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# The Plains Wind Farm

## Amended Biodiversity Development Assessment Report

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# The Plains Wind Farm

## Amended Biodiversity Development Assessment Report

0667692

**Robert Ashworth**
Ecologist

**Claire Hewitt**
Principal Ecologist / BAM Accredited Assessor (BAAS20009)

**Joanne Woodhouse**
Consulting Director, Project Manager

**Mark Davey**
Partner

Environmental Resources Management
Australia Pty Ltd
Level 14, 207 Kent St
Sydney NSW 2000

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## ACRONYMS AND ABBREVIATIONS

| Acronyms | Description |
|---|---|
| AOO | Area of occupancy |
| BAM | Biodiversity Assessment Method |
| BAM-C | Biodiversity Assessment Method Calculator |
| BBAMP | Bird and Bat Adaptive Management Plan |
| BBUS | Bird and bat utilisation survey |
| BC Act | *Biodiversity Conservation Act 2016* (NSW) |
| BC Regulation | *Biodiversity Conservation Regulation 2017* (NSW) |
| BCS | Biodiversity Conservation and Science Directorate |
| BDAR | Biodiversity Development Assessment Report |
| BMP | Biodiversity Management Plan |
| BOAMS | Biodiversity Offset Assessment Management System |
| BOS | Biodiversity Offsets Scheme |
| BUS | Bird utilisation survey |
| CEEC | Critically endangered ecological community |
| CEMP | Construction Environmental Management Plan |
| cm | Centimetres |
| CRM | Collision risk modelling |
| CTMP | Construction Traffic Management Plan |
| Cwth | Commonwealth |
| Cwth DCCEEW | Commonwealth Department of Climate Change, Energy, Environment and Water |
| DPE | NSW Department of Planning and Environment |
| DPIE | NSW Department of Planning, Industry and Environment |
| EOO | Extent of occurrence |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) |
| EP&A Act | *Environmental Planning and Assessment Act 1979* (NSW) |
| EEC | Endangered Ecological Community |
| ESCP | Erosion and Sediment Control Plan |
| FM Act | *Fisheries Management Act 1994* (NSW) |
| Ha | Hectare |
| km | Kilometre |
| kV | Kilovolt |
| LCA | Land category assessment |
| LLS Act | *Local Land Services Act 2013* (NSW) |

| Acronyms | Description |
|---|---|
| Met mast | Meteorological mast |
| MNES | Matters of National Environmental Significance |
| MW | Megawatt |
| IBRA | Interim Biogeographic Regionalisation for Australia |
| NVR Map | Native Vegetation Regulatory Map |
| NSW | New South Wales |
| NSW BioNet | Atlas of NSW Wildlife and Vegetation Classification |
| NSW DCCEEW | NSW Department of Climate Change, Energy, Environment and Water |
| NSW DEC | NSW Department of Environment and Conservation |
| PAMP | Pest Animal Management Plan |
| PCT | Plant community type |
| PMST | Protected Matters Search Tool (Cwth) |
| PP | Pinch point (along haul route) |
| PREP | The Plains Renewable Energy Park |
| REZ | Renewable Energy Zone |
| RSA | Rotor swept area |
| SAII | Serious and Irreversible Impact |
| SEARs | Secretary’s Environmental Assessment Requirements |
| SVTM | State Vegetation Type Map (NSW) |
| TBDC | Threatened Biodiversity Data Collection |
| TEC | Threatened ecological community |
| VIS | Vegetation integrity score |
| VZ | Vegetation Zone |
| WTG | Wind turbine generator |

# DECLARATIONS

**Certification under clause 6.15 Biodiversity Conservation Act 2016**

I, Claire Hewitt, certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the ***Biodiversity Conservation Act 2016*** (BC Act).

| | |
|---|---|
| Signature: | |
| Date: | 08 August 2025 |
| BAM Assessor Accreditation Number: BAAS20009 | |

**Details and experience of Author's and contributors.**

## AUTHORS AND CONTRIBUTORS

| Name | BAM Assessor Accreditation no (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| **Environmental Resources Management (ERM)** | | | | |
| Claire Hewitt | BAAS20009 | ERM – Senior Ecologist/Technical Lead (BDAR Resubmission) | • Technical review<br>• BAM Accredited Assessor | • Master of Environmental Science and Management<br>• Master of Natural Sciences<br>• BAM Accredited Assessor |
| Mark Aitkens | BAAS17034 | ERM – Principal Ecologist/Technical Lead | • Technical review<br>• BAM Accredited Assessor | • Bachelor of Science (Environmental Biology)<br>• BAM Accredited Assessor |
| Matt Davis | BAAS18090 | ERM - Principal Ecologist/Technical Lead | • Technical review<br>• BAM Accredited Assessor | • Bachelor Science Ecology and Conservation Biology<br>• Master of Environmental Management, Conservation Biology<br>• BAM Accredited Assessor |
| Lorena Boyle | BAAS23027 | ERM – Ecologist/Field Lead | • BAM plot surveys<br>• Targeted threatened flora surveys<br>• Targeted threatened fauna surveys<br>• Report preparation | • Bachelor of Zoology<br>• BAM Accredited Assessor |
| Joanne Woodhouse | - | ERM - Project Manager | • Technical and QA Review | • Bachelor of Env Science<br>• Diploma in Bushfire Protection<br>• Diploma in Indigenous Archaeology |
| Milan Bartusek | - | ERM - GIS Consultant | • GIS mapping and calculations<br>• Figure preparation | • Masters in Geoinformatics and Applied Cartography |

| Name | BAM Assessor Accreditation no (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| Ned Bowden | - | ERM - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Environmental Management (Hons)<br>• Graduate Certificate of Ornithology |
| Jaimie Soper | - | ERM - Ecologist | • Targeted threatened flora surveys<br>• Targeted threatened fauna surveys | • Bachelor of Zoology<br>• Graduate certificate of environmental science |
| Michael Thompson | - | ERM - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Science (Zoology)<br>• Graduate Certificate of Environmental Management |
| Robert Ashworth | - | ERM - Ecologist | • Targeted threatened flora surveys<br>• Targeted threatened fauna surveys<br>• Report Preparation | • Bachelor of Science (Ecology and Conservation Biology)<br>• Masters of Environment, restoration and Conservation |
| Freya Robinson | - | ERM - Ecologist | • Targeted threatened flora surveys<br>• Targeted threatened fauna surveys<br>• Report preparation | • Bachelor of Biological Science - Majors in Botany and Ecology<br>• Graduate Certificate of Agriculture & Environment |
| Mikki Gourlis | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys<br>• Report preparation | • Bachelor of Zoology |
| Jemma Boyce | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Applied Biology |
| Jessica Gardner | - | ERM - Ecologist | • Targeted threatened flora surveys | • Master of Science (Biosciences) |

| Name | BAM Assessor Accreditation no (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| Joe Clement | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys<br>• Report preparation<br>• GIS mapping | • Master of Science (Ecological Consultancy)<br>• Bachelor of Science (Biological Science, Zoology/Animal Biology) |
| James Salinas | - | ERM – Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Science (Environmental Science) |
| Baden Sadlo | - | ERM – Principal Ecologist | • BAM plot survey<br>• Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Bioenvironmental Science |
| Levi Stewart | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Ecology |
| Courtney Whitehead | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Ecology, Conservation and Environment |
| Jevan Raghoobar | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Science |
| Georgina Thompson | - | ERM - Ecologist | • Report preparation | • Bachelor of Environmental Science and Management |
| Jordan Schloss | - | ERM - Ecologist | • Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Environmental Science |

| Name | BAM Assessor Accreditation no (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| Sophie Draganic | - | ERM – Ecologist | • BAM plot survey<br>• Targeted threatened fauna surveys<br>• Targeted threatened flora surveys | • Bachelor of Environmental Science and Management |
| Kelsie Youman | - | ERM - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Science (Hons), Biodiversity and Conservation Biology |
| Hannah Centra | - | ERM - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Environmental Science and Management |
| Andressa Martire da Silva | - | ERM – Ecologist | • Targeted threatened fauna surveys | • Master of Environmental Science |
| **Hunter Ecology** | | | | |
| Bart Schiebaan | BAAS18033 | Hunter Ecology - Principal Ecologist | • BAM plot surveys<br>• Targeted threatened flora surveys | • Bachelor of Applied Science<br>• Advanced Diploma (Business Management)<br>• Certificate II (Conservation & Land Management)<br>• BAM Accredited Assessor |
| Lizzie Bowman | BAAS18112 | Hunter Ecology - Principal Ecologist | • BAM plot surveys<br>• Targeted threatened flora surveys | • Bachelor of Science<br>• Graduate Certificate (Environmental Management and Sustainability_<br>• BAM Accredited Assessor |

| Name | BAM Assessor Accreditation no (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| **Ascent Ecology** | | | | |
| Ned Garlick Kelly | - | Ascent Ecology - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Forest Sciences and Ecology |
| Byron Sinclair | - | Ascent Ecology - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Business<br>• Graduate Certificate, Environmental Sciences |
| Kaelen Were | - | Ascent Ecology - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Environmental Science |
| Natalie Greenland | - | Ascent Ecology - Ecologist | • Targeted threatened fauna surveys | • Bachelor of Science, Marine Biology (Hons)<br>• Certificate III Conservation Ecosystem Management |
| **Red Gum Environmental Consulting** | | | | |
| Damian Wall | BAAS18081 | Red-gum Environmental Consulting - Principal Ecologist | • BAM plot surveys<br>• Targeted threatened flora surveys | • BAppS, MEnvMgt, GradCert CHM, MEIANZ, CENVP<br>• BAM Accredited Assessor |
| Olivia Hynam | - | Red-gum Environmental Consulting - Ecologist | • BAM plot surveys<br>• Targeted threatened flora surveys | • Bachelor of environmental Science and Management, Applied Earth Sciences |
| **Mango Green Consulting** | | | | |
| Gabrielle Rose | - | Mango Green Consulting – Senior Ecologist | • BAM plot surveys<br>• Targeted threatened flora surveys | • BAM Accredited Assessor |

| Name | BAM Assessor Accreditation no (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| **Evolve Ecology** | | | | |
| Evelyn Craigie | BAAS18088 | Evolve Ecology - Principal Ecologist | • BAM plot surveys<br>• Targeted threatened fauna surveys | • Master of Environmental Management<br>• BAM Accredited Assessor |
| Reece Ford | - | Evolve Ecology - Ecologist | • BAM plot surveys<br>• Targeted threatened fauna surveys | • Bachelor of Environmental Science and Management, Biodiversity and Ecosystems |
| Jack Radcliffe | - | Evolve Ecology - Ecologist | • BAM plot surveys<br>• Targeted threatened fauna surveys | • Bachelor of Science (Biological Science, Coastal and Marine Science) |

**Conflict of interest.**

I, Claire Hewitt, declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.

This declaration has been made in the interest of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

| | |
|---|---|
| Signature: | |
| Date: | 8 August 2025 |
| BAM Assessor Accreditation Number: BAAS20009 | |

# EXECUTIVE SUMMARY

## OVERVIEW

ENGIE Australia Pty Ltd ('ENGIE' or 'Applicant') proposes to construct, operate, maintain and decommission The Plains Wind Farm (the Project) within the rural locality of Hay, New South Wales (NSW). The Applicant is seeking development approval under Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) (State Significant Development or SSD) requiring preparation of a Biodiversity Development Assessment Report (BDAR) as the Project has potential to have a significant impact on biodiversity values (s7.14 of the *Biodiversity Conservation Act 2016* (BC Act)).

## THE PROJECT

The Project is situated on Mungadal Station and neighbouring properties to the east and west of the Cobb Highway in the Riverina Murray Region of NSW. The Subject Land is land to which the Biodiversity Assessment Method (BAM) has been applied and represents the area of permanent and temporary disturbance anticipated for the Project, with a 100 m buffer applied to the wind turbine locations. To allow for micrositing flexibility in the pre-construction detailed design phase of the Project, impacts have been calculated for the entire Subject Land. However, the Development Footprint, referred to in this BDAR, represents the indicative extent of actual impacts associated with the construction and operation of the Project.

The Subject Land extends over 271 freehold land parcels (and 6 parcels of Crown Land/ 'Road Casement'), in the Hay Shire Local Government Area (LGA). The Project is about 15 kilometres (km) (by road) south of Hay town centre and 10 km (by road) north of Booroorban village, via the Cobb Highway. The Project is located on land predominately used for agricultural activities.

The Project involves the construction, operation, maintenance and decommissioning (where applicable) of:

- 171 wind turbine generators (WTGs), with each having a hub height of up to 180 metres (m) and tip height of up to 270 m, and a total maximum capacity of up to 1,230 megawatts (MW);
- Up to 10 permanent met masts;
- Electrical reticulation; and
- On-site and off-site supporting infrastructure.

The Project will connect to either an existing 220 kV transmission line or the 330 kV Project EnergyConnect (under construction), both owned by TransGrid and located along the southern boundary of the Project.

The Project is a linear development comprising an indicative Development Footprint of 1,887.08 ha. This Development Footprint incorporates both permanent (347.16 ha) and temporary (1,539.84 ha) impacts during the construction phase of the Project. The Subject Land represents the Development Footprint, with a 100 m buffer applied to the wind turbine locations and is 2,079.22 ha. Impacts have been calculated for the entire Subject Land to allow for micrositing flexibility.

A Haul Route is proposed for the delivery of Project components from the Port of Adelaide, South Australia (SA), to the Subject Land. The area of impact for this component of the Project is delineated separately to the Subject Land. The area of disturbance as a result of the Haul Route, and required to be assessed under the BAM, is referred to as the 'Haul Route Disturbance Footprint' (Haul Route DF). The Haul Route DF is assessed independently to the Subject Land.

## METHODS

Impacts to biodiversity values have been assessed in accordance with the Biodiversity Assessment Method 2020 (BAM) (NSW DPIE, 2020a). Field surveys were undertaken over fifteen (15) events as follows:

| Season | Dates | Survey Methods |
|---|---|---|
| **Plains Wind Farm Subject Land** | | |
| Spring 2021 | 26 October – 12 November 2021 | Surveys included general habitat assessment, scattered tree assessments, targeted flora surveys, nocturnal avian driven transects, bird utilisation surveys (BUS), BAM plots, rapid vegetation assessment, targeted avian area searches and nocturnal call playback and spotlighting |
| Summer 2022 | 14 – 25 February 2022 | Surveys included general habitat assessment, scattered tree assessments, BAM plots, rapid vegetation assessment, anabat deployment, amphibian aural-visual survey, diurnal avian driven transects and BUS |
| Autumn 2022 | 16 – 20 May 2022 | Surveys included general habitat assessment, scattered tree assessments and BUS |
| Winter 2022 | 8 – 18 August 2022 | Surveys included a general habitat assessment, scattered tree assessments, BUS and nocturnal call playback |
| Summer 2023 | 21 February – 3 March 2023 | Surveys included general habitat assessment, scattered tree assessments, BAM plots, rapid vegetation assessment, targeted flora surveys, anabat deployment, koala tree assessment, amphibian aural-visual survey, diurnal avian driven transects, nocturnal call playback and spotlighting, and bird censuses |
| Autumn 2023 | 23 March – 13 May 2023 | Anabat device deployed at height on a meteorological mast |
| Spring 2023 | 18 – 29 September 2023<br>13 November – 16 November 2023 | Surveys included threatened flora transects and BUS |
| Summer 2023 | 2 - 5 December 2023 | Surveys included BAM plots and rapid vegetation assessment. |
| Summer 2024 | 19 – 23 February 2024<br>11 – 14 March 2024 | Surveys included summer BUS and anabat deployment |
| Autumn* 2024 | 10 – 13 June 2024 | Surveys included autumn BUS and anabat deployment at height on the met mast |
| Winter* 2024 | 4 – 11 August 2024 | Surveys included winter BUS |

| Season | Dates | Survey Methods |
|---|---|---|
| Spring 2024 | 1 – 13 September 2024<br>21 October – 1 November 2024 | Surveys included spring BUS, targeted bird censuses, threatened flora surveys and habitat mapping |
| Summer 2024 | 6 – 20 December 2024 | Surveys included vegetation mapping, habitat mapping, threatened flora surveys, BAM plots, rapid vegetation assessment and targeted amphibian and reptile surveys |
| **Haul Route** | | |
| Winter 2023 | 17 – 21 July 2023 | Haul Route assessment surveys included rapid vegetation assessments, habitat assessments and targeted flora transects |
| Spring 2024 | 2 – 13 September 2024<br>18 – 22 November 2024 | Haul Route assessment surveys included targeted flora transects, nocturnal reptile surveys, targeted bird censuses, habitat assessment, BAM plots and land category assessment transects |

**Site inaccessible during lambing season. As such Autumn 2024 survey effort was completed at the beginning of June 2024. In turn, the winter survey effort was completed in August 2024 to account for weather variation across seasons.*

The planned Spring 2022 surveys for threatened flora were abandoned due to weather events and flood conditions resulting in survey effort shortfalls (i.e., the Subject Land was inaccessible for surveys). Engie consulted with the NSW South West Biodiversity Conservation and Science Directorate (BCS) on 25th October 2022 and 28th June 2023 and committed to undertaking additional targeted threatened flora surveys. Additional surveys were conducted in 2024 to inform assessment of the Grey Snake (*Hemiaspis damelii*) and Plains-wanderer (*Pedionomus torquatus*) habitat, both listed as threatened under the EPBC Act, in accordance with the EPBC Act controlled actions' assessment approach.

## BIODIVERSITY VALUES

The Subject Land comprises 2,013.30 ha of native vegetation cover associated with the following naturally occurring plant community types (PCTs):

- PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion);
- PCT 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains;
- PCT 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion;
- PCT 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones;
- PCT 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion;
- PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains;
- PCT 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones;
- PCT 164 - Cotton Bush open shrubland of the semi-arid (warm) zone; and

- PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion.

Each of the PCTs was allocated one vegetation zone as native vegetation was observed in a consistent condition and form throughout the Subject Land, except for PCT 164 which was delineated into three (3) vegetation zones (good, moderate and Malacocera).

The Haul Route DF comprises 1.20 ha of native vegetation cover associated with three (3) PCTs:

- PCT 123 - Mulga – Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion
- PCT 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones
- PCT 158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW).

A single vegetation zone was established for each PCT.

Alignment of PCTs with threatened ecological communities (TECs) was also analysed, resulting in the confirmation of TEC absence within the Subject Land and the Haul Route DF.

Nine (9) ecosystem credit species have been recorded within or near the Subject Land:

- Black Falcon (*Falco subniger*);
- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*);
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*);
- Little Eagle (*Hieraaetus morphnoides*);
- Plains-wanderer (*Pedionomus torquatus*) (dual credit species);
- Southern Whiteface (*Aphelocephala leucopsis*);
- Spotted Harrier (*Circus assimilis*);
- Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*); and
- White-fronted Chat (*Epthianura albifrons*).

The Sharp-tailed Sandpiper (*Calidris acuminata*) has also been elected for assessment as the species was observed within The Plains Renewable Energy Park (PREP) area. The species is neither a candidate or ecosystem species but is listed as vulnerable and migratory under the EPBC Act.

No threatened species have been recorded within the Haul Route DF.

Nine (9) species credit species have been observed within the Subject Land. Species' polygons have been created for these species, as listed below:

- Plains-wanderer* (*Pedionomus torquatus*) (dual credit species, Subject Land contains Important Area mapping);
- Southern Bell Frog (*Litoria raniformis*);
- Southern Myotis (*Myotis macropus*);
- Mossgiel Daisy (*Brachyscome papillosa*);
- Winged Peppercress (*Lepidium monoplocoides*);
- Chariot Wheels (*Maireana cheelii*);

- Turnip Copperburr (*Sclerolaena napiformis*);
- Slender Darling Pea (*Swainsona murrayana*); and
- Red Darling Pea (*Swainsons plagiotropis*).

Six (6) species credit species have been assumed to be present within the Subject Land due to insufficient survey effort. Species' polygons have also been created for these species, as listed below:

- Grey Snake (*Hemiaspis damelii*);
- A Spear Grass (*Austrostipa wakoolica*);
- A Burr Daisy (*Calotis moorei*)*;
- Small Scurf-pea (*Cullen parvum*);
- Lanky Buttons (*Leptorhynchos orientalis*); and
- Austral Pillwort (*Pilularia novae-hollandiae*).

No species' polygons are required or produced for the Haul Route DF.

Serious and Irreversible Impact (SAII) entities were identified for the purposes of further assessment under the BAM. These are identified with an asterisk above.

There are three (3) named waterways situated within the Subject Land, with the Project intersecting the ephemeral creeks, including:

- Telegraph Creek;
- Abercrombie Creek; and
- Curtains Creek.

No key fish habitat is present. It is considered unlikely that any threatened aquatic species, listed under the NSW *Fisheries Management Act 1994*, would be impacted by the Project.

## INDIRECT AND PRESCRIBED IMPACTS

The Project is anticipated to have indirect impacts on biodiversity values, such as an increased risk of feral predators and edge effects on native vegetation adjacent to the Subject Land, and prescribed impacts on biodiversity values, as outlined below:

- Impacts on the following habitat of threatened entities:
  - Rocks (Haul Route DF only);
  - Human-made structures;
  - Non-native vegetation;
- Impacts on areas connecting threatened species habitat and which maintain their lifecycle, such as movement corridors;
- Impacts that affect water quality, water bodies and hydrological processes that sustain threatened entities;
- Impacts on threatened and protected animals from turbine strike and / or barotrauma; and
- Impacts on threatened species or fauna that are part of a TEC from vehicle strike.

## CUMULATIVE IMPACTS

It is anticipated that the Project will remove native vegetation thus contributing to the cumulative loss of vegetation in the region. The Project involves direct impacts to 2,013.29 ha of native vegetation across the Subject Land, and 1.20 ha of native vegetation across the Haul Route DF. A review against publicly available information regarding nearby relevant projects found the Project will likely contribute to cumulative impacts during construction and operation within the existing environment.

## AVOID, MINIMISE AND MITIGATE

The Applicant has completed environmental assessment of the Subject Land in accordance with the Biodiversity Assessment Method 2020 (BAM) and Secretary's Environmental Assessment Requirements (SEARs) and has modified the project layout based on the outcomes of these assessments.

The Project design has evolved through the course of preparing the BDAR to minimise impact on biodiversity features. Amendments to the Project elements maximise the use of existing public and internal access tracks and minimise vegetation clearance required where possible. The Project continues to avoid locations of raptor nesting sites, remnant woodland habitat and ephemeral wetlands. The Project also continues to largely avoid Plains-wanderer habitat.

Impacts will be mitigated by measures designed to protect retained and adjacent vegetation and habitat during the construction, operation and decommissioning phases. A BMP will be prepared in consultation with the relevant bodies prior to construction. Other management plans, such as the CEMP, will incorporate mitigation measures to minimise the impacts of traffic, noise, light, soil erosion and water quality, and will be implemented prior to construction. The CEMP will make provisions for clearing protocols, construction timing, and include measures to minimise soil disturbance, runoff and sediment transfer, noise, dust, and vibrations as a result of the Project. The PAMP will be developed and implemented to minimise the impacts of introduced predators on existing native fauna, with a particular focus on protecting the Plains-wanderer. The BBAMP, prepared as part this BDAR, will enable the implementation of a long-term approach to the mitigation and management of potential impacts on listed threatened and migratory species and other avian species at risk of turbine strike and / or barotrauma. Monitoring will also be incorporated into the BBAMP to identify any potential changes to the species' utilisation of the Subject Land and the surrounding landscape.

## SERIOUS AND IRREVERSIBLE IMPACTS (SAII)

Two species have been identified at risk of SAII, thus requiring assessment under Section 9.1 of the BAM (NSW DPIE, 2020a). This includes:

- A Burr Daisy (*Calotis moorei*); and
- Plains-wanderer (*Pedionomus torquatus*).

These assessments took into consideration the impacts of the Project and the avoidance, minimisation and mitigation measures proposed, and concluded that the severity of the Project's impact is not of a kind that would contribute to an increase in the decline of the species such that they would become extinct. It is anticipated that these species would likely respond to the management and mitigations proposed to minimise impacts as a result of the Project, for example, weed control to avoid impacts on threatened flora and pest management to control predators of the Plains-wanderer.

## RESIDUAL IMPACTS AND BIODIVERSITY OFFSET LIABILITY

The Project has been calculated to have a direct impact on the PCTs summarised in Table E 1.

Table E 1 Impacts that require offsets - ecosystem credits

| Vegetation Zone | PCT | Condition | TEC | Impact area (ha) | Ecosystem credits required |
|---|---|---|---|---|---|
| VZ01 | 17 | Moderate | No | 1.02 | 30 |
| VZ02 | 24 | Moderate | No | 3.77 | 75 |
| VZ03 | 44 | Moderate | No | 54.50 | 1544 |
| VZ04 | 153 | Good | No | 4.67 | 152 |
| VZ05 | 157 | Good | No | 13.65 | 493 |
| VZ06 | 160 | Good | No | 27.61 | 751 |
| VZ07 | 163 | Moderate | No | 28.82 | 692 |
| VZ08 | 164 | Good | No | 841.5 | 25382 |
| VZ09 | 164 | Malacocera | No | 6.81 | 205 |
| VZ10 | 164 | Moderate | No | 1029.77 | 15372 |
| VZ11 | 216 | Low | No | 1.18 | 15 |
| VZ12* | 123 | Moderate | No | 0.29 | 7 |
| VZ13* | 155 | Low | No | 0.69 | 11 |
| VZ14* | 158 | Moderate | No | 0.22 | 7 |

**Vegetation Zones 12, 13 and 14 are related to the Haul Route DF only.*

The Project has been calculated to have a direct impact on the species credit species summarised in Table E 2. Note that the residual impact on species is the extent of known presence following consideration of survey results that demonstrate species absence. Some species have been assumed to be present.

No species credit species require to be offset for the Haul Route DF.

Table E 2 Impacts that require offset - species credits

| Common Name | Scientific Name | Loss of habitat (ha) | Number of species credits required |
|---|---|---|---|
| A Spear Grass | *Austrostipa wakoolica* | 1.02 | 34 |
| Mossgiel Daisy | *Brachyscome papillosa* | 662.26 | 18425 |
| A Burr Daisy | *Calotis moorei* | 10.12 | 635 |
| Small Scurf-pea | *Cullen parvum* | 18.56 | 526 |
| Grey Snake | *Hemiaspis damelii* | 32.40 | 1136 |
| Winged Peppercress | *Lepidium monoplocoides* | 26.95 | 905 |
| Lanky Buttons | *Leptorhynchos orientalis* | 15.28 | 39 |
| Southern Bell Frog | *Litoria raniformis* | 8.84^ | 180 |
| Chariot Wheels | *Maireana cheelii* | 643.09 | 17600 |
| Southern Myotis | *Myotis macropus* | 339.18 | 8858 |
| Plains-wanderer | *Pedionomus torquatus* | 0.18 | 11 |
| Austral Pillwort | *Pilularia novae-hollandiae* | 18.56 | 526 |
| Turnip Copperburr | *Sclerolaena napiformis* | 58.76 | 138 |
| Slender Darling Pea | *Swainsona murrayana* | 685.46 | 19231 |
| Red Darling Pea | *Swainsona plagiotropis* | 14.62 | 20 |

^ *includes 1.86 ha of non-native vegetation*

## OFFSET STRATEGY

The no net loss standard involves the retirement of ecosystem and species credits for Project related impacts in accordance with the NSW Biodiversity Offsets Scheme (BOS). The BOS requires all direct impacts on biodiversity to be calculated using the BAM Calculator (BAM-C), which determines the final species and ecosystem credit obligations for the Project. Typically, the final credit obligations are to be 'retired' prior to construction or in accordance with an approved staged approach.

The Applicant has developed a biodiversity offset strategy. This strategy details the offset approach to be undertaken to retire credit obligations and will be achieved by:

- Retiring 'like for like' credits, as specified in Section 10, to the amount and from the regions indicated; and / or
- Entering into a Strategic Offset Delivery Agreement (SODA) with the NSW Government, if eligible, where the Applicant pays NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) to undertake actions to meet their biodiversity offset obligations through the retirement of like-for-like biodiversity credits or the funding of a suitable biodiversity conservation action; and / or
- Payment into the Biodiversity Conservation Fund in lieu of satisfying the offset liability specified in Section 10.

The fee associated with the latter option is determined through formal consultation with the Biodiversity Conservation Trust.

# PREFACE

## 1. ASSESSMENT OVERVIEW

Environmental Resources Management Australia Pty Ltd (ERM) has prepared this Amended Biodiversity Development Assessment Report (Amended BDAR) for the Plains Wind Farm (the Project) on behalf of ENGIE Australia Pty Ltd (the Applicant). This Project will form a component of The Plains Renewable Energy Park (PREP).

Approval for the Project is sought under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as the Project is declared State Significant Development (SSD) under Part 2.2, clause 2.6 and Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP).

The Project was determined to be a controlled action on 20 March 2023 and approval is also sought under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Referral (EPBC Ref: 2022/09404).

In support of the SSD application (SSD-50629707), an Environmental Impact Statement (EIS) was prepared for the Project (ERM, 2024a). The EIS was publicly exhibited between 8 May 2024 and 4 June 2024 by the NSW Department of Planning, Housing and Infrastructure (DPHI).

This Amended BDAR is prepared in accordance with the Biodiversity Assessment Method 2020 (BAM), with consideration of the NSW Department of Climate Change, Energy, the Environment and Water's (NSW DCCEEW) 'Wind Farms – turbine strike assessment & adaptive impact management' guidelines (NSW DCCEEW, 2024b), as the Biodiversity Offset Scheme (BOS) applies to the Project. It also addresses the:

- Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DPE) (SSD-50629707, dated 16 December 2022); and
- Supplementary SEARs received from the Commonwealth Department of Agriculture, Water and the Environment (DAWE) - now the Department of Climate Change, Energy, the Environment and Water (Cwth DCCEEW).

This Amended BDAR has addressed the Project amendments and relevant issues raised in public and agency submissions. The Amended BDAR will be submitted with the Submission Report and Amendment Report prepared as part of the SSD application.

### 1.1 RELEVANT LEGISLATION AND POLICIES

This BDAR addresses Stage 1 (Biodiversity Assessment) and Stage 2 (Impact Assessment) of the BAM and omits Stage 3 (Improving Biodiversity Values) as this is only required for Biodiversity Stewardship Site Assessment Reports. The BDAR also addresses the assessment requirements of the EPBC Act and the relevant State Environmental Planning Policies (SEPPs).

#### 1.1.1 ASSESSMENT FRAMEWORK

The Project requires approval under Part 4 of the EP&A Act. Section 1.7 of the EP&A Act specifies that Act has effect subject to the provisions of Part 7 of *Biodiversity Conservation Act 2016* (BC Act). Part 7 of the BC Act mandates the application of the Biodiversity Assessment Methodology 2020 (BAM) (NSW DPIE, 2020a) where the Project exceeds a biodiversity offsets

scheme threshold (i.e., Section 7.2 of the BC Act) and / or is "likely to significantly affect threatened species" upon application of the test (Section 7.3 of the BC Act). In this case, these thresholds do not apply as the Project is declared SSD thus mandating the preparation of a BDAR (s7.14) in the absence of a successful BDAR waiver. The Minister for Planning is to take into consideration impacts on serious and irreversible impact (SAII) entities and determine if any additional measures are required to minimise impacts on these entities (s7.16(3)).

### 1.1.2 REQUIREMENT FOR A BDAR

The BOS applies to the Project as it has been declared SSD (s7.14 of the BC Act). The Applicant has engaged an independent accredited assessor, without any conflicts of interest, to apply the BAM to assess the impacts of the Project on biodiversity values.

### 1.1.3 APPLICATION OF THE BAM

#### 1.1.3.1 CONTENT

This BDAR has been prepared in accordance with the relevant parts of the BAM, as required under the BC Act, for development identified as "likely to significantly affect threatened species". No streamlined assessment modules were applied in preparing this BDAR. The minimum information supplied in this BDAR is in accordance with the relevant details specified in Table 24 of Appendix K of the BAM.

#### 1.1.3.2 CERTIFICATION

The BDAR is certified by the accredited assessor indicated on Page (viii) of this document as of the date corresponding with the signature. The BAM Calculator (BAM-C) report associated with this BDAR was finalised within 14 days of the date of submission of this BDAR.

#### 1.1.3.3 CHANGES TO THE BAM

Clause 6.31 of the NSW *Biodiversity Conservation Regulation 2017* (BC Regulation) outlines how an accredited assessor can address changes to the BAM that occur while preparing a BDAR for a Project. This clause is reproduced below for clarity:

***6.31 Changes in biodiversity assessment method***

*(1) If the biodiversity method is changed, a biodiversity assessment report may, during the designated period after the method is changed, be prepared on the basis of the method in force before the change, but only if the report states that it has been prepared on that basis.*

*(2) For the purposes of this clause, the designated period is—*

*(a) except as provided by this subclause—6 months, or*

*(b) in the case of a biodiversity development assessment report in respect of State significant development or State significant infrastructure—12 months, or*

*(c) in the case of a biodiversity certification assessment report for an application that is not a strategic biodiversity certification application—12 months, or*

*(d) in the case of a biodiversity certification assessment report for a strategic biodiversity certification application—12 months or such longer period as the Minister approves in a particular case.*

The BAM refers to the Threatened Biodiversity Data Collection (TBDC) and NSW BioNet Atlas (NSW DCCEEW, 2025b) as published databases that *must* be used in preparing a BDAR (see Section 1.4 of the BAM). Under this section, a change in these published databases may change the BAM requirements for a specific project. Thus, such changes during the preparation of a BDAR for this Project may be interpreted as a change to the BAM. On this basis, and with reference to the specified designated periods above, the accredited assessor may prepare the BDAR based on the methods in force before the change and in so doing will state this as the case, where appropriate, in the BDAR.

This BDAR contains site-based information capable of determining the plant community types (PCTs) and habitat present within the Project Area, thus provides a sound basis for the generation of the ecosystem and candidate species applicable to the Project. Changes in the candidate species list after the publishing of this BDAR may represent a change in the BAM and, for this reason, these additional species may be excluded from the assessment. The BDAR will state this if the circumstance arises.

A change to survey methods for candidate species specified in NSW BioNet (incorporating the TBDC) during the preparation of the BDAR is also interpreted as a change to the BAM. If appropriate, the accredited assessor may choose to apply the survey methods in force before the change and, if so, the decision to do so will be stated in the BDAR.

### 1.1.4 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places – defined as matters of national environmental significance (MNES).

A referral was submitted by the Applicant to the Commonwealth Department of Climate Change, Energy, the Environment and Water (Cwth DCCEEW), (EPBC 2022/09404). The referral identified the potential for significant impacts to EPBC Act listed MNES, which are likely to occur or use habitat within the Project area.

A delegate of the Minister for the Environment determined that the Project is likely to have a significant impact on MNES and therefore is a 'controlled action' under Part 75 of the EPBC Act. Consequently, the Project will be assessed under an Assessment Bilateral Agreement, allowing a single environmental impact assessment process for both the Commonwealth and NSW Governments. Supplementary SEARs have been provided where the Commonwealth has identified additional matters for consideration. The EPBC Act controlling provisions for the proposed action included:

- Listed threatened species and communities; and
- Listed migratory species.

The assessment requirements include, but are not limited to, the EIS identifying each EPBC Act listed threatened species and community and migratory species likely to be impacted by the action. It should also include a description of the habitat and survey methodologies for each species and community, a detailed assessment of impacts and avoidance, mitigation and offset measures to reduce impacts.

Supporting information and comment relating to the relevant NSW SEARs and the supplementary SEARs are provided in Table 1-1.

## TABLE 1-1 SEARS AND SUPPLEMENTARY SEARS - COMMENTS AND RESPONSE

| SEARs Comment | Response |
|---|---|
| **NSW Department of Planning and Environment** | |
| An assessment of the biodiversity values and the likely biodiversity impacts of the project, including impacts associated with transport route road upgrades in accordance the BC Act, the BAM and documented in a BDAR, including a detailed description of the proposed regime for avoiding, minimising, managing and reporting on the biodiversity impacts (including on grasslands) of the development over time, and a strategy to offset any residual impacts of the development in accordance with the BC Act. | This BDAR |
| An assessment of the likely impacts on listed aquatic threatened species, populations or ecological communities, scheduled under the NSW *Fisheries Management Act 1994* (FM Act), and a description of the measures to minimise and rehabilitate impacts, including impacts to the Murrumbidgee River, Abercrombie Creek, Curtains Creek and Telegraph Creek. | Section 3.1.1 |
| An assessment of the impacts of the development on birds and bats, including blade strike, low air pressure zones at the blade tips (barotrauma), alteration to movement patterns, and cumulative impacts of other wind farms in the vicinity. | Section 6.2<br>Section 8.3 (BBAMP) |
| A cumulative impact assessment of biodiversity values in the region from nearby developments. | Section 8.4 |
| If an offset is required, include details of the measures proposed to address the offset obligation. | Section 10 |
| **South West Branch, Biodiversity and Conservation Division, NSW Department of Planning and Environment** | |
| 1. Biodiversity impacts related to the proposed development are to be assessed in accordance with Section 7.9 of the BC Act using the BAM and documented in a BDAR.<br>The BDAR must include information in the form detailed in the BC Act (s6.12), BC Regulation (s6.8) and the BAM, unless DPE determines that the proposed development is not likely to have any significant impact on biodiversity values. | Section 1 |
| 2. The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect, uncertain and prescribed impacts in accordance with the BAM. | Section 7 |
| 3. The BDAR must include details of the measures proposed to address the offset obligation as follows;<br>a. The total number and classes of biodiversity credits required to be retired for the development/project;<br>b. The number and classes of like-for-like biodiversity credits proposed to be retired;<br>c. The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules;<br>d. Any proposal to fund a biodiversity conservation action;<br>e. Any proposal to make a payment to the Biodiversity Conservation Fund.<br>If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits. | Section 10 |
| 4. The BDAR must be submitted with all digital spatial data associated with the survey and assessment as per Appendix K of the BAM. | Submitted with the BDAR |

| SEARs Comment | Response |
|---|---|
| 5. The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the BC Act. | Refer to Declarations |
| 6. The EIS must assess the impact of wind turbine strikes on protected animals including;<br>a) Predict the likelihood of impact on aerial species resident in, or likely to fly over, the project area, including but not limited to bat/bird strike and barotrauma.<br>b) Predict the rate of impact per turbine per year for species likely to be affected.<br>c) Justify predictions of likelihood of impact and rates of impact with reference to relevant literature and other published sources of information.<br>d) Predict the consequences of impacts for the persistence of bioregional populations, with reference to relevant literature and other published sources of information.<br>e) Predict and map the likely zone of disturbance around wind turbines for aerial species resident in, or likely to fly over, the project area, with reference to relevant literature and other published sources of information.<br>f) Map significant landscape and habitat features within the zone of disturbance for species likely to be affected, including but not limited to hollow bearing trees, nest trees, microbat habitat and important habitat for migratory species.<br>g) Predict the likelihood and describe the nature of indirect impacts on aerial species resident in, or likely to fly over, the project area including but not limited to barriers to migratory pathways and breeding, feeding and resting resources.<br>h) For migratory species, predict the impact of avoidance behaviour relative to migration distances and the availability of suitable habitat for breeding, feeding and resting over the migration route, with reference to relevant literature and other sources of published information.<br>i) Justify prediction of likelihood and nature of impact, with reference to relevant literature and other published sources of information.<br>j) Predict the cumulative impact of the project together with existing wind farms with respect to movement patterns and the use of adjacent habitat and provide justification for these predictions. | Section 6.2<br>Section 8.3<br>Appendix I (BBAMP) |
| **NSW Department of Primary Industries (Fisheries)** | |
| A clear description of the location of works, including identification of the waterways present and all relevant plans. | Section 3 |
| Identification and classification of key fish habitat in the area, according to section 3.2 of DPI Policy. | Section 3.1.1 |
| A clear description of the works to be undertaken, including timing and duration of the works and all relevant plans. This includes detail on the:<br>• location and design of any proposed or upgraded waterway crossings over key fish habitat.<br>• the methodology (e.g. trenching or underboring) for any underground cabling or transmission lines that pass through key fish habitat. | Section 3.1.1<br><br>*Note: No Key Fish Habitat present* |
| Description of aquatic and riparian vegetation and instream aquatic vegetation in the vicinity of the development, particularly the extent and condition of riparian vegetation and instream aquatic vegetation, water depth, permanence of water flow and snags (large woody debris) within the footprint of the proposal area. | Section 3.1.1 |

| SEARs Comment | Response |
|---|---|
| Details on the location and design of proposed or upgraded waterway crossings of key fish habitat. | *Note: No Key Fish Habitat present* |
| An assessment of all potential impacts to key fish habitat and riparian zones. The extent of aquatic habitat removal and riparian vegetation removal, modification or improvement that may result from the development is to be clearly defined. Potential impacts to water quality and fish passage must be clearly defined. | Section 3.1.1 |
| An assessment of significance for any threatened species matters listed under the FM Act, using the Threatened Species Assessment Guidelines - Assessment of Significance. | Section 3.1.1 |
| A clear description of all proposed safeguards to mitigate impacts on aquatic habitats, water quality and riparian buffer zones. This can include, but not be limited to:<br>• A clear map showing the riparian buffer zone width.<br>• A description of any riparian buffer zone revegetation or erosion control works.<br>• Details regarding how fish passage will be provided for.<br>• A description of proposed erosion and sediment control techniques to be used during construction.<br>• Detail on any onsite design measures to mitigate water quality and flow impacts to within and downstream of the site. | Section 3.1.1 |
| **Cwth DCCEEW Bilateral Assessment Requirements** | |
| 1. *Background and description of action*<br>The EIS / BDAR must include:<br>a. Descriptions and maps of the operational and construction footprints of the project that relate to MNES.<br>b. Descriptions and maps of staging and timing of the action that may impact on MNES.<br>c. Maps of the subject land boundary showing the final proposal and disturbance footprint with regards to MNES<br>Submit GIS shapefiles of all maps that relate to MNES | Section 2.1 |
| 2. *Landscape context of the MNES*<br>Ensure that the 'Establishing the site context' of BAM 2020 (Section 3) have been fully met in the BDAR in relation to MNES | Section 3 |
| 3. *EPBC Act listed threatened species and communities*<br>The EIS / BDAR must include the following:<br>a. Demonstration that field-based survey effort meets BCD survey guidelines and, where available, Commonwealth survey guidelines.<br>b. Demonstration of access and use of supporting databases (e.g. NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results).<br>c. Demonstration of access and use of published peer-reviewed literature.<br>d. Demonstration of access and use of local data (if relevant).<br>e. Demonstration of appropriate mapping of all EPBC Act-listed threatened species and communities in accordance with the relevant Commonwealth listing advice. | Section 1.4<br>Section 2.2<br>Section 4<br>Section 5 |

| SEARs Comment | Response |
|---|---|
| f. Demonstration of consideration of important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans.<br>g. A list of all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity (including species that are 'ecosystem credits' in BAM).<br>h. A discussion, with data and analysis where any species and communities identified by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) referral documents have been ruled out as occurring on or near the subject site. | |
| 4. *Avoidance, minimisation, mitigation and management.*<br>The EIS / BDAR must include:<br>a. The demonstration of all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including an analysis of alternative:<br>• designs and engineering solutions<br>• modes or technologies<br>• routes and locations of facilities<br>• sites within the subject site<br>• the identification of any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc).<br>b. A discussion and justification of all feasible measures to avoid, mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including:<br>• techniques, timing, frequency and responsibility<br>• identify measures for which there is risk of failure<br>• evaluate the risk and consequence of any residual impacts<br>• any adaptive management strategy proposed to monitor and respond to impacts. | Section 7<br>Section 8.5 |
| 5. *Impact assessment*<br>The EIS / BDAR must include the following:<br>a. Identification of the residual adverse impacts likely to occur to each EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account.<br>b. Justification and evidence for the predicted level of impact, with reference to the Commonwealth's Significant Impact Guidelines 1.1 - Matters of National Environmental Significance'' and the NSW Department of Planning Industry and Environment (DPIE) 'Guidance to Assist a Decision - Maker to Determine a Serious and Irreversible Impact'<br>c. Provide a table detailing listed EPBC Act entities, nature of impact (direct, indirect), duration/timing of impact, quantum of impact, consequence, offsetting requirements.<br>d. Provide data and justification where any EPBC Act-listed threatened species or communities to be considered in the BDAR are considered to be at low risk of impact during the assessment. | Section 8<br>Section 9 |
| 6. *Offsets*<br>The EIS / BDAR must include the following:<br>a. The identification of any MNES that have not been offset using the BAM.<br>b. Details of how impacts requiring offset correlate to the MNES impacts. | Section 9 |

| SEARs Comment | Response |
|---|---|
| c. Details of the PCTs that require offsetting and the number and type of ecosystem credits required for impacts to MNES.<br>d. Details of threatened species requiring offset and the number of species credits required for impacts to MNES.<br>e. A demonstration of the correct uses the BAM (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of no net loss of biodiversity<br>f. Any details of ecological rehabilitation and/or biodiversity conservation actions proposed for offsetting<br>g. The identification of any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures.<br>h. Provide threatened entity, PCT association, area of impact, credits required, offsetting approach, reference (EIS, BDAR) | |
| 7. *Other considerations*.<br>The EIS / BDAR must include the following:<br>a. Consideration of all relevant Commonwealth guidelines and policy statements that are appliable to the action and listed threatened species and/or communities, including but not limited to:<br>• International environmental obligations<br>• Recovery Plans<br>• Approved Conservation Advice<br>• Threat Abatement Plans<br>b. An assessment for each EPBC Act listed threatened species and/or community, that has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the proposed action and threatening processes or recommended conservation actions outlined in Commonwealth policies and plans. | Throughout |
| **Cwth DCCEEW Supplementary SEARs** | |
| Based on the information in the EPBC referral documentation, the location of the action, species records and likely habitat present in the area, there are likely to be significant impacts to:<br>• Plains-wanderer (*Pedionomus torquatus*) – Critically Endangered<br>• Winged Peppercress (*Lepidium monoplocoides*) – Endangered<br>• Chariot Wheels (*Maireana cheelii*) – Vulnerable | Section 5<br>Section 8<br>Section 9 |

| SEARs Comment | Response |
|---|---|
| Additionally, there is some risk that there may be significant impacts on the following matters and further assessment to determine if the communities and species listed below are present in the proposed action area and, if so, the extent to which they may be impacted by the proposed action, is required:<br>• Slender Darling-pea, Slender Swainson, Murray Swainson-pea (*Swainsona murrayana*) – Vulnerable<br>• Turnip Copperburr (*Sclerolaena napiformis*) – Endangered<br>• Superb Parrot (*Polytelis swainsonii*) – Vulnerable<br>• Corben's Long-eared Bat, South-eastern Long-eared Bat (*Nyctophilus corbeni*) – Vulnerable<br>• Mossgiel Daisy (*Brachyscome papillosa*) – Vulnerable<br>• Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog (*Litoria raniformis*) – Vulnerable<br>• Natural Grasslands of the Murray Valley Plains TEC (Threatened Ecological Community) – Critically Endangered<br>• Weeping Myall Woodlands TEC – Endangered | Section 5<br>Section 8<br>Section 9 |
| Note the species and communities listed above may not be complete list and it is the responsibility of the Applicant to ensure any protected matters under these controlling provisions are assessed for the Commonwealth decision-maker's consideration. | Section 5<br>Section 8<br>Section 9 |

## 1.2 BIODIVERSITY CREDITS AND CLASSES

The BAM uses biodiversity credits to measure:

- The residual impacts of a proposal on biodiversity values; or
- Gains in biodiversity values at biodiversity stewardship sites.

In this application, the BDAR is measuring the direct impacts of the Project on biodiversity values using two kinds of credits - 'ecosystem credits' and 'species credits'.

Each ecosystem credit is assigned up to seven attributes that are used to distinguish the type of biodiversity values represented by the credit and to determine whether a credit within a class is 'like' another credit. These attributes are:

- The PCT impacted by the Project;
- Any TEC associated with the PCT;
- The offset trading group for the TEC or, if no associated TEC, for the PCT;
- The vegetation class of the PCT;
- The vegetation formation of the PCT;
- The presence or absence of hollow bearing trees; and
- The Interim Biogeographical Regionalisation for Australia (IBRA) subregion in which the Project occurs.

Each species credit is assigned four attributes. Matching of attributes is used to apply the 'like-for-like' rules as set out in the BC Regulation. These attributes are:

- The threatened species impacted by the Project;
- The threat status of the threatened species;
- The kingdom to which the threatened species belongs; and
- The IBRA subregion in which the Project occurs.

## 1.3 ACCREDITED PERSON

A BDAR, which documents the assessment and 'No Net Loss' outcomes, must be prepared by a person accredited under Section 6.10 of the BC Act. An accredited person is referred to as an assessor.

This BDAR was authored by Lorena Boyle (Accredited BAM Assessor – BAAS23027) with contributions from Robert Ashworth, Freya Robinson, Mikki Gourlis, Joe Clement, Amy Blacker, Jemma Boyce and Georgina Thompson. The BDAR was reviewed by Claire Hewitt (Accredited BAM Assessor – BAAS20009) in March and April 2025.

The assessment provided in the report is based on the BAM-C (version 1.5) with BAM data last updated on 1 April 2025 and linked to one Development Assessment Case created in the BAM-C, separated into two related cases as follows:

- Case 00048619/BAAS23027/24/00048622 – Revision 05 - Major Projects (SSD under Part 4 of the EP&A Act): The Project (with the exception of the Haul Route DF)
- Case 00048619/BAAS23027/25/00054788 – Revision 02 - Major Projects (SSD under Part 4 of the EP&A Act): The Haul Route DF.

## 1.4 DATA AND INFORMATION USED

The full list of information sources referred to in this report is provided in Section 12. Digital shapefiles for all maps and spatial data have been submitted with this report. Information sources included, but were not limited to, the following:

- Proposal layers and concept designs provided by the Applicant;
- Land Surveys Aerial LiDAR Survey Imagery and Ground Control Survey 2023;
- NSW BioNet, incorporating the TBDC and BioNet Vegetation Classification (NSW DCCEEW, 2025b) (https://www2.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet);
- NSW SEED Portal (NSW Government, 2025b) (https://www.seed.nsw.gov.au/)
- NSW State Vegetation Type Map (Edition C2.0.M2.1) (NSW DCCEEW, 2020) (https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map);
- NSW Biodiversity Values Map (NSW DCCEEW, 2025a) (https://www.lmbc.nsw.gov.au/Maps/index.html? viewer=BVMap);
- PlantNet (Royal Botanic Gardens and Domain Trust, 2025) (https://plantnet.rbgsyd.nsw.gov.au/)
- Australia's IBRA bioregions and sub-regions, version 7 (Cwth DCCEEW, 2023a) (http://www.environment.gov.au/land/nrs/science/ibra);
- NSW Mitchell Landscapes map (NSW Government, 2025b) and descriptions (NSW Department of Environment and Climate Change (DEC), 2002);
- Commonwealth Government's Species Profiles and Threats (SPRAT) database (Cwth DCCEEW, 2025) (http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)
- EPBC Act Protected Matters Search Tool (Cwth DCCEEW, 2024b; Cwth DAWE, 2021a) (http://www.environment.gov.au/epbc/protectedmatters- search-tool);
- Guidance to assist a decision-maker to determine a serious and irreversible impact (NSW DPIE, 2019a);
- Biodiversity Assessment Method (BAM) 2020 (NSW DPIE, 2020a);
- Biodiversity Offset Assessment Management System (BOAMS), incorporating the BAM Calculator (BAM-C) (https://customer.lmbc.nsw.gov.au/assessment/s/userlogin);
- 'Species credit' threatened bats and their habitats - NSW survey guide for the Biodiversity Assessment Method (NSW DPIE, 2021);
- Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (NSW DPIE, 2020b);
- NSW Department of Environment and Conservation (DEC) - Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (NSW DEC, 2004);
- Cwth. Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) - Survey Guidelines for Australia's Threatened Mammals (Cwth DSEWPC, 2011);
- NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (NSW DPIE, 2020c);
- Cwth. Department of the Environment, Water, Heritage and the Arts (DEWHA) - Survey Guidelines for Australia's Threatened Birds (Cwth DEWHA, 2010);

- Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method Survey Guide (NSW DPE, 2022b);
- Threatened reptiles - Biodiversity Assessment Method survey guide (NSW DPE, 2022a);
- Biodiversity Development Assessment Report – The Plains Wind Farm (ERM, 2024b);
- Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide (NSW DCCEEW, 2024b); and
- Onshore Wind Farm Guidance (Cwth DCCEEW, 2024a).

## 1.5 BIODIVERSITY VALUES NOT ASSESSED

The BAM does not assess biodiversity values for:

- Marine mammals;
- Wandering seabirds;
- Biodiversity that is endemic to Lord Howe Island; and / or
- Native vegetation and loss of habitat on Category 1 - exempt land (within the meaning of Part 5A of the Local Land Services Act 2013 (LLS Act)), other than the additional biodiversity impacts under clause 6.1 of the BC Regulation (referred to as prescribed impacts in the BAM).

This BDAR does not include an assessment of the above matters. The extent of Category 1 - exempt land is outlined in the following section.

## 1.6 CATEGORY 1 - EXEMPT LAND

The Subject Land comprises rural zoned land and is thus regulated under the *Local Land Services Act 2013* (LLS Act). Under the LLS Act, three land categories are defined relating to vegetation clearing:

- Category 1 – 'Exempt land', land not subject to clearing approval;
- Category 2 – 'Regulated Land', land on which clearing of native vegetation may be carried out with or without approval in accordance with an 'allowable activity' or 'code' under the LLS Act (Category 2 – regulated land is further divided into Category 2 – vulnerable regulated land and Category 2 – sensitive regulated land); and
- 'Excluded Land' – Land not categorised on the Native Vegetation Regulatory (NVR) Map and to which the LLS Act does not apply.

The draft NVR Map (accessed 13 March 2025) (NSW Government, 2025a) identifies the Subject Land as containing Category 1 – exempt land, Category 2 - regulated land and Category 2 – vulnerable regulated land (along Telegraph Creek and Abercrombie Creek). The Category 1 – exempt land, predominantly in the far west of the Subject Land, is used for intensive agricultural activities, such as cropping. Other areas of Category 1 – exempt land within the Subject Land include tracks and infrastructure. Category 1 – exempt land is represented as PCT 0 (non-native) on report figures.

Clearing of native vegetation and loss of habitat on Category 1 - exempt land is not subject to consideration in this assessment, however, prescribed impact assessment does incorporate assessment of impacts to threatened entities and other species on Category 1 – exempt land. Clearing of native vegetation on Category 2 – regulated land within the Subject Land will be subject to approval and has been considered throughout this BDAR in accordance with the BAM.

The Haul Route DF comprises areas of rural zoned land and Excluded Land. No Category 1 – exempt land was identified within the Haul Route DF via the draft NVR Map (NSW Government, 2025a).

## 1.7 STRUCTURE OF THE BDAR

A BDAR requires completion of Stages 1 and 2 of the BAM (NSW DPIE, 2020a). These stages are outlined below.

- Stage 1 establishes a consistent approach to assessing the biodiversity values of land; and
- Stage 2 outlines the guidance and requirements to apply the hierarchy of avoid, minimise and offset for assessing direct, indirect or prescribed impacts on biodiversity values arising from the proposed development, activity, clearing or biodiversity certification. Stage 2 also provides guidance on the use of mitigation measures where there is uncertainty on the timing or extent of impacts.

Section structuring in this BDAR follows the corresponding BAM sections to assist readability and for compliance with the BAM. Thus, in omitting the Stage 3 BAM assessment, the BDAR section structuring ends with the last section for Stage 2 (Section 10 Applying the no net loss standard).

Documents appended to this BDAR include:

- Appendix A – BAM Plot Data;
- Appendix B – Fauna Records Across the PREP;
- Appendix C – Microbat Call Analysis Report Summer 2022;
- Appendix D – Microbat Call Analysis Report Summer/Autumn 2023;
- Appendix E – Microbat Call Analysis Report Summer 2024;
- Appendix F – EPBC Protected Matter Search Tool Results;
- Appendix G – Credit Reports (Subject Land);
- Appendix H – Credit Reports (Haul Route DF); and
- Appendix I – Bird and Bat Adaptive Management Plan
- Appendix J – Bird Utilisation Survey Data.

It is noted that the 'Microbat Call Analysis Report (Summer 2022)' includes a possible recording of the Eastern Long-eared Bat (*Nyctophilus bifax*). The Project is situated substantially outside the species' distribution, therefore this possible recording is discounted and not further discussed.

## 1.8 BDAR VERSION HISTORY

This BDAR has been prepared in accordance with the BAM (NSW DPIE, 2020a) through contributions made by accredited and non-accredited persons since 2020. Contributors to the preparation of the BDAR are listed on at the beginning of this BDAR.

A BDAR was prepared for the Project by ERM in 2024. Since the BDAR was published in 2024, the Project has undergone several design revisions, additional surveys have been conducted, collision risk modelling has been undertaken and the ground verified vegetation mapping has been refined. This Amended BDAR was prepared to address the impacts of the revised Project design and the issues raised in government agency and public submissions on the EIS. Responses to government agency submissions are addressed in Table 1-2.

### 1.8.1 RESPONSE TO SUBMISSIONS

Table 1-2 addresses comments in relation to biodiversity assessment presented in The Plains Wind Farm - Biodiversity Development Assessment Report (ERM, 2024b) from the NSW South West Biodiversity Conservation and Science Directorate (BCS), dated 4 June 2024.

TABLE 1-2 RESPONSE TO SUBMISSIONS

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_2.1 | Update the BDAR to ensure that the exclusion of suitable habitat for all candidate species is in accordance with the BAM. | BDAR and exclusion of suitable habitat for candidate species was completed in accordance with the BAM. Updated BDAR has taken into consideration BCS comments regarding excluded species. | Section 5.1.3 |
| BCS_2.2 | Prior to determination, conduct surveys for candidate species which have been excluded based on the presence/absence of nearby records. | Updated BDAR has retained assessment for the following entities, previously excluded:<br><br>- Little Eagle (*Hieraaetus morphnoides*)<br>- Square-tailed Kite (*Lophoictinia isura*)<br>- Southern Bell Frog (*Litoria raniformis*)<br>- Claypan Daisy (*Brachyscome muelleroides*)<br>- Austral pillwort (*Pilularia novae-hollandiae*)<br>- Lanky Buttons (*Leptorhynchos orientalis*) | Section 5.2 |
| BCS_3.1 | Revise Table 2-6 to include, for each species credit species, the area of each associated PCT required to be searched and the length of transect that was conducted. | Noted. The updated BDAR has included, for each species credit species, the area of each associated PCT required to be searched and the length of transect that was conducted | Section 5.2 |
| BCS_3.2 | Revise the survey track spatial data according to Table 7 of Appendix D of the 'BAM Operational Manual - Stage 2' to enable cross-checking with Table 5-7, including survey month and vegetation zone. | Survey track data completed to inform the updated BDAR has included spatial data with the following attributes:<br>- Target species (scientific name)<br>- Date of survey<br>- Surveyor<br>- Survey type (e.g. transect, 2-phase grid, incidental)<br>- Survey month<br>- Vegetation zone<br>Noting data collected prior to September 2024 may not be provided in this format. | Provision of spatial data |

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_3.3 | Consult with BCS to determine if the large area survey method can be applied for some flora species and how this may be able to be used with existing data and additional surveys. | ERM and ENGIE consulted with BCS prior to undertaking targeted flora surveys, scheduled for first week of September and December 2024. | Meeting held with BCS on 19 August 2024. Survey methods were discussed. |
| BCS_4.1 | Ensure any additional targeted survey to reduce the area of assumed presence is finalised included in a revised BDAR before the project is determined. | Additional survey effort was undertaken across the following survey events:<br>- Winter 2024<br>- September 2024<br>- October 2024<br>- December 2024<br>The effort aimed to meet 2 years of BUS survey data, and avoid the assumption of presence for all candidate species. Results from all scheduled surveys have been incorporated into the revised BDAR. | Section 5.2 |
| BCS_5.1 | Revise the species' polygons for 'area' species in accordance with section 5.2.5 of the BAM. | Species' polygons have been provided for all present and assumed present candidate species in accordance with 5.2.5 of the BAM, informed by current observations and results of scheduled survey events. | Section 5.2 |
| BCS_5.2 | Revise the spatial data so all species' polygons include vegetation zones with areas so that they can be matched against the BAM-C and the required species credits. | Vegetation Zones have been included in species' polygon spatial data. | Provision of spatial data |
| BCS_6.1 | Additional surveys are required to inform an accurate SAII assessment for *Calotis moorei.* The surveys outcomes should then be used to further develop avoid minimise strategies for *Calotis moorei*. | Field surveys were scheduled for September 2024 to target all remaining areas of potential *Calotis moorei* habitat. Survey outcomes informed the final SAII assessment, avoidance during final project design, and mitigation measures for the species where required. | Section 9.1 |
| BCS_6.2 | Further avoidance and minimisation strategies for Plains-wanderer should be considered and included in the BDAR including use of existing access tracks to minimise direct impacts to Important Habitat Map areas and reduce fragmentation risk to the local subpopulation. | Further consideration for avoidance and minimisation strategies for the Plains-wanderer have been included in the revised BDAR. Avoidance through use of existing tracks for access and reticulation have been considered. | Section 7 |

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_7.1 | Identify all ancillary infrastructure and revise the assessment and BAM-C to include all direct and indirect impacts to biodiversity. | The revised BDAR has been based on a final Subject Land which includes all permanent and temporary disturbance and a 100 m buffer around turbines to inform direct and indirect impacts. | Throughout BDAR |
| BCS_8.1 | Revise PCT mapping to more accurately reflect boundaries evident on aerial imagery. | PCT mapping has been revised, informed by aerial imagery and scheduled field survey events. | Section 4 |
| BCS_8.2 | Sample additional VI plots to demonstrate that vegetation condition across the subject land has been adequately sampled and considered. | Vegetation integrity plots were completed during the December 2024 survey event. Number of plots undertaken met requirements under the BAM. | Section 2.2 and Section 4 |
| BCS_8.3 | Include photos of all PCTs on the subject land in the BDAR to support PCT and vegetation zone justification. | Photos of each PCT have been provided in the updated BDAR. | Section 4 |
| BCS_8.4 | Revise the floristic analysis and discussion in Section 4.1.3 to ensure groups have been accurately allocated to PCTs and that the results are supported by the field data presented. | PCT mapping has been revised, and floristic analysis has been updated. | Section 4 |
| BCS_8.5 | Update Table 4-2 to include plot identifiers for all VI plots classified to each PCT. | PCT mapping has been revised and additional BAM Plots have been completed, with consistent identifiers, provided in the revised BDAR. | Section 2.2 and Section 4 |
| BCS_9.1 | Revise vegetation zone mapping and descriptors according to BAM section 4.3.1. Include additional justification if further ground-truthing demonstrates that one vegetation zone is adequate to represent the variation of each PCT present in the subject land. | PCT and vegetation zone mapping has been revised, informed by aerial imagery and scheduled field survey events. Justification has been provided. | Section 4 |
| BCS_9.2 | Ensure vegetation zones in good condition are indicated as such in the BDAR, BAM calculator and spatial data. | Spatial data, the BAM-C and the revised BDAR have been updated to show all vegetation zones and their condition state. | Section 4, BAM-C reports and spatial data. |

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_9.3 | List VI plot identifiers used to define each vegetation zone in Table 2-4. | Plots identifiers have been provided. | Section 2.2 and Section 4 |
| BCS_10.1 | Provide field datasheets for all VI plots used in the assessment. | A summary of collected field data has been provided. | Appendix A |
| BCS_10.2 | Label each field datasheet with a unique identifier that match the spatial data attributes and VI plot references in the BDAR. | A summary of collected field data has been provided. | Section 2.2, Section 4, Appendix A |
| BCS_11.1 | Provide evidence, including field datasheets, to justify the mapping of non-native vegetation on the haul route. | The BAM plot spreadsheet for the haul route has been provided in the revised BDAR. Only areas of infrastructure and planted, exotic vegetation have been classified as non-native vegetation in the revised BDAR in the Haul Route DF. | Section 2.2, Section 4, Appendix A |
| BCS_12.1 | Ensure all areas of PCT 28 present on the subject land have been mapped as Sandhill Pine Woodland EEC. | PCT 28 is no longer mapped within the revised Subject Land. | Section 4 |
| BCS_13.1 | Provide details for all avoid and minimise measures to be implemented through post-approval environmental management plans, in accordance with BAM sections 7.1.2 and 7.2.2(2). | Further details for all avoid and minimise measures to be implemented through post-approval environmental management plans have been provided. | Section 7, Section 8.5 |
| BCS_13.2 | Demonstrate avoidance by revising the proposed location of all tracks and cabling to ensure the existing network is used, and that cable reticulation is co-located with tracks or within existing cleared areas wherever possible. | Noted. Avoidance through use of existing tracks for new tracks and cable reticulation has been considered. | Section 7 |

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_14.1 | Comprehensively revise the identification and assessment of all prescribed impacts according to BAM sections 6 and 8.3, with reference to current ecological knowledge, literature and existing species records. | Within the updated BDAR, prescribed impacts have been fully assessed. | Section 6, Section 8.3 |
| BCS_14.2 | Review the assessment to address the connectivity values of naturally open or non-woody native vegetation. Revise in detail all aspects of the BDAR where connectivity has been assessed and/or is relied on to justify exclusion of species from the assessment. | Updated BDAR has considered connectivity value of naturally open or non-woody native vegetation and relevant sections of the revised BDAR have been updated accordingly. | Section 3.1, Section 6, Section 8.3 |
| BCS_15.1 | Revise the information in section 7.1.4 of the BDAR to clearly address the prescribed impact identification requirements in BAM section 6.1.5, the avoid and minimise considerations in BAM section 7.2.1, and the assessment of the (prescribed) impacts of wind turbine strike in BAM section 8.3.5. | Prescribed impacts have been identified and assessed in the revised BDAR. | Section 6, Section 8.3, Appendix H |
| BCS_15.2 | Revise the prescribed impact assessment to justify the exclusion of protected birds and bats. | An updated BBAMP has been provided, including justification for excluded species where applicable. | Appendix H |
| BCS_15.3 | Revise the list of vagrant species to comply with BAM s5.2.2 and the BAM glossary. Revise the assessment to include any species that do not meet the BAM definition of vagrant. | An updated BBAMP has been provided, with vagrancy allocation revised. | Appendix H |
| BCS_15.4 | Prepare a separate BBAMP that is appended to the BDAR. | The revised BDAR has included a BBAMP. | Appendix H |

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_16.1 | Conduct a full two years of pre-construction BBUS, across all seasons and including paired at height data to ensure the BBAMP is supported by sufficient data. | ERM has undertaken the following bird utilisation surveys to date:<br>- Spring 01 2021<br>- Summer 01 - 2022<br>- Autumn 01 - 2022<br>- Winter 01 - 2022<br>- Spring 02 - 2023<br>- Summer 02 - 2024<br>- Autumn 02 - 2024 (noting these surveys were undertaken in early June due to site access restrictions, lambing and inclement weather)<br>- Winter 02 - 2024<br>- Spring 03 - 2024<br><br>ERM has conducted the following bat surveys to date:<br>- February 2022<br>- February - March 2023<br>- March - May 2023 (meteorological mast)<br>- December 2023 - March 2024<br>- June – Sept 2024 (meteorological mast) | Section 6.2, Appendix C, Appendix D, Appendix E, Appendix H, Appendix J |
| BCS_16.2 | Provide the raw data from BUSS results in the BDAR and digital data package. | Raw BUS data have been provided, and spatial data for survey point locations | Appendix J, Provision of spatial data |
| BCS_17.1 | Revise the draft BBAMP in consultation with BCS, and ensure outcomes based on the results of the BBUS data are fully justified with supporting information and literature. | Revised BBAMP chapters have been provided. Consultation with BCS was undertaken in August 2024. | Section 6.2, Appendix H |
| BCS_17.2 | Document measures to avoid and minimise impacts to raptors at proposed turbines that are within 500 metres of recorded stick nests. | Avoid and minimise measures to avoid impacts on stick nests have been provided in the revised BDAR. Raw BUS data has been provided, and spatial data for survey point locations. | Provision of spatial data, Section 7, Section 8, Appendix I, Appendix J |
| BCS_18.1 | Identify and assess all indirect impacts of the proposal on native vegetation and habitat during construction and operation in Sections 8.2 and Table 8-4, and include the results in Section 11.4. | Indirect impacts have been addressed in the revised BDAR. | Section 8.2, Section 8.5 |
| BCS_18.2 | Provide details for all measures necessary to mitigate or manage indirect impacts. | The updated BDAR has included further details for all measures necessary to mitigate or manage indirect impacts. | Section 8.2, Section 8.5 |

| Reference | Submission | Response | Where addressed |
|---|---|---|---|
| BCS_19.1 | Revise Table 8-7 to detail auditable mitigation and management measures to be implemented through post-approvals plans. | Auditable mitigation and management measures have been provided in the revised BDAR. | Section 8.5 |
| BCS_19.2 | Include a unique identifier for each mitigation measure in Table 8-7 and ensure they correspond with the EIS. | A unique description has been provided for each mitigation measure in the revised BDAR. These descriptions correspond with Appendix C of the Amendment Report. | Section 8.5 |
| BCS_20.1 | Provide additional justification for excluding the presence of the 'Natural Temperate Grasslands of the Murray Valley Plain' CEEC from the subject land. | Additional BAM plots have been undertaken in December 2024 to justify absence or presence of 'Natural Temperate Grasslands of the Murray Valley Plain' CEEC from the Subject Land. | Section 4.1.4 |
| BCS_21.1 | Provide a section or chapter in the BDAR and specifically address each of the Bilateral assessment requirements detailed in BDAR Table 1-1 (and Attachment C to this response). | Updated BDAR has included a section to specifically address each of the bilateral assessment requirements detailed in BDAR Table 1-1 (and Attachment C to BCS response). | Throughout BDAR, Section 9.2.3 |

# STAGE 1: BIODIVERSITY ASSESSMENT

## 2. INTRODUCTION

The Project is situated approximately 15 kilometres (km) (by road) south of the town of Hay in the Riverina Murray region of New South Wales (NSW). The Project occurs within the Hay Shire Council Local Government Area (LGA) and is within the South West Renewable Energy Zone (REZ). The Project is positioned on Mungadal Station and neighbouring properties to the east and west of the Cobb Highway.

The Subject Land is on land predominately used for sheep and cattle grazing and the groundcover has been improved for pasture by the introduction of exotic species. The landscape is flat with little topographic relief. The Subject Land extends over an area of 2,079.22 hectares (ha) across 314 freehold land parcels.

For the purposes of the BDAR, the Project is considered a linear development comprising an indicative Development Footprint of 1,887.08 ha. This Development Footprint incorporates temporary direct impacts during the construction phase of the Project. The Subject Land represents the Development Footprint, with a 100 m buffer applied to the wind turbine locations and is 2,079.22 ha. Impacts have been calculated for the entire Subject Land to allow for micrositing flexibility.

This BDAR further addresses potential biodiversity impacts as a result of upgrades and modifications at five (5) haul route pinch points. 'Haul Route' is used hereafter to refer to the entirety of the proposed transport route. 'Haul Route Disturbance Footprint' (Haul Route DF) is used to refer to the area of native vegetation to be directly impacted by these upgrades and modifications and subject to assessment under the BAM.

### 2.1 PROPOSED DEVELOPMENT

#### 2.1.1 LOCATION

The Project is located within the South West REZ. The Project is accessible via the Cobb Highway which runs north-south, bisecting the Subject Land. The Subject Land is currently used for agricultural purposes, such as livestock grazing and cropping, and is characterised by large areas of chenopod shrublands and grassland. Isolated remnant patches of woodland vegetation are only present outside the Subject Land.

Major transport corridors in proximity to the Project include:

- Cobb Highway - located through the centre of the project and connects Hay to Echuca;
- Sturt Highway which connects Hay to Adelaide, and Sydney and Melbourne via the Hume Highway; and
- Mid-Western Highway which connects Hay to West Wyalong.

The Project location is shown in Figure 2-1.

#### 2.1.2 SUBJECT LAND

The Subject Land is land to which the BAM is applied and includes the area of direct impacts and any additional areas where the proposal is likely to have indirect impacts, for example, around proposed turbine locations. The Subject Land represents the indicative Development Footprint, with a 100 m buffer applied to the wind turbine locations and is 2,079.22 ha. Impacts have been calculated for the entire Subject Land to allow for micrositing flexibility.

### 2.1.3 DEVELOPMENT FOOTPRINT

The indicative Development Footprint comprises an area of 1,887.08 ha and is nested within the Subject Land. This Development Footprint incorporates temporary direct impacts during the construction phase of the Project. However, note that impacts have been calculated for the entire Subject Land to allow for micrositing flexibility.

The Development Footprint represents the potential maximum area of impact associated with the construction and operation of the Project and is presented in Figure 2-3. Note that impacts have been calculated for the entire Subject Land in this BDAR to allow for micrositing flexibility.

### 2.1.4 ASSESSMENT AREA

The Assessment Area for a linear development, such as the Project, is all land within a 500 m radius of the Subject Land, as shown in Figure 2-2. The Assessment Area comprises areas of agricultural land, part of West Burrabogie Road, and the Cobb Highway. The Assessment Area is situated approximately 20 km west of the Oolambeyan National Park. The Assessment Area does not extend into residential or commercial areas.

### 2.1.5 PROPERTIES

Lot and DP Details for the Subject Land are listed in Table 2- and presented in Figure 2-2.

Additional areas of impact associated with the Haul Route are assessed in this BDAR. More details are provided in Section 2.1.7.

TABLE 2-1 SUBJECT LAND LOT AND DP DETAILS

| Lot | DP | Title |
|---|---|---|
| **Project Area** | | |
| 1 | 185080 | Freehold |
| 1, 2 | 529796 | Freehold |
| 76 | 661974 | Freehold |
| 1,2,117,118 | 756732 | Freehold |
| 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 49, 50, 119 | 756737 | Freehold |
| 1, 2, 3, 4, 5, 6, 7, 10, 11, 13, 14, 20, 21, 22, 23, 24, 25, 30 | 756745 | Freehold |
| 44, 77, 78 | 756763 | |
| 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 44 | 756770 | Freehold |
| 1, 2, 3, 4, 5, 7, 11, 12, 17, 18, 19, 24, 25, 26, 27, 28, 29, 35, 36, 37, 38, 40, 41, 42 | 756771 | Freehold |
| 36, 42, 43, 44, 45, 46, 50, 72, 73, 74, 76, 77, 78, 94, 95 | 756774 | Freehold |
| 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43 | 756778 | Freehold |
| 3, 14, 15, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28, 31, 35, 36, | 756779 | Freehold |

| Lot | DP | Title |
|---|---|---|
| 3, 4, 5, 7, 8, 9, 10, 11, 12 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 41, 42, 48, 51, 55, 56, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69 | 756785 | Freehold |
| 23, 24, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47 | 756797 | Freehold |
| 73 | 756809 | Freehold |
| 21 | 831180 | Freehold |
| 1 | 954661 | Freehold |
| 1 | 1015117 | Freehold |
| 1 | 1101148 | Freehold |
| 1 | 1218600 | Freehold |
| 7002 | 1056492 | Crown |
| 1 | 1123124 | Crown |
| 7300, 7301, 7303, 7304 | 1149704 | Crown |

### 2.1.6 DEVELOPMENT DESCRIPTION

THE PROJECT LAYOUT IS SHOWN IN FIGURE 2-4 LOCATION MAP (HAUL ROUTE)

with components further discussed in Table 2-.

TABLE 2-2 PROJECT COMPONENTS

| Component | Specification |
|---|---|
| **Wind Turbine Generators** | |
| Foundations | The exact size and type of tower foundation will be based on subsurface soil conditions and the results of geotechnical surveys undertaken during the detailed design phase, prior to commencement of construction. |
| Tower | Each WTG tower is assembled onsite and anchored to a concrete foundation. The towers include an internal ladder and service personnel lift and support the WTG nacelle, rotor hub and blades. |
| Hardstands | The total area of the hardstand during construction will be approximately 3.6 ha, subject to the topography of the surrounding land, and will include a minimum of 10 m bushfire Asset Protection Zone (APZ) around the perimeter of the hardstand area. A portion of the hardstand will be maintained during Project operations to allow for maintenance and future decommissioning of the WTGs. There may be an opportunity to revegetate the assembly portions of the hardstand to allow grazing activities to resume in these areas, if not required for Project operations. |
| Nacelle | The nacelle is the housing that sits on the top of the turbine tower and accommodates the generator, gearbox, transformer, control systems, and pitch and yaw drives. The nacelle structure consists of a cast iron base frame and a rear girder structure. The base frame is the foundation for the drive train and transmits forces from the rotor to the tower through the yaw system. The bottom surface is machined and connected to the yaw bearing and the yaw gears are bolted to the base frame. The crane girders are attached to the rear structure. |

| Component | Specification |
|---|---|
| Rotor Hub and Blades | The rotor includes the three blades and the hub which connects the blades to the gearbox. Blade length of up to 90 m, rotor hub height up to 180 m and tip height up to 270 m. |
| **Electrical Reticulation and Grid Connection** | |
| Substation | At least one 330 kV main substation and up to three 132 kV collector substations will be constructed to transform the 33 kV received from the internal electrical reticulation network to the 330 kV transmission voltage. The main substation would occupy a maximum expected area of 2.7 ha and each collector substation an area of 1.5 ha. |
| Medium Voltage Reticulation | The internal electrical reticulation network, which connects the WTGs to the collector substations, will comprise approximately 215.5 km of underground and 58.8 km of overhead 33 kV cables. WTGs are connected in strings, which are then connected to the onsite substations. Where possible the cabling will be in underground trenches running parallel to access tracks. Where deviation from the access track is required due to geotechnical or other constraints, or to reduce overall cable length, these deviations will be positioned to minimise impact to ecological and heritage areas of high significance.<br>The trenching for underground electrical cabling will be approximately 0.6 m wide per circuit by 1.0 m deep, located within a works area of approximately 5 m to accommodate the mobile plant and stockpiling of spoil and bedding sand. Trenches will be progressively backfilled during the construction works. |
| High Voltage Transmission Line | A 330 kV single or double circuit, three phase, twin conductor bundles overhead transmission line connection. The construction of approximately 27 km of a new 330 kV overhead transmission line will be required to connect the collector substations to the main substation, and then another 85 m (approximately) to connect to the switchyard.<br>The 330 kV overhead transmission line is approximately 50 m high, with single circuit lattice steel towers, spaced approximately 500 m apart, subject to the final design. The transmission line will include a 60 m wide easement with unformed access tracks up to 4 m wide (equivalent to a farm track) to facilitate operational access by TransGrid (for maintenance, repair and hazard reduction). |
| Switchyard | A switchyard for physical electrical components, including required earth works, will be located within the main substation and will connect the Project to the existing transmission line and/ or Project EnergyConnect (currently under construction). |
| **Temporary Infrastructure** | |
| Accommodation Compound | Two accommodation compounds will be provided to accommodate the construction workforce. One compound will be located to the north (Lot 11& 12 DP 756737) of the western portion of the Project Area, and one to the south (Lot 45 DP DP756737) of the eastern portion of Project Area, with a total area of approximately 15 ha each. |
| concrete batching plants and onsite borrow pits, laydown and storage areas | A construction compound, including storage areas, material stockpile, and a temporary power supply for Project construction will be available. Temporary rock crushing facilities and concrete batching plants are proposed to process excavated material for the WTGs foundations, electrical infrastructure, internal access roads, substation and switchyard. Up to five temporary concrete batching plants and rock-crushing facilities will be determined closer to construction. The area required for the plant and storage of materials is estimated to be approximately 48.2 ha in total, located within the indicative Development Footprint.<br>There are also two O & M buildings; one in the west approximately 4ha and one in the east approximately 6ha in area. |

| Component | Specification |
|---|---|
| **Other components** | |
| Internal Access Tracks | Access to the east and west portions of the Subject Land during construction and operations is proposed via five access points off Cobb Highway and two off West Burrabogie Road. There is also one dedicated emergency access location off Cobb Highway.<br>The ongoing maintenance of the Project will be accessed through the construction of new private access tracks. The internal access tracks will be connected to existing public roads.<br>Where practicable, the internal access road network will be aligned along the route of existing farm tracks to reduce impacts to biodiversity and to provide upgraded access for ongoing agricultural activities.<br>The internal access tracks will be up to 6 m trafficable width, with localised widening on curves and where required to support transportation of the over-dimensional component vehicles. The internal access tracks will be constructed with dirt, sand, gravel or sealed pavement, with the final design based on materials in proximity to the site. |
| Meteorological (met) Monitoring Masts | Up to 3 permanent met masts will be installed in proximity to WTGs and will have a maximum height of 150 m above ground level. Three permanent met masts are identified within the current project layout and will assist in verifying the performance of WTGs during operation of the Project. Each met mast each will include sensors and a concrete foundation and will be designed and constructed to the appropriate aviation safety specifications. |
| Micrositing | The layout presented in this BDAR may require refinement based on detailed geotechnical investigations and selection of the final WTG model. As such, the Applicant requires the ability to microsite Project infrastructure. This will allow the design to be adjusted, for example, to avoid unnecessary excavation, vegetation clearing, or to benefit constructability, plant and equipment access. To allow the Applicant to make general design refinements without the need to modify the application, the EIS has assessed impacts for an area that includes temporary and permanent Project infrastructure with a 100 m micrositing buffer applied around WTGs (the Subject Land). |
| Lighting | During the exhibition phase of the Project, Civil Aviation Safety Authority (CASA) provided a recommendation that obstacle lighting with a 200 candela intensity be installed on the nacelle of turbines. This aviation obstacle lighting is oriented upward to enhance visibility to aircraft only. Lighting to the substation and within the construction compound are limited to low-level lighting for security, night time maintenance and emergency purposes. All lighting will be designed, managed and operated in accordance with 'AS/NZS 4282:2023 Control of Obtrusive Effects of Outdoor Lighting' (Standards Australia Ltd., 2023). 'The National Light Pollution Guidelines for Wildlife' (Cwth DCCEEW, 2023b) may also be considered during the detailed design phase for night lighting considerations. |
| Landscaping | The landscape strategy for the Project will include vegetation planting in specific locations at non-associated dwellings, which will provide a visual buffer and assist in fragmenting views to turbines. Other landscaping will comprise planting of native trees, shrubs and groundcovers, designed to be low-maintenance and which will further enhance the natural habitat associated with the existing environment. |

Additional infrastructure will generally be constructed and utilised within the Subject Land including geotechnical, visual enhancement plantings, fencing, creek crossings, water management, sediment and erosion control structures and access roads. Upon completion of construction works, all temporary facilities will be removed and rehabilitated.

The Project will operate as a stand-alone operation; however, it may also utilise various access tracks, the substation, the switchyard, the operations and management compound, the electrical reticulation network and other infrastructure associated with The Plains Solar Farm (upon its positive determination), as described and assessed in a separate SSD Application.

STURT HIGHWAY
JERILDERIE ROAD
GLENCOE ROAD
TELEGRAPH CREEK
ABERCROMBIE CREEK
HAY SHIRE COUNCIL
RAHEEN ROAD
WALTHAMS TANK
ROMANI ROAD
IBRA Murrumbidgee Subregion / Riverina Region
SIXTEEN MILE GUMS
SIXTEEN MILE GUMS TANK
COBB HIGHWAY
GREEN SWAMP
CUBA DAM
WEST BURRABOGIE ROAD
CURTAINS CREEK
EDWARD RIVER COUNCIL
EUROLIE CREEK
NYANGAY CREEK

**Legend**

- Highway
- Main Road
- Local Road
- Track-Vehicular
- Perennial Watercourse
- Non-perennial Watercourse
- Mainly Dry Watercourse
- Wetland
- IBRA Subregion / Region
- Local Government Area
- Plains Renewable Energy Hub Project Boundary
- Subject Land

**Source:**
Boundary: Client Provided (Oct 2024)
Basedata: NSW DCDB/DTDB. NSW SEED
Imagery: ESRI World Imagery

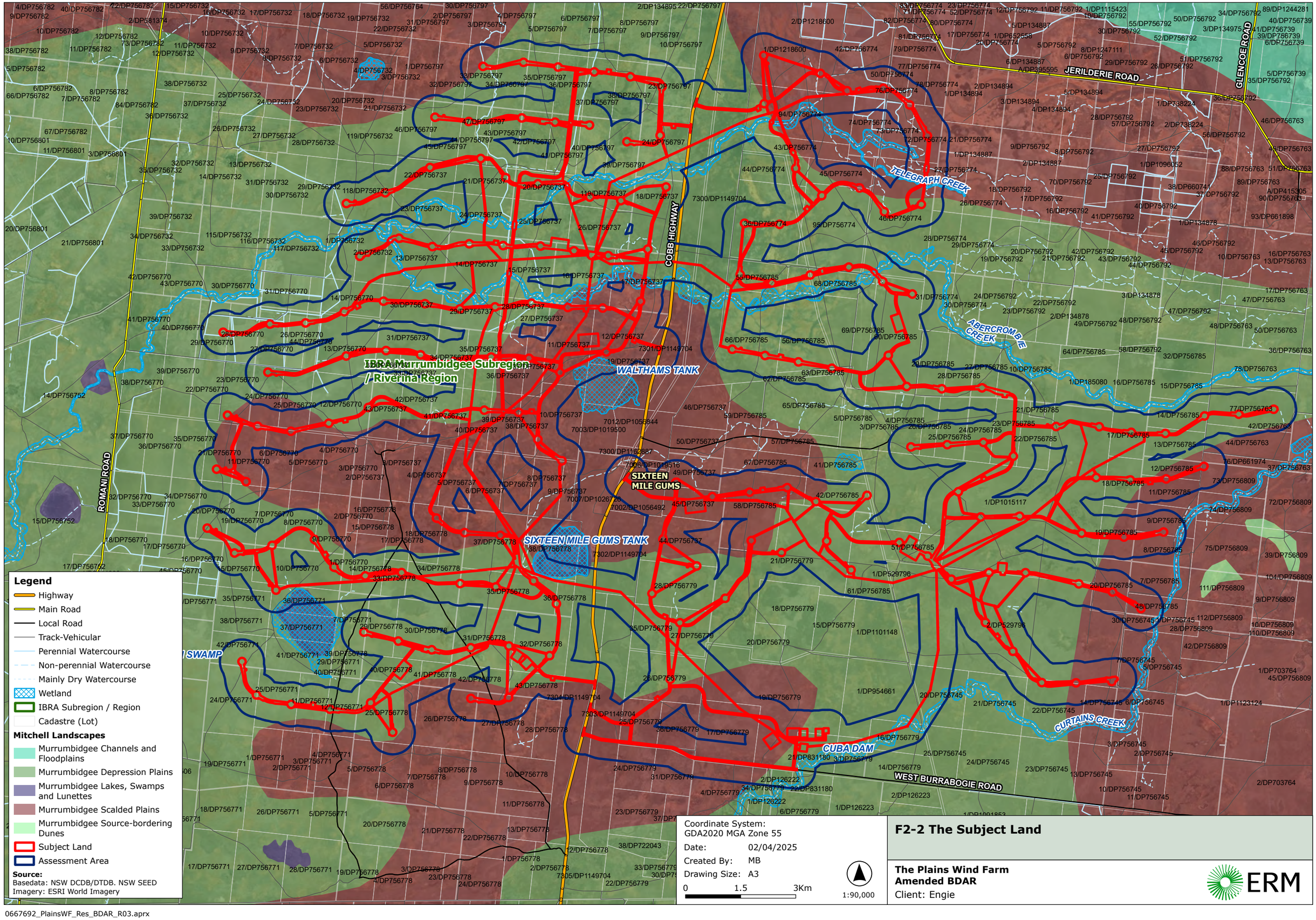
Coordinate System:
GDA2020 MGA Zone 55
Date: 02/04/2025
Created By: MB
Drawing Size: A3
0 2 4Km
1:115,000

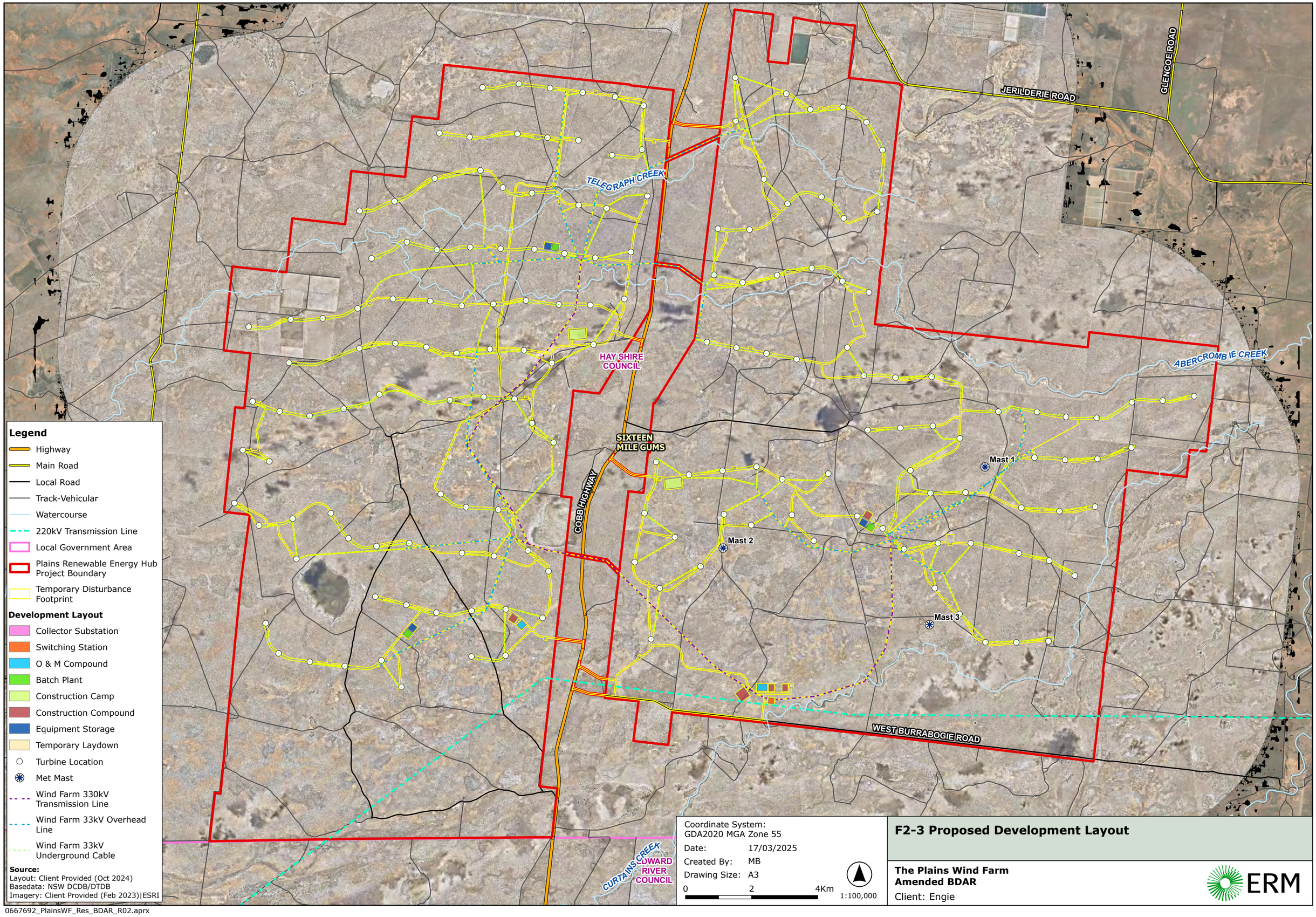
# F2-1 Location Map

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R03.aprx


JERILDERIE ROAD
GLENCOE ROAD
COBB HIGHWAY
TELEGRAPH CREEK
ABERCROMBIE CREEK
WALTHAMS TANK
IBRA Murrumbidgee Subregion / Riverina Region
SIXTEEN MILE GUMS
SIXTEEN MILE GUMS TANK
ROMANI ROAD
CUBA DAM
CURTAINS CREEK
WEST BURRABOGIE ROAD
SWAMP
Legend
Highway
Main Road
Local Road
Track-Vehicular
Perennial Watercourse
Non-perennial Watercourse
Mainly Dry Watercourse
Wetland
IBRA Subregion / Region
Cadastre (Lot)
Mitchell Landscapes
Murrumbidgee Channels and Floodplains
Murrumbidgee Depression Plains
Murrumbidgee Lakes, Swamps and Lunettes
Murrumbidgee Scalded Plains
Murrumbidgee Source-bordering Dunes
Subject Land
Assessment Area
Source:
Basedata: NSW DCDB/DTDB. NSW SEED
Imagery: ESRI World Imagery
Coordinate System:
GDA2020 MGA Zone 55
Date: 02/04/2025
Created By: MB
Drawing Size: A3
0 1.5 3Km
1:90,000
F2-2 The Subject Land
The Plains Wind Farm
Amended BDAR
Client: Engie
ERM




# F2-3 Proposed Development Layout

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R02.aprx

### 2.1.7 HAUL ROUTE

The blade and tower components of the wind turbines for the Project will require transport between the Port of Adelaide and the Subject Land, via Broken Hill, NSW. The proposed haul route will head north from Port Adelaide, passing through several towns en-route, towards Broken Hill in NSW. From Broken Hill, the haul route will proceed to Wilcannia and then head south through Ivanhoe (NSW), Booligal and Hay, finishing at the Subject Land.

The Applicant proposes to undertake upgrades and modifications to 11 identified pinch points along the proposed haul route between the Port of Adelaide and the Subject Land. Six pinch points are in South Australia (SA) and five pinch points are situated in NSW. These pinch points are discussed in more detail within the 'Amended Traffic Impact Assessment' (Amber Organisation Pty Ltd., 2025) as part of The Plains Wind Farm Amendment Report (ERM, 2025). The proposed haul route and pinch points are shown in Figure 2-4.

This BDAR includes assessment of the five (5) haul route pinch points located in NSW only. The cadastral details for the five (5) pinch points in NSW are presented in Table 2-3 and the works proposed for the Haul Route are provided in Table 2-4. Impacts to biodiversity are expected at four identified pinch points (PP) - PP07A. PP08A, PP08B and PP010. These impacts will require assessment under the BOS and this assessment is included within this BDAR. Impacts to biodiversity at PP07A. PP08A and PP08B have been assessed as part of the Haul Route DF. The area in which impacts to biodiversity are expected is presented in Figure 2-5.

Impacts to biodiversity at PP010 have been assessed as part of the Project's Subject Land.

TABLE 2-3 HAUL ROUTE LOT AND DP DETAILS

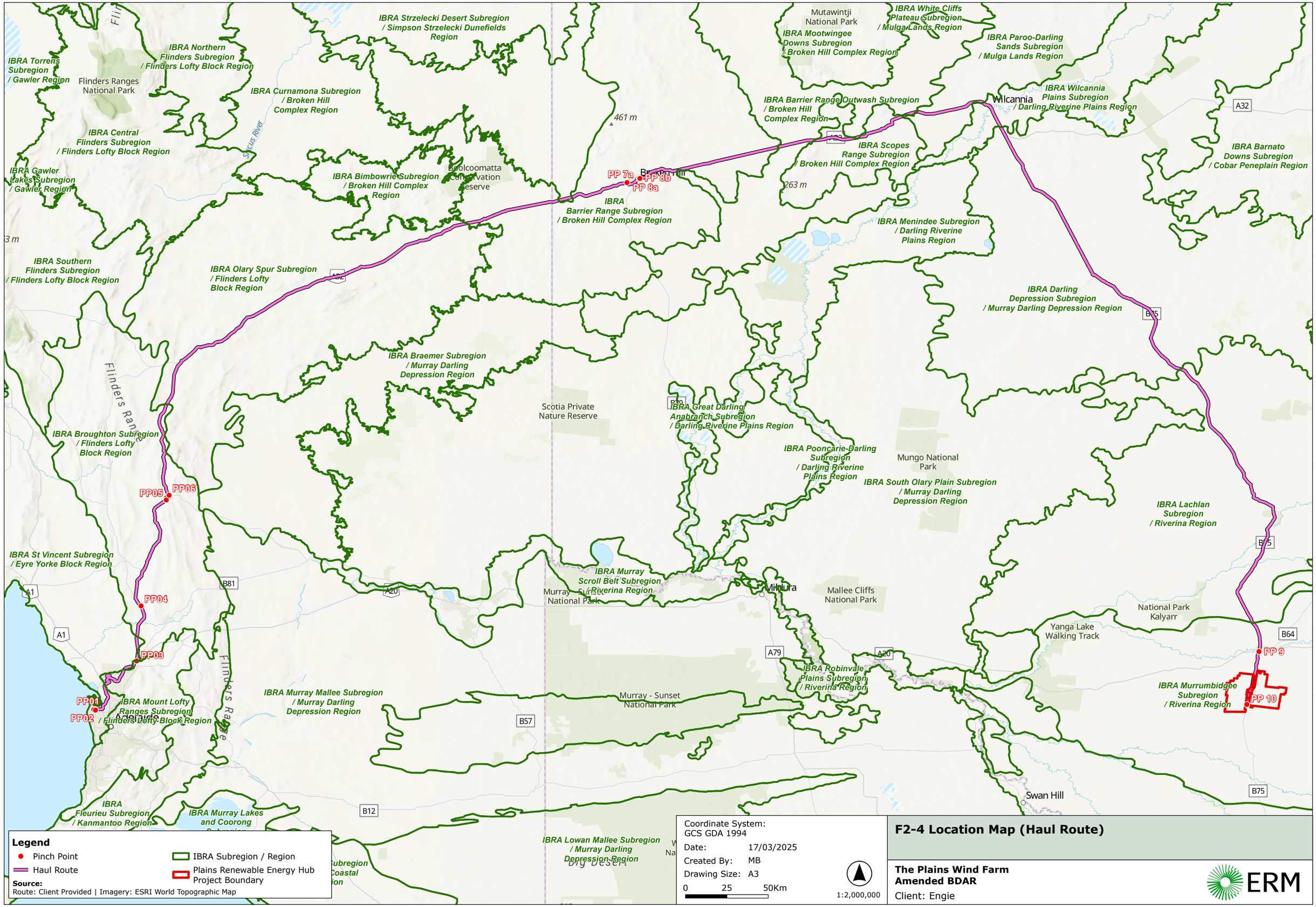
| Lot | DP | Title |
|---|---|---|
| **Haul Route** | | |
| **PP07A (Haul Route DF) – Barrier Highway, Broken Hill** | | |
| 7401 | DP1179151 | Crown |
| 7400 | DP1179151 | Crown |
| 100 | DP1136508 | Freehold |
| 301 | DP1242250 | Local Government Authority |
| 302 | DP1242250 | Freehold |
| 17 | DP39679 | Freehold |
| 7307 | DP1179131 | Crown |
| 6667 | DP822054 | Crown |
| **PP08A (Haul Route DF) – Crystal Street, Broken Hill** | | |
| 7313 | DP1185108 | Freehold |
| **PP08B (Haul Route DF) – Chettle Street, Broken Hill** | | |
| 7313 | DP1185108 | Freehold |

| Lot | DP | Title |
|---|---|---|
| **PP09 – Cobb Highway, Hay** | | |
| Within road easement | - | Crown |
| **PP10 – Cobb Highway, adjacent to Subject Land** | | |
| 7304 | DP1149704 | Crown |

## TABLE 2-4 HAUL ROUTE PROPOSED WORKS

| Pinch Point (NSW) | Proposed Works |
|---|---|
| 07A (Haul Route DF) | Pinch Point 07A is located to the west of the town of Broken Hill. Cargo will arrive from the south-west via the Barrier Hwy and needs to exit via the Silver City and Barrier Highways to the north-east. Building a new bypass has been deemed the only feasible option to pass through the town of Broken Hill.<br><br>*07A) Right hand turn from Barrier Hwy into Crown Land*<br>The proposed bypass makes use of existing tracks which come off the Barrier Hwy at around 2.4km west of Broken Hill. There is no existing intersection; a new one will have to be designed and constructed. A temporary track will need to be built to link the entry into Barrier Hwy to the exit point at the western end of Gaffney Street. This temporary track will pass through Crown Land near the Broken Hill Community Recycling Centre. One sign will need to be made removable.\<br><br>This pinch point contains native vegetation which will be impacted by upgrades required for the proposed haul route. |
| 08A (Haul Route DF) | Pinch Point 08A is located in the town of Broken Hill. Cargo will arrive from the south-west via the Barrier Highway and needs to exit via the Silver City and Barrier Highways to the north-east.<br><br>*08A) Right hand turn from Crystal Street to Sturt Street*<br>The blades will require a temporary track to link the eastern end of Crystal Street with Sturt Street, travelling across Menindee Road. This will pass across private property and will require a moderate amount of civil works to make the surface suitable for a road base. The track will be made of gravel and will be a minimum of 5.5. m wide. There is a power pole which can be avoided, and the road sign can be relocated away from the path of the transporter.<br><br>This pinch point contains native vegetation which will be impacted by upgrades required for the proposed haul route. |
| 08B (Haul Route DF) | Pinch Point 08B is located in the town of Broken Hill. Cargo will arrive from the south-west via the Barrier Highway and needs to exit via the Silver City and Barrier Highways to the north-east.<br><br>*08B) Right hand turn from Chettle Street to Barrier Highway*<br>A temporary track will need to be built to link the eastern end of Chettle Street to the Barrier Highway/Argent Street. This will pass through private land north of the Perilya Mine, which is non-operational. The track will be made of gravel and will be a minimum of 5.5. m wide. There is an existing double gate at the end of Chettle Street which may be utilised to access the property. A new gate will have to be put in at the exit point onto the Barrier Highway/Argent Street. The final section of track adjacent to the Barrie Highway will need to be sealed.<br><br>This pinch point contains native vegetation which will be impacted by upgrades required for the proposed haul route. |

| Pinch Point (NSW) | Proposed Works |
|---|---|
| 09 | Pinch Point 09 is located in the town of Hay. Cargo will arrive from the north via the Cobb Highway and needs to exit via the Cobb Hwy in the south, at the intersection of the Cobb and Sturt Highways.<br><br>*09) Roundabout: Cobb Highway & Sturt Highway*<br>The roundabout south of Hay will require a moderate amount of work prior to blade transport. Three light poles will need to be removed or relocated, and three signs made removable. A hard stand will be required of approximately 300m$^2$. The blade swing passes over private property to the east - a proposed service station currently under development (Lot 100 / DP1283323).<br><br>This pinch point does not contain native vegetation. |
| 10 | Pinch Point 10 is located north of the town of Booroorban and at the southern end of the Subject Land. Cargo will arrive from the north via the Cobb Highway and needs to exit onto West Burrabogie Road.<br><br>*10) Left hand turn from Cobb Highway to West Burrabogie Road*<br>The turn onto West Burrabogie Road will require some additional hard stand material to be laid down on the inside of the corner. Approximately 550m$^2$ of hard stand will be required.<br><br>Note impacts to native vegetation at this pinch point have been considered as part of the Subject Land's biodiversity impacts. |



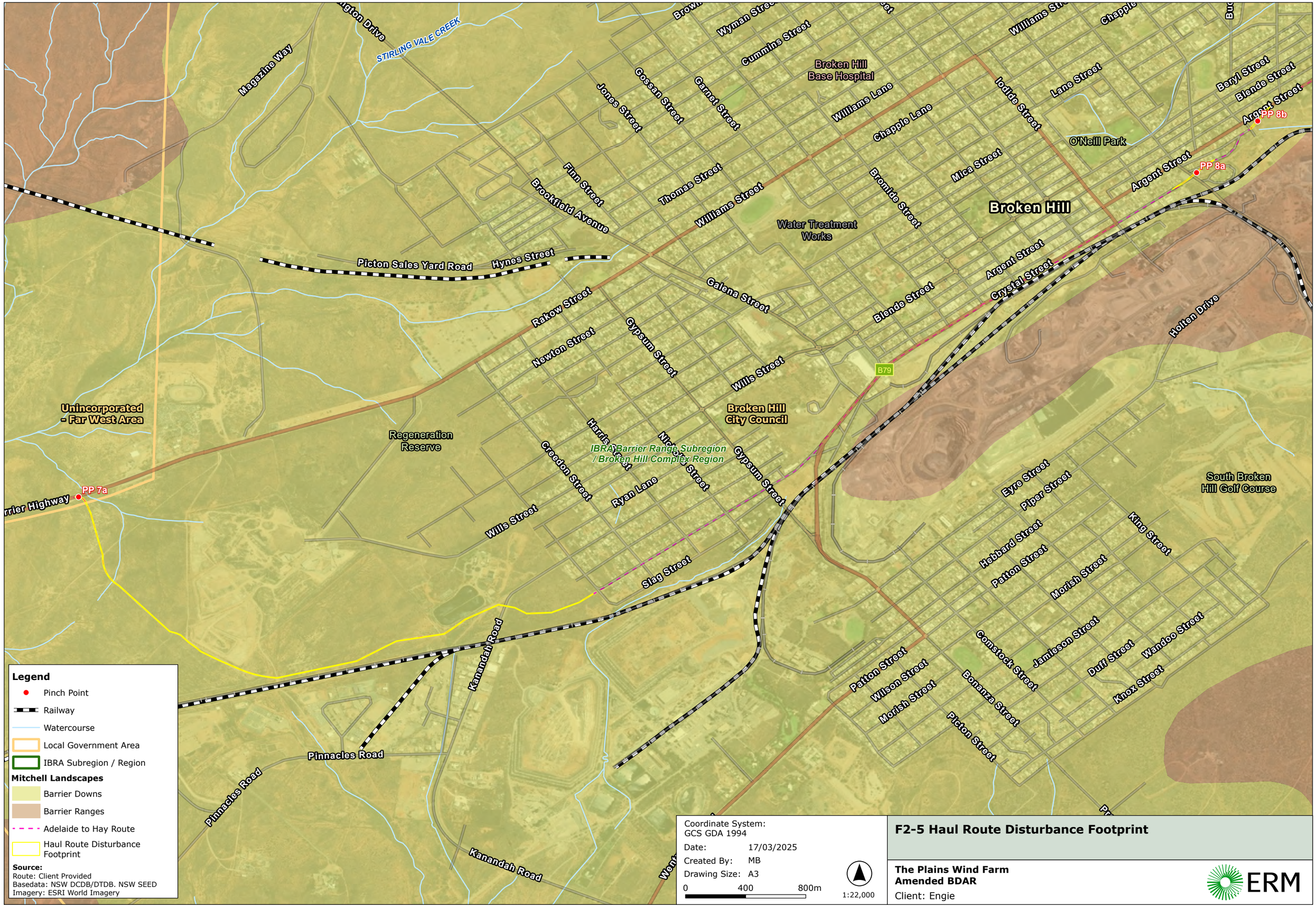

**F2-4 Location Map (Haul Route)**

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R02.aprx




**Legend**

- Pinch Point
- Railway
- Watercourse
- Local Government Area
- IBRA Subregion / Region

**Mitchell Landscapes**

- Barrier Downs
- Barrier Ranges
- Adelaide to Hay Route
- Haul Route Disturbance Footprint

**Source:**
Route: Client Provided
Basedata: NSW DCDB/DTDB. NSW SEED
Imagery: ESRI World Imagery

Coordinate System:
GCS GDA 1994

Date: 17/03/2025
Created By: MB
Drawing Size: A3

0 400 800m

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# F2-5 Haul Route Disturbance Footprint

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

## 2.2 METHODOLOGY

### 2.2.1 SITE CONTEXT

#### 2.2.1.1 LANDSCAPE FEATURES

Landscape features requiring consideration were initially determined via desktop assessment. The combination of desktop assessment and field surveys undertaken between October 2021 and December 2024 across The PREP area, and between July 2023 and September 2024 across the proposed haul route, sought to verify the following landscape features (in accordance with Sections 4.2 and 4.3 of the BAM):

- IBRA bioregions and subregions and Mitchell landscape region;
- Native vegetation extent and cleared areas within the Assessment Area;
- Rivers and streams (classified according to stream order);
- Wetlands within, adjacent to and downstream of the Subject Land;
- Connectivity features;
- Areas of geological significance and soil hazard features; and
- Site context components, including native vegetation and habitat features.

Unmapped wetland habitat was observed within the PREP area during field survey events. Wetland areas were subsequently mapped and considered throughout the preparation of this BDAR. No further amendments were required to be made to any remaining landscape features identified through spatial assessment of publicly available datasets.

#### 2.2.1.2 NATIVE VEGETATION COVER

A desktop assessment was initially conducted to determine the extent (ha) of vegetation cover within the Subject Land, in the Assessment Area and across the proposed haul route. The following resources were used:

- Land Surveys Aerial LiDAR Survey Imagery and Ground Control Survey, undertaken in 2023;
- Historical aerial imagery (NSW Spatial Services | Department of Customer Service, 2025);
- Transitional NVR Map (NSW Government, 2025c);
- Draft NVR Map (NSW Government, 2025a);
- NSW State Vegetation Type Map (NSW DCCEEW, 2020); and
- NSW SEED Portal (NSW Government, 2025b).

Surveys conducted between 2021 and 2024 confirmed the extent and condition of native vegetation cover on the Subject Land.

Native vegetation in the Assessment Area and Haul Route situated outside of the Subject Land was not ground-truthed and relies on NSW State Vegetation Mapping (NSW DCCEEW, 2020) that may be outdated and / or inaccurate. Consequently, there may be some minor additions or omissions to the actual extent of native vegetation as defined in the BAM.

### 2.2.2 NATIVE VEGETATION, THREATENED ECOLOGICAL COMMUNITIES AND VEGETATION INTEGRITY

Sections of the BAM relevant to vegetation mapping are:

- Section 4.1 Map native vegetation extent on subject land.
- Section 4.2 Identify and map plant community types and ecological communities.
- Section 4.3 Map vegetation zones and assess vegetation integrity (vegetation condition).

The following sections outline the approach taken in generating the vegetation map for the Subject Land.

#### 2.2.2.1 EXISTING INFORMATION

The State Vegetation Type Map (SVTM) (NSW DCCEEW, 2020) and BioNet Vegetation Classification (NSW DCCEEW, 2025b) system were reviewed to identify plant community types (PCTs) and threatened ecological communities (TECs) likely to be present within the Subject Land, and across the proposed haul route. This was used as the basis for more detailed site-specific vegetation mapping.

#### 2.2.2.2 MAPPING NATIVE VEGETATION EXTENT

Native vegetation and vegetation community delineation and mapping across the Subject Land involved review and field validation of the SVTM over several field survey events between 2021 and 2024. Field survey efforts were initially undertaken at a higher scale across the broader PREP area prior to site selection. A refined survey design was provided by the Applicant in 2024.

Each vegetation survey, detailed below, included plot-based vegetation integrity surveys (BAM plots) and / or rapid vegetation assessments at locations where distinct PCTs could be observed within the Subject Land. The extent and structure of the existing vegetation, and dominant species within each stratum were noted. Rapid vegetation assessments and BAM plots also recorded aspects of the landscape such as slope, nearby water sources, soil qualities and signs of disturbance, e.g., clearing, fire damage, grazing and weed invasion, where applicable.

Vegetation survey events for the Subject Land are provided below:

- Spring 2021 – 26 October to 12 November 2021;
- Summer 2022 – 14 February to 25 February 2022;
- Summer 2023 – 21 February to 3 March 2023;
- Summer 2023 – 2 to 5 December 2023; and
- Summer 2024 – 6 to 20 December 2024.

Areas of native vegetation which could be validated as a PCT were identified and delineated in the field, and their condition determined. Identification of PCTs within the Subject Land was confirmed with reference to the community profile descriptors provided in NSW BioNet (NSW DCCEEW, 2025b).

**Haul Route**

Surveys undertaken to assess native vegetation along the haul route were conducted over four (4) survey events:

- Winter 2023 - 17 - 21 July 2023. The proposed haul route between the Port of Adelaide and the Subject Land was assessed. The NSW portion was assessed between the 18 and 21 July 2023. Survey effort included rapid vegetation assessments.
- Spring 2023 - 10 – 11 November 2023. The proposed haul route in the Hay area was assessed. Survey effort included rapid vegetation assessments.
- Spring 2024 - 9 – 13 September 2024. The proposed haul route in the Broken Hill area was assessed. Survey effort included rapid vegetation assessments, BAM plots and land category assessment (LCA) transects.
- Spring 2024 - 18 – 22 November 2024. The proposed haul route in the Broken Hill area was assessed. Survey effort included LCA transects.

#### 2.2.2.3 RAPID VEGETATION ASSESSMENTS

Rapid vegetation assessments were conducted to supplement BAM plots when determining PCT occurrence and to facilitate delineation of vegetation zones within the Subject Land and the proposed haul route. Rapid vegetation assessments recorded the dominant canopy, mid stratum and ground stratum species present while also noting aspects of the landscape such as slope, nearby water sources, soil qualities and signs of disturbance. Rapid vegetation assessments conducted across the Subject Land are shown in Figure 2-6 and shown in Figure 2-7 for the proposed haul route.

Rapid vegetation assessments were undertaken at regular intervals while travelling through the Subject Land / proposed haul route, and at locations where changes in PCT or vegetation condition were observed. Data were recorded in the Fulcrum app (Spatial Networks, Inc., 2025) and captured the following information:

- Location;
- Overall vegetation description;
- Landform pattern;
- Soil type, colour and description;
- Drainage properties;
- Dominant plant species in each structural layer;
- Other species in each structural layer;
- Height and density of each stratum; and
- Photographs.

#### 2.2.2.4 NATIVE GROUNDCOVER ASSESSMENT (SUBJECT LAND)

A native groundcover assessment (NGA) was undertaken within areas in the west of the Subject Land where intensive agricultural activities, such as cropping, were present. The purpose of the NGA was to confirm that the area subject to intensive agricultural activities did not comprise native vegetation in accordance with Section 4.1.2 of the BAM. The NGA applied the Local Land Services' (LLS) 'Quadrat Method' (LLS, 2019), whereby a series of seven 1m x 1m quadrats were placed randomly across the area of interest. The following was recorded in the Fulcrum app (Spatial Networks, Inc., 2025) in each quadrat:

- Percentage of the quadrat that has vegetative groundcover (native and non-native groundcover); and
- Percentage of groundcover in the quadrat that is native.

The results for each of the above were averaged across the seven quadrat locations to yield the:

- Average percentage of groundcover (native and non-native); and
- Average percentage of native groundcover across the area of interest.

The NGAs conducted across the Subject Land are shown in Figure 2-6.

#### 2.2.2.5 LAND CATEGORY ASSESSMENT TRANSECTS (HAUL ROUTE)

LCA transects were completed in locations along the proposed haul route that had been assessed as containing native vegetation through desktop assessment of spatial imagery, but which appeared to be dominated by non-native vegetation through on-ground inspection. LCA transects were conducted at PP08A and PP08B. However, the results determined that the areas contained native vegetation (refer to Section 4). The transect-intercept method for estimating the percentage cover of exotic perennial and native vegetation, outlined in NSW Office of Environment and Heritage (OEH) 'Interim Grasslands and other Groundcover Assessment Method' (NSW OEH, 2017b), was used as the assessment method for the LCA transects.

LCA transects undertaken within the proposed haul route are shown in Figure 2-7.

#### 2.2.2.6 PLOT-BASED VEGETATION SURVEY

BAM plots were conducted across the Subject Land and the Haul Route DF in accordance with section 4.2.1 of the BAM. BAM plots were established by walking a random distance into the vegetation zone (VZ) and establishing the plot on a random bearing. The BAM plots were used to calculate the vegetation integrity score (VIS) of the VZ. Each BAM plot was established around a central 50 m transect and included:

- A 20 m x 20 m plot examined to identify all flora species present. Searches continued until all flora species within the plot were detected. Data collected for each species included:
  - Stratum in which each species occurred;
  - Growth form for each species;
  - Scientific and common name for each species;
  - Percentage foliage cover (PFC) across the plot, of each species rooted in or overhanging the plot; and
  - Abundance rating for each species;
- A 1000 m² (20 m x 50 m) plot (incorporating the floristic plot) to assess the functional attributes: number of large and hollow bearing trees, stem size classes, tree regeneration and length of logs; and
- Five 1 m² sub-plots to assess average litter cover (and other groundcover components).

BAM plots were located within the Subject Land as much as practicable. However, due to design refinements over time, there are instances where BAM plots were no longer located within the Subject Land. Where BAM plots were not located within the Subject Land, and they were used to generate VIS within the BAM-C, they were located very close to the Subject Land within a contiguous or representative patch of vegetation commensurate with the finalised VZs (refer to Section 4).

#### 2.2.2.7 IDENTIFYING PLANT COMMUNITY TYPES

PCTs occurring within the Subject Land and the Haul Route DF were identified through a review of data collected from BAM plots and rapid vegetation assessments over all the field survey events. Consideration was given to landscape position, edaphic factors, topography, slope, aspect and hydrogeological features when determining PCTs.

A best-fit PCT was assigned with further consideration of the IBRA bioregion and subregion, vegetation formation and class and the dominant flora species present within the upper, mid and ground strata. The identification of PCTs presented in this BDAR is in accordance with the NSW PCT classification as described in the NSW BioNet Vegetation Classification database (NSW DCCEEW, 2025b).

Aerial imagery was used to assist in PCT delineation, where appropriate. However, the spatial visibility of shrubland and grassland vegetation within the Subject Land and Haul Route DF was not consistently reflected in ground conditions and was subject to seasonal variation and disturbances, such as grazing.

#### 2.2.2.8 VEGETATION ZONES

A VZ is an area of native vegetation that is the same PCT and has a similar broad condition state. The VZs were defined and refined through vegetation field surveys across the Subject Land in Spring 2021, Summer 2022, Summer 2023 and Summer 2024. Table 2-5 summarises the BAM plot requirements based on the size and number of vegetation zones within the Subject Land. BAM plot locations for the Subject Land are shown in Figure 2-6.

TABLE 2-5 SUBJECT LAND VEGETATION ZONES AND BAM PLOT REQUIREMENTS

| Vegetation Zone | PCT | Condition | BAM-C Code | Area (ha) within Subject Land | Minimum Plots Required | Plots Used in BAM-C Assessment |
|---|---|---|---|---|---|---|
| VZ01 | 17 | Moderate | PCT17_ Moderate | 1.02 | 1 | • WF16<br>• WF29 |
| VZ02 | 24 | Moderate | PCT24_ Moderate | 3.77 | 2 | • WF10<br>• SF24 |
| VZ03 | 44 | Moderate | PCT44_ Moderate | 54.50 | 5 | • WF07<br>• WF12<br>• WF20<br>• WF48<br>• SF25<br>• SF26<br>• SF27 |
| VZ04 | 153 | Good | PCT153_Good | 4.67 | 2 | • WF49<br>• WF50<br>• WF51 |
| VZ05 | 157 | Good | PCT157_Good | 13.65 | 3 | • WF22<br>• WF28<br>• WF38<br>• WF41<br>• WF42<br>• WF52<br>• WF53 |

| Vegetation Zone | PCT | Condition | BAM-C Code | Area (ha) within Subject Land | Minimum Plots Required | Plots Used in BAM-C Assessment |
|---|---|---|---|---|---|---|
| VZ06 | 160 | Good | PCT160_Good | 27.61 | 4 | • WF06<br>• WF11<br>• WF15<br>• WF17<br>• WF34 |
| VZ07 | 163 | Moderate | PCT163_ Moderate | 28.82 | 4 | • WF24<br>• WF39<br>• WF40<br>• WF43<br>• WF54<br>• SF28<br>• SF29 |
| VZ08 | 164 | Good | PCT164_Good | 841.50 | 7 | • WF03<br>• WF08<br>• WF18<br>• WF19<br>• WF23<br>• WF30<br>• WF32<br>• WF33<br>• WF45 |
| VZ09 | 164 | Malacocera | PCT164_ Malacocera | 6.81 | 3 | • WF35<br>• WF36<br>• WF47 |
| VZ10 | 164 | Moderate | PCT164_ Moderate | 1029.77 | 8 | • WF01<br>• WF04<br>• WF05<br>• WF09<br>• WF13<br>• WF14<br>• WF21<br>• WF26<br>• WF31<br>• WF37<br>• WF44 |
| VZ11 | 216 | Low | PCT216_Low | 1.18 | 1 | • WF25 |

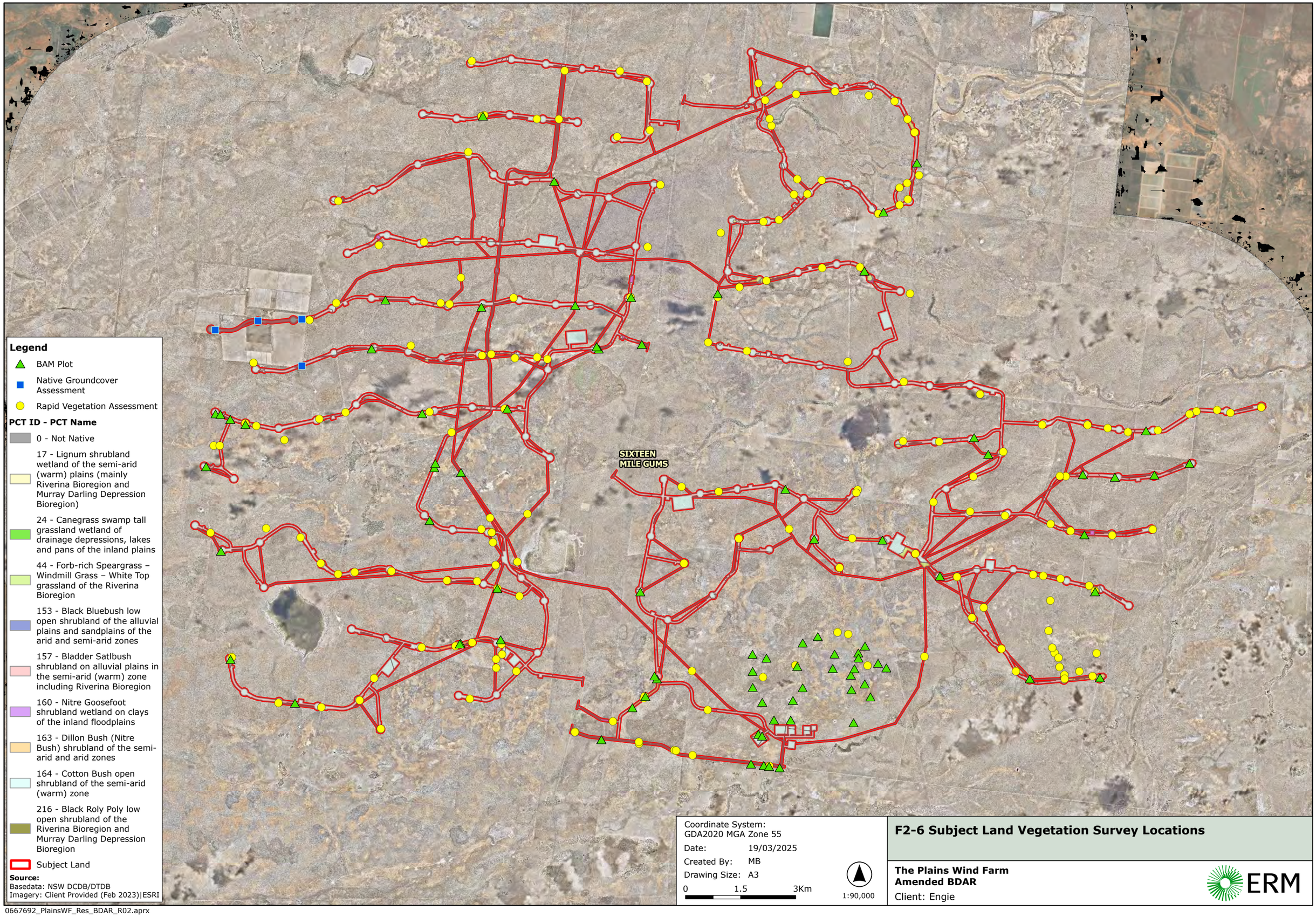
### Haul Route

BAM plots were used to determine the PCTs present across the Haul Route DF. Detailed information is presented in Section 4. Three (3) VZs across three (3) PCTs were determined. Table 2-6 summarises the BAM plot requirements based on the size and number of vegetation zones within the Haul Route DF.

BAM plot locations for the Haul Route DF are shown in Figure 2-7.

TABLE 2-6 HAUL ROUTE VEGETATION ZONES AND BAM PLOT REQUIREMENTS

| Vegetation Zone | PCT | Condition | Code | Area (ha) within Development Footprint | Minimum Plots Required | Plots Used in Assessment |
|---|---|---|---|---|---|---|
| VZ12 | 123 | Moderate | PCT123_Moderate | 0.29 | 1 | BAM01_139 |
| VZ13 | 155 | Low | PCT155_Low | 0.69 | 1 | BAM03_352<br>BAM04_308<br>BAM05_242<br>BAM06_231 |
| VZ14 | 158 | Moderate | PCT158_Moderate | 0.22 | 1 | BAM02_036 |




Coordinate System:
GDA2020 MGA Zone 55

Date: 19/03/2025

Created By: MB

Drawing Size: A3

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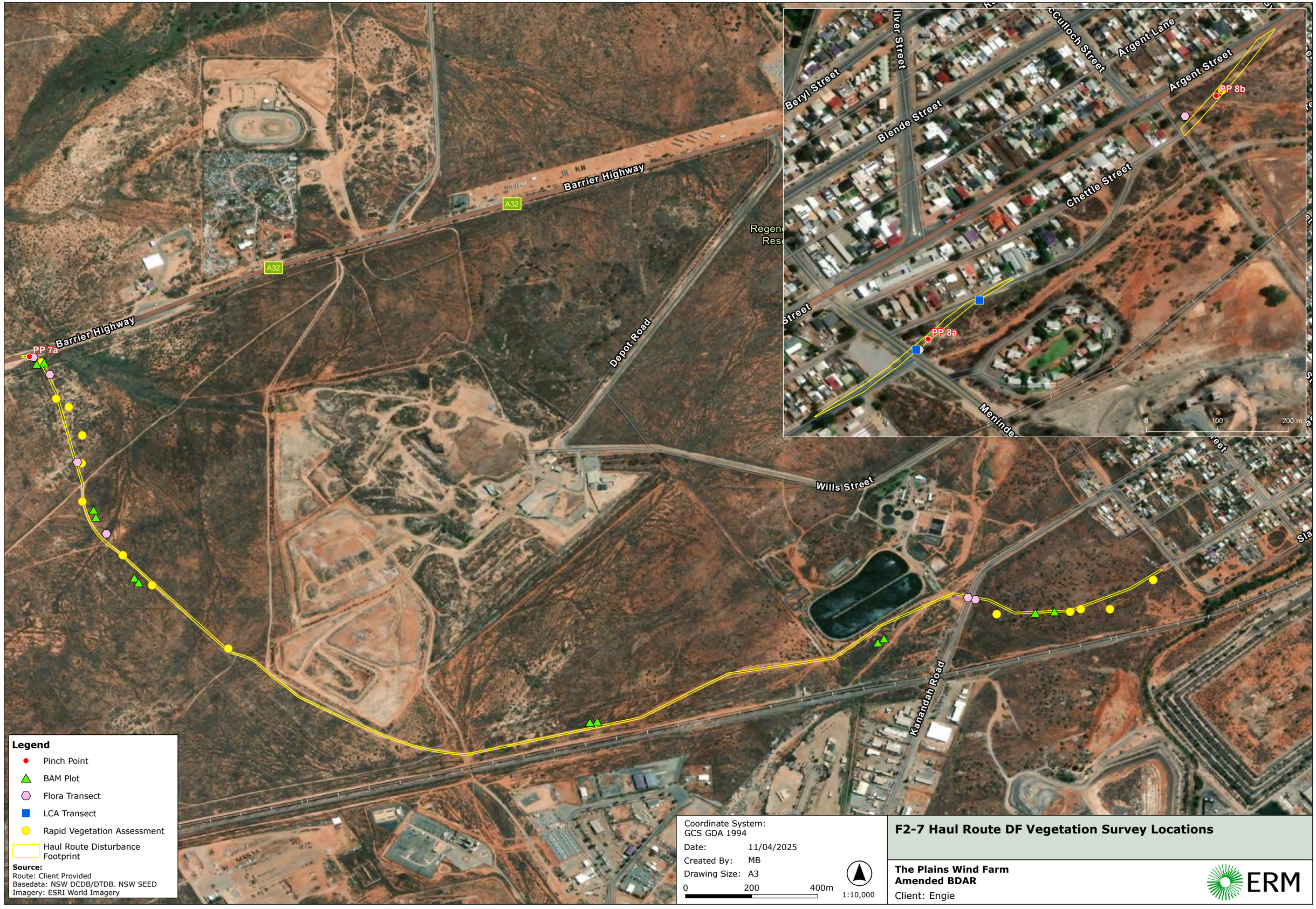
# F2-6 Subject Land Vegetation Survey Locations

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R02.aprx




# F2-7 Haul Route DF Vegetation Survey Locations

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R05.aprx

## 2.2.3 THREATENED FLORA SURVEY METHODS

### 2.2.3.1 REVIEW OF EXISTING INFORMATION

Consultation of the BAM-C, NSW BioNet (NSW DCCEEW, 2025b) and Atlas of Living Australia (ALA) (ALA, 2025) were performed prior to all flora surveys conducted for this BDAR. Threatened flora sightings recorded within the Subject Land and Haul Route DF were recorded and investigated thoroughly.

### 2.2.3.2 HABITAT CONSTRAINTS ASSESSMENT

Desktop review and field surveys within the Subject Land and across the Haul Route included the assessment of habitat constraints and microhabitats and their suitability for threatened flora species.

### 2.2.3.3 FIELD SURVEYS

The BAM-C identifies candidate species that require seasonal targeted searches to be conducted across the Subject Land and the Haul Route DF in accordance with the BAM and relevant guidelines.

Under Section 5.2.2 of the BAM, species credit species can be excluded from further assessment, and therefore targeted surveys, if it is determined that species-specific habitat constraints are not present within the Subject Land or Haul Route DF. Furthermore, under Section 5.2.3 of the BAM, a species credit species can be considered unlikely to occur on the Subject Land or Haul Route DF (or within specific vegetation zones) if, after carrying out a field assessment, the assessor determines that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land or Haul Route DF (or specific vegetation zone). In addition, a species credit species may be limited in its distribution by geographic constraints, and it can be excluded from further assessment. Species credit species excluded from further assessment are detailed in Section 5.1.3.

A combination of threatened flora survey methods was implemented for the Project. Details are provided in the following sections.

**Parallel Field Traverses**

Parallel field traverses were conducted in accordance with the guideline 'Surveying threatened plants and their habitats' (NSW DPIE, 2020b). Traverses were conducted by two ecologists spaced 10 m apart, as appropriate for the detection of herbs, forbs, grasses and other graminoids, ferns and orchids, as well as larger plant life forms, in open vegetation. Walking speeds were maintained at those suitable for the detection of the target species. Calculations of hours of effort and area (ha) covered was based on the assumption that 1 km of walking and searching would take approximately 15 minutes to complete (0.25 hours) and that 1 km of traversing would cover an area of 1 ha.

The following survey events included parallel field traverses, which were completed across the PREP area and the Subject Land. Effort completed within the Subject Land is as follows:

- Spring 2023 (18 – 29 September 2023):
  - 0.1 hours of effort in PCT 24 covering approximately 0.47 km and 0.47 ha
  - 0.3 hours of effort in PCT 44 covering approximately 1.21 km and 1.21 ha

- 0.4 hours of effort in PCT 160 covering approximately 1.73 km and 1.73 ha
- 7.8 hours of effort in PCT 164 covering approximately 31.21 km and 31.21 ha

- Summer 2024 (15 – 20 December 2024):
  - 0.4 hours of effort in PCT 24 covering approximately 1.43 km and 1.43 ha
  - 0.3 hours of effort in PCT 44 covering approximately 1.06 km and 1.06 ha
  - 0.1 hours of effort in PCT 157 covering approximately 0.22 km and 0.22 ha
  - 0.9 hours of effort in PCT 160 covering approximately 3.57 km and 3.57 ha
  - 0.01 hours of effort in PCT 163 covering approximately 0.06 km and 0.06 ha
  - 3.8 hours of effort in PCT 164 covering approximately 15.29 km and 15.29 ha

Parallel field traverse effort for the Subject Land is shown in Figure 2-8.

**Two-phase, Grid-based Systematic Approach**

'Surveying threatened plants and their habitats' (NSW DPIE, 2020b) allows for the implementation of the two-phase, grid-based systematic approach for areas of suitable habitat for species credit species greater than 50 ha.

In consideration of the large area covered by the Subject Land, dominated by PCT 164 (VZ08, VZ09 and VZ10) and to a lesser extent PCT 44 (VZ03), and the minimal topographical changes in relief, a 200 m grid-based systematic approach was applied. Prior to undertaking surveys, a 200 m x 200 m grid intersect was placed across the Subject Land. Targeted flora surveys were conducted at the grid intersect points across the Subject Land within a 40 m x 40 m quadrat where suitable habitat for the target species was present. Parallel field traverses were conducted within the quadrat by two ecologists who walked two transects of 40 m each, spaced 10 m apart. Therefore, four transects of 40 m spaced 10 m apart were completed at each grid intersect point.

Where a target species was located, fine-scale, targeted searches were conducted to determine the extent of the occurrence of the species and the number of individuals (for 'count' species credit species). The microhabitat and conditions were recorded and taken into consideration when determining the extent of the fine-scale search.

Two-phase, grid-based transects were completed within the Subject Land as follows:

- Spring 2024 (1 – 13 September 2024):
  - 12 transects in PCT 44;
  - 2 transects in PCT 153;
  - 4 transects in PCT 157;
  - 7 transects in PCT 160;
  - 5 transects in PCT 163; and
  - 450 transects in PCT 164.

A total of 535 grid-based transects were undertaken in September 2024, targeting 14 threatened flora species. Twelve transects were undertaken in non-native vegetation which had previously been mapped incorrectly as containing native vegetation and 43 transects were conducted outside the Subject Land. No transects were conducted in PCTs 17, 24 or 216.

Details of the targeted flora species are provided in Section 5. Survey effort is shown in Figure 2-9.

**Haul Route**

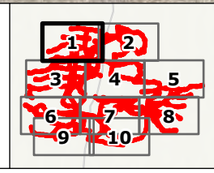
Targeted threatened flora surveys undertaken along the haul route were conducted over three (3) survey events:

- Winter 2023 (18 - 21 July 2023);
- Spring 2024 (9 - 13 September 2024); and
- Spring 2024 (18 – 22 November 2024).

During these survey events, targeted parallel transect searches were performed on foot in accordance with the guidelines (DPIE, 2020b). Details of the targeted flora species are provided in Section 5. Figure 2-10 presents the extent of the targeted flora survey effort.

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - December 2024

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

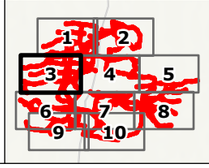
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

Parallel Field Traverses - December 2024

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

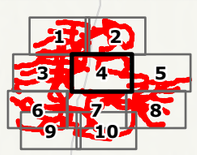
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

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# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 4

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

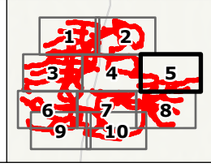
0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 5

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - December 2024

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

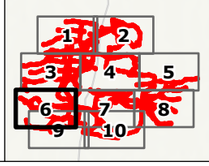
153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

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# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 6

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

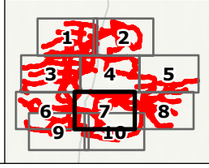
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 7

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - December 2024

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

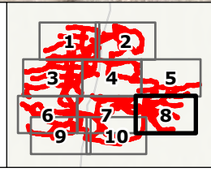
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 8

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - December 2024

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

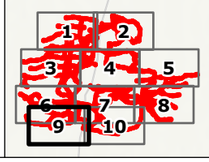
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 9

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Parallel Field Traverses - December 2024

Parallel Field Traverses - September 2023

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

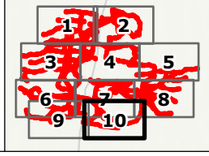
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

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# F2-8 Targeted Flora Survey Effort (Parallel Field Traverses) (Subject Land). Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**Legend**

- Flora Transect Point
- Two-phase Grid-based Survey

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/03/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

# F2-9 Targeted Flora Survey Effort (Two-Phased Grid-Based Approach) (Subject Land)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R01.aprx

**Legend**

- September 2024 Transect
- November 2024 Transect

**PCT ID - PCT Name**

- 0 - Infrastructure
- 123 - Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion
- 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones
- 158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)
- Haul Route Disturbance Footprint

**Source:**
Route: Client Provided
Basedata: NSW DCDB/DTDB
Imagery: ESRI World Imagery

Coordinate System:
GCS GDA 1994

Date: 27/03/2025
Created By: MB
Drawing Size: A3

0 200 400m

1:10,000

# F2-10 Targeted Flora Survey Effort (Haul Route DF)

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R03.aprx

## 2.2.4 THREATENED FAUNA SURVEY METHODS

### 2.2.4.1 REVIEW OF EXISTING INFORMATION

The BAM-C, NSW BioNet (NSW DCCEEW, 2025b) and ALA (ALA, 2025) were reviewed prior to the fauna surveys conducted for this BDAR. Threatened flora sightings recorded within the Subject Land and Haul Route DF were recorded and investigated thoroughly.

### 2.2.4.2 HABITAT CONSTRAINTS ASSESSMENT

Desktop assessments and field surveys within the Subject Land and proposed haul route included assessment of habitat constraints and microhabitats and their suitability for threatened fauna species. This included desktop assessment of the Assessment Area for features such as caves and waterways, and field inspection of microhabitats including leaf litter, stick nests and hollow-bearing trees within the Subject Land.

### 2.2.4.3 FIELD SURVEYS

Targeted field surveys were undertaken in habitat throughout the broader the PREP area to inform design alterations of the Subject Land.

The following targeted fauna survey events were completed across the PREP area and Subject Land:

- Spring 2021: 26 October – 12 November 2021;
- Summer 2022: 14 – 25 February 2022;
- Autumn 2022: 16 – 20 May 2022;
- Winter 2022: 8– 18 August 2022;
- Summer 2023: 21 February – 3 March 2023;
- Spring 2023: 13 – 16 November; and
- Summer 2024: 6 – 20 December 2024.

Requirements for targeted surveys included the survey months specified in the BAM-C, the survey effort and methods described in NSW BioNet (NSW DCCEEW, 2025b) and the relevant survey guidelines. Relevant survey guidelines included the following:

- BAM (NSW DPIE, 2020a);
- 'Species credit' threatened bats and their habitats - NSW survey guide for the Biodiversity Assessment Method (NSW DPIE, 2021);
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (NSW DEC, 2004);
- Threatened reptiles – Biodiversity Assessment Method survey guide (DPE, 2022a);
- Survey Guidelines for Australia's Threatened Mammals (Cwth DSEWPC, 2011);
- Survey Guidelines for Australia's Threatened Birds (Cwth DEWHA, 2010);
- NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (NSW DPIE, 2020c); and
- Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method Survey Guide (NSW DPE, 2022b).

Survey effort across the Subject Land and areas of the PREP are shown in Figure 2-11 and detailed in Section 5.

**Haul Route**

Targeted threatened fauna surveys and habitat assessments along the proposed haul route were conducted over four (4) survey events, as follows:

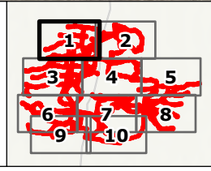
- 17 – 21 July 2023 - survey effort included habitat assessments between the Port of Adelaide and the Subject Land.
- 10 – 11 November 2023 – survey effort included habitat assessments in the Hay area.
- 9 – 13 September 2024 - survey effort included targeted bird surveys and habitat assessments in the Broken Hill area.
- 18 – 22 November 2024 - survey effort included nocturnal reptile surveys and targeted bird surveys in the Broken Hill area.

Survey effort is shown in Figure 2-12 and detailed in Section 5.

BUS04
BUS03
BUS02
BUS05
BUS06
BUS07
Chorus 18_2

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Reptile Survey
- Spotlighting
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**
- 0 - Not Native
- 17 - Lignum shrubland wetland
- 157 - Bladder Saltbush shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon Bush (Nitre Bush) shrubland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55
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Created By: MB
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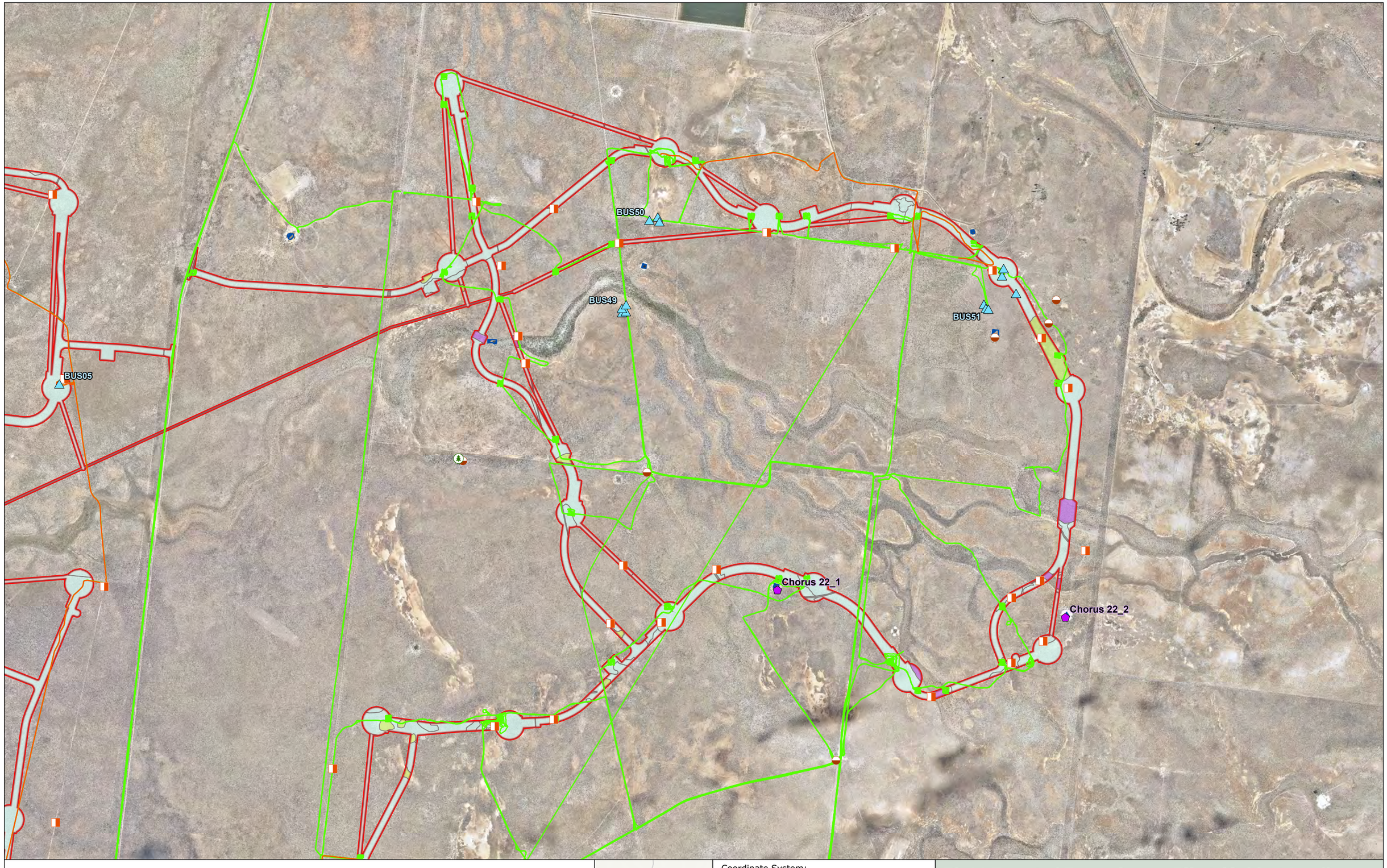
# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 1

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

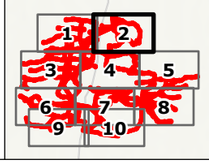
0667692_PlainsWF_Res_BDAR_R04.aprx




- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 160 - Nitre Goosefoot shrubland wetland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System: GDA2020 MGA Zone 55
Date: 04/04/2025
Created By: MB
Drawing Size: A3
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1:25,000

# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 2

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

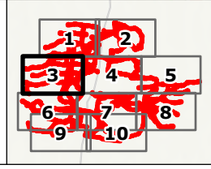
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Reptile Survey
- Spotlighting
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 153 - Black Bluebush low open shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon Bush (Nitre Bush) shrubland
- 164 - Cotton Bush open shrubland
- 216 - Black Roly Poly low open shrubland
- Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

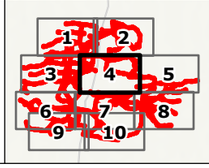
0667692_PlainsWF_Res_BDAR_R04.aprx

BUS48
Chorus 9_1
BUS47
BUS10
BUS41
Chorus 16_1
BUS40
BUS39
BUS42
BUS38
SIXTEEN MILE GUMS

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Nocturnal Driven Transect
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 17 - Lignum shrubland wetland
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 157 - Bladder Saltbush shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

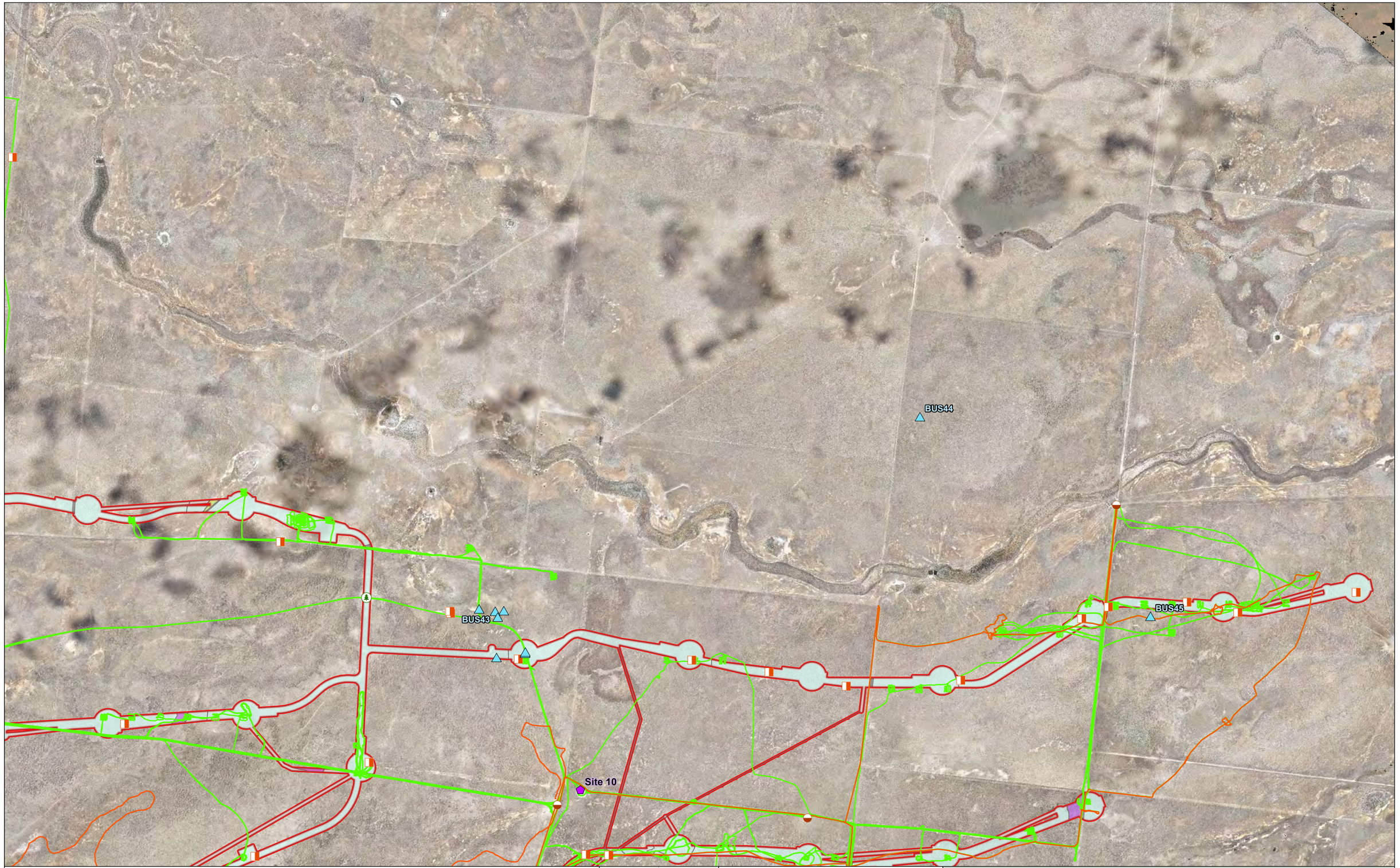
# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 4

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

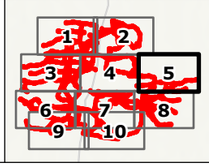
0667692_PlainsWF_Res_BDAR_R04.aprx




- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Nocturnal Driven Transect
- Diurnal Driven Transects

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 160 - Nitre Goosefoot shrubland wetland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 5

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

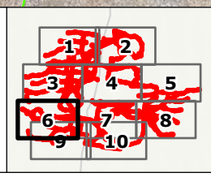
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 153 - Black Bluebush low open shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon Bush (Nitre Bush) shrubland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 6

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

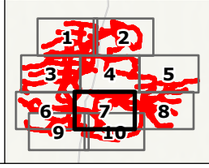
0667692_PlainsWF_Res_BDAR_R04.aprx

BUS36
BUS15
BUS34
BUS33
Chorus 16_2
Chorus 3_1

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Reptile Survey
- Spotlighting
- Nocturnal Driven Transect
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 157 - Bladder Saltbush shrubland
- 163 - Dillon Bush (Nitre Bush) shrubland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

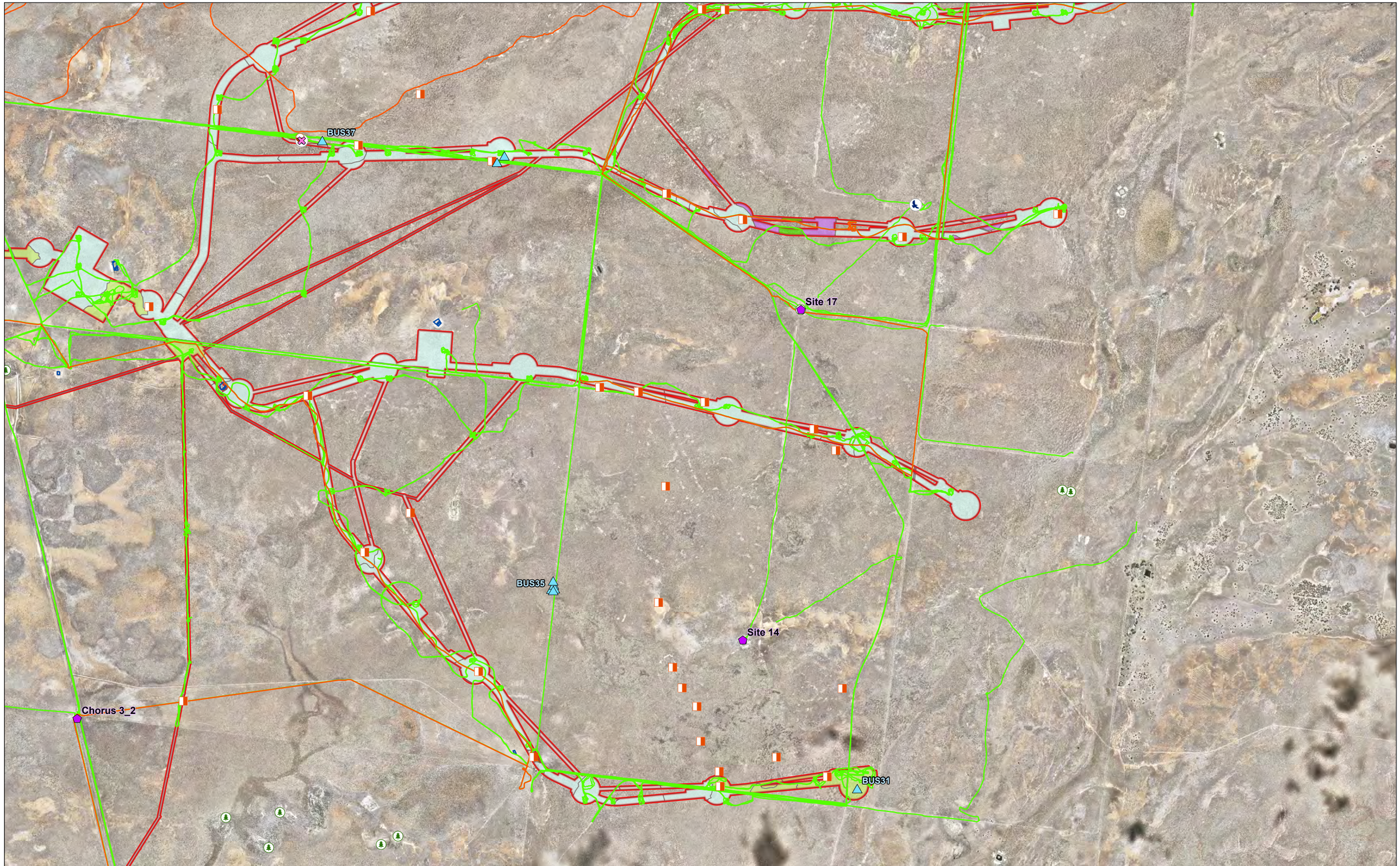
# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 7

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

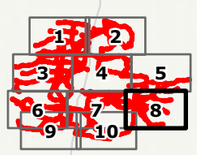
0667692_PlainsWF_Res_BDAR_R04.aprx




- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Targeted Raptor Survey
- Stick Nest Survey
- Nocturnal Driven Transect
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 24 - Canegrass swamp tall grassland wetland
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 160 - Nitre Goosefoot shrubland wetland
- 164 - Cotton Bush open shrubland
- 216 - Black Roly Poly low open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 8

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

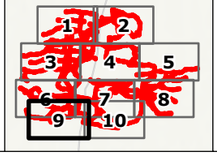
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Stick Nest Survey
- Diurnal Driven Transects

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 24 - Canegrass swamp tall grassland wetland
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 157 - Bladder Saltbush shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon Bush (Nitre Bush) shrubland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System: GDA2020 MGA Zone 55
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 9

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

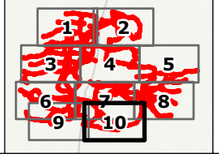
ERM

Chorus 16_2
BUS33
Chorus 3_1
Chorus 3_2
BUS32
Chorus 9_2
Anabat 6
BUS26
Anabat 1
BUS27

- Anabat
- Bird Utilisation Survey
- Bird Survey
- Call Playback Survey
- Amphibian Survey
- Koala SAT
- Hollow Bearing Tree Census
- Scattered Tree Assessment
- Plains-wanderer Habitat Assessment
- Targeted Raptor Survey
- Stick Nest Survey
- Reptile Survey
- Spotlighting
- Nocturnal Driven Transect
- Diurnal Driven Transects
- Water Source Survey

**PCT ID - PCT Name (abr.)**

- 0 - Not Native
- 24 - Canegrass swamp tall grassland wetland
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland
- 157 - Bladder Saltbush shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon Bush (Nitre Bush) shrubland
- 164 - Cotton Bush open shrubland
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

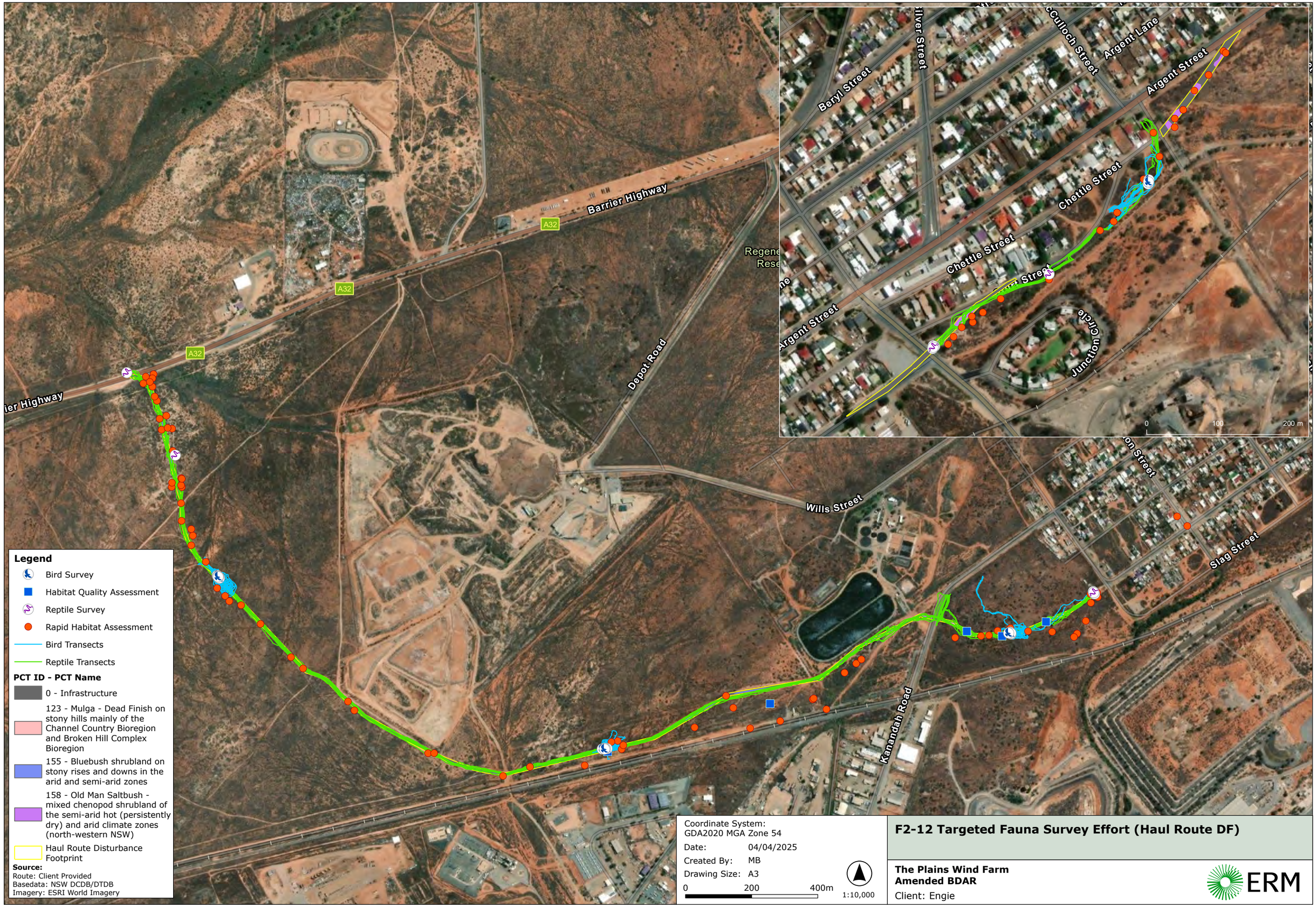
# F2-11 Targeted Fauna Survey Effort (Subject Land) Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx




# F2-12 Targeted Fauna Survey Effort (Haul Route DF)

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

### 2.2.5 WEATHER CONDITIONS

Weather conditions during the field survey events were appropriate for detection of target flora and fauna. A summary of the recorded conditions on the Subject Land during the survey periods is provided in Table 2-7, with the proposed haul route survey conditions provided in Table 2-8.

#### TABLE 2-7 WEATHER CONDITIONS DURING SURVEY PERIODS (SUBJECT LAND)

(Bureau of Meteorology, 2024b)

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| **Spring 2021** | | | |
| 26/10/2021 | 3.2 | 25.9 | 0 |
| 27/10/2021 | 7.8 | 32.9 | 0 |
| 28/10/2021 | 4.4 | 31.1 | 0.2 |
| 29/10/2021 | 3.5 | 22.7 | 0 |
| 30/10/2021 | 3.5 | 20.6 | 0 |
| 31/10/2021 | 3.7 | 24.6 | 0 |
| 01/11/2021 | 8.4 | 28.3 | 0 |
| 02/11/2021 | 9.7 | 33.2 | 0 |
| 03/11/2021 | 21.6 | 24.2 | 0 |
| 04/11/2021 | 4.8 | 28.7 | 4.2 |
| 05/11/2021 | 4.0 | 29.7 | 0 |
| 06/112021 | 17.2 | 33.1 | 0 |
| 07/11/2021 | 14.0 | 29.2 | 2.8 |
| 08/11/2021 | 0.5 | 26.4 | 0.2 |
| 09/11/2021 | 7.2 | 28.3 | 0 |
| 10/11/2021 | 17.4 | 24.6 | 0 |
| 11/11/2021 | 7.5 | 19.5 | 0 |
| 12/11/2021 | 10.7 | 14.6 | 24.8 |
| **Summer 2022** | | | |
| 14/02/2022 | 21.9 | 37.5 | 0 |
| 15/02/2022 | 20.4 | 38.9 | 0 |
| 16/02/2022 | 22.0 | 39.5 | 0 |
| 17/02/2022 | 20.7 | 30.8 | 0 |
| 18/02/2022 | 14.7 | 29.1 | 0 |
| 19/02/2022 | 11.2 | 31.5 | 0 |
| 20/02/2022 | 13.9 | 33.5 | 0 |
| 21/02/2022 | 13.0 | 29.0 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 22/02/2022 | 11.8 | 34.1 | 0 |
| 23/02/2022 | 17.7 | 34.6 | 0.6 |
| 24/02/2022 | 24.3 | 32.8 | 0 |
| 25/02/2022 | 22.6 | 34.6 | 0 |
| **Autumn 2022** | | | |
| 16/05/2022 | 5.0 | 16.9 | 7.2 |
| 17/05/2022 | 1.2 | 18.3 | 0.6 |
| 18/05/2022 | 8.0 | 19.9 | 0 |
| 19/05/2022 | 7.0 | 15.6 | 8.6 |
| 20/05/2022 | 4.9 | 18.1 | 0 |
| **Winter 2022** | | | |
| 08/08/2022 | 0.5 | 16.4 | 4.8 |
| 09/08/2022 | -1.1 | 16.3 | 0.2 |
| 10/08/2022 | -2.2 | 17.0 | 0 |
| 11/08/2022 | 7.4 | 12.4 | 0.2 |
| 12/08/2022 | 7.1 | 18.9 | 2.6 |
| 13/08/2022 | 8.1 | 14.9 | 0.2 |
| 14/08/2022 | 4.1 | 17.1 | 0 |
| 05/08/2022 | 4.1 | 15.0 | 0 |
| 16/08/2022 | 5.0 | 16.9 | 7.2 |
| 17/08/2022 | 1.2 | 18.3 | 0.6 |
| 18/08/2022 | 8.0 | 19.9 | 0 |
| **Summer 2023** | | | |
| 21/02/2023 | 17.3 | 37.7 | 0 |
| 22/02/2023 | 17.9 | 34 | 0 |
| 23/02/2023 | 17.7 | 32.4 | 0 |
| 24/02/2023 | 17.4 | 34.6 | 0 |
| 25/02/2023 | 20 | 36.6 | 0 |
| 26/02/2023 | 17.6 | 31.1 | 0 |
| 27/02/2023 | 12.8 | 30.1 | 0 |
| 28/02/2023 | 12.4 | 31.4 | 0 |
| 01/03/2023 | 13.8 | 29 | 0 |
| 02/03/2023 | 10.6 | 30.3 | 0 |
| 03/03/2023 | 12.7 | 32.5 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| **Autumn 2023** | | | |
| 23/03/23 | 18.5 | 31.2 | 13.6 |
| 24/03/23 | 16.5 | 31.5 | 0.4 |
| 25/03/23 | 13.0 | 27.9 | 0 |
| 26/03/23 | 12.8 | 28.0 | 0 |
| 27/03/23 | 15.2 | 23.9 | 0 |
| 28/03/23 | 16.1 | 29.2 | 2.8 |
| 29/03/23 | 16.4 | 24.6 | 10.8 |
| 30/03/23 | 7.9 | 22.5 | 0 |
| 31/03/23 | 9.8 | 24.2 | 0 |
| 01/04/23 | 9.3 | 20.9 | 0 |
| 02/04/23 | 4.2 | 23.1 | 0 |
| 03/04/23 | 6.7 | 28.6 | 0 |
| 04/04/23 | 10.9 | 30.6 | 0 |
| 05/04/23 | 9.8 | 31.2 | 0 |
| 06/04/23 | 18.5 | 24.1 | 0 |
| 07/04/23 | 15.2 | 23.0 | 4.2 |
| 08/04/23 | 12.9 | 22.5 | 0.6 |
| 09/04/23 | 7.9 | 19.7 | 0 |
| 10/04/23 | 7.1 | 17.5 | 0 |
| 11/04/23 | 7.8 | 21.0 | 0 |
| 12/04/23 | 12.2 | 22.9 | 2.0 |
| 13/04/23 | 13.0 | 23.4 | 3.8 |
| **Spring 2023** | | | |
| 18/09/2023 | 14.4 | 37.4 | 0 |
| 19/09/2023 | 14.8 | 35.6 | 0 |
| 20/09/2023 | 11.4 | 25.4 | 0 |
| 21/09/2023 | 4.6 | 20.4 | 0 |
| 22/09/2023 | 2.3 | 22.9 | 0 |
| 23/09/2023 | 3.3 | 25 | 0 |
| 24/09/2023 | 4.5 | 29.2 | 0 |
| 25/09/2023 | 13.5 | 29.1 | 0 |
| 26/09/2023 | 8.7 | 29.6 | 0 |
| 27/09/2023 | 5.8 | 25.4 | 0 |
| 28/09/2023 | 3.7 | 27.9 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 29/09/2023 | 3.6 | 29.7 | 0 |
| 13/11/2023 | 8.7 | 28.6 | 0 |
| 14/11/2023 | 12.1 | 25.3 | 0 |
| 15/11/2023 | 11.1 | 29.6 | 0.4 |
| 16/11/2023 | 11.1 | 27.7 | 0 |
| **Summer 2023** | | | |
| 05/12/23 | 18.0 | 43.2 | 0 |
| **Summer 2024** | | | |
| 19/02/2024 | 12.3 | 34.6 | 0 |
| 20/02/2024 | 15.7 | 35.7 | 0 |
| 21/02/2024 | 19.3 | 35.9 | 0 |
| 22/02/2024 | 21.2 | 40.7 | 0 |
| 23/02/2024 | 19.2 | 28.5 | 0 |
| 11/03/2024 | 17.3 | 37.7 | 0 |
| 12/03/2024 | 21.9 | 39.7 | 0 |
| 13/03/2024 | 20.4 | 40.8 | 0 |
| 14/03/2024 | 20.7 | 31.6 | 0 |
| **Autumn* 2024** | | | |
| 10/06/2024 | 6.6 | 16.8 | 0 |
| 11/06/2024 | 10.7 | 15.2 | 0 |
| 12/06/2024 | 18.5 | 15.8 | 1.2 |
| 13/06/2024 | -0.1 | 10.1 | 0 |
| **Winter* 2024** | | | |
| 04/08/2024 | 1.2 | 16.6 | 0 |
| 05/08/2024 | 4.7 | 15.1 | 0 |
| 06/08/2024 | -1.1 | 16.9 | 0 |
| 07/08/2024 | 0.5 | 17.2 | 0 |
| 08/08/2024 | 2.7 | 18.4 | 0 |
| 09/08/2024 | 3.9 | 20.0 | 0.2 |
| 10/08/2024 | -0.1 | 20.1 | 0 |
| 11/08/2024 | 0.1 | 19.9 | 0 |
| **Spring 2024** | | | |
| 01/09/2024 | 6.1 | 24.0 | 0 |
| 02/09/2024 | 11.7 | 18.4 | 0 |
| 03/09/2024 | 2.6 | 18.6 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 04/09/2024 | 3.9 | 23.6 | 0 |
| 05/09/2024 | 12.0 | 30.2 | 0 |
| 06/09/2024 | 15.1 | 33.1 | 0 |
| 07/09/2024 | 8.3 | 21.1 | 0.6 |
| 08/09/2024 | 5.0 | 22.1 | 0 |
| 09/09/2024 | 5.9 | 21.4 | 0 |
| 10/09/2024 | 1.7 | 23.1 | 0 |
| 11/09/2024 | 8.6 | 25.5 | 0 |
| 12/09/2024 | 9.6 | 19.8 | 0 |
| 13/09/2024 | 1.0 | 21.2 | 0 |
| 21/10/2024 | 7.1 | 31.4 | 0 |
| 22/10/2024 | 13.5 | 25.0 | 0 |
| 23/10/2024 | 16.4 | 26.7 | 0 |
| 24/10/2024 | 6.9 | 21.9 | 0 |
| 25/10/2024 | 4.2 | 21.4 | 0 |
| 26/10/2024 | 2.9 | 25.4 | 0 |
| 27/10/2024 | 10.5 | 31.9 | 0 |
| 28/10/2024 | 13.0 | 26.5 | 0 |
| 29/10/2024 | 7.2 | 28.3 | 0 |
| 30/10/2024 | 6.9 | 30.5 | 0 |
| 31/10/2024 | 11.4 | 27 | 0 |
| 01/11/2024 | 6.2 | 25.4 | 0 |
| **Summer 2024** | | | |
| 06/12/2024 | 22.4 | 40.2 | 0 |
| 07/12/2024 | 20.9 | 38.5 | 0 |
| 08/12/2024 | 14.4 | 29.0 | 4.4 |
| 09/12/2024 | 12.5 | 27.4 | 0 |
| 10/12/2024 | 10.9 | 32.3 | 0 |
| 11/12/2024 | 11.5 | 30.1 | 0 |
| 12/12/2024 | 13.2 | 33.6 | 0 |
| 13/12/2024 | 16.1 | 35.7 | 0 |
| 14/12/2024 | 14.3 | 38.0 | 0 |
| 15/12/2024 | 16.4 | 40.2 | 0 |
| 16/12/2024 | 22.4 | 45.4 | 0 |
| 17/12/2024 | 22.3 | 32.4 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 18/12/2024 | 13.4 | 31.4 | 0 |
| 19/12/2024 | 15.9 | 33.1 | 0 |
| 20/12/2024 | 14.2 | 37.3 | 0 |

**Site inaccessible during lambing season. As such Autumn 2024 survey effort was completed at the beginning of June. In turn, the Winter 2024 survey effort was completed in August to account for weather variation across seasons.*

TABLE 2-8 WEATHER CONDITIONS DURING SURVEY PERIODS (HAUL ROUTE)

(Bureau of Meteorology, 2024a; Bureau of Meteorology, 2024b)

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| **Broken Hill, NSW** | | | |
| **Winter 2023** | | | |
| 18/07/2023 | 4.3 | 17.8 | 0 |
| 19/07/2023 | 2.3 | 16.0 | 0 |
| **Spring 2024** | | | |
| 02/09/2024 | 12.5 | 19.0 | 0 |
| 03/09/2024 | 3.3 | 19.5 | 0 |
| 04/09/2024 | 5.0 | 25.8 | 0 |
| 05/09/2024 | 15.3 | 31.4 | 0 |
| 06/09/2024 | 22.2 | 32.5 | 0 |
| 07/09/2024 | 11.8 | 22.6 | 0.4 |
| 08/09/2024 | 12.5 | 22.7 | 0 |
| 09/09/2024 | 6.7 | 22.2 | 0 |
| 10/09/2024 | 7.6 | 24.6 | 0 |
| 11/09/2024 | 10.7 | 26.4 | 0 |
| 12/09/2024 | 8.9 | 18.6 | 0 |
| 13/09/2024 | 5.5 | 20.1 | 0 |
| 18/11/2024 | 11.7 | 26.5 | 0 |
| 19/11/2024 | 11.5 | 29.0 | 0 |
| 20/11/2024 | 12.4 | 32.0 | 0 |
| 21/11/2024 | 16.9 | 34.6 | 0 |
| 22/11/2024 | 20.6 | 35.2 | 0 |
| **Hay, NSW** | | | |
| **Winter 2023** | | | |
| 20/07/2023 | -2.0 | 18.3 | 0 |
| 21/07/2023 | 2.1 | 14.7 | 0.6 |

### 2.2.6 LIMITATIONS

The field and desktop assessments undertaken to inform this report provide a detailed overview of the biodiversity values that exist within the Subject Land. However, results are potentially limited by the inherent nature of the native vegetation communities and targeted species.

Variation in flora composition and structure has been observed during survey events, likely due to natural seasonal variation, severe weather / climatic events (e.g., drought and floods), land use history, pest vertebrate / invertebrate impacts and any associated interaction effects. This was further reflected in aerial imagery available for the Subject Land, with variation observed between aerial imagery and on-site conditions.

The classification of native vegetation within the Subject Land has been assigned to the best-fit PCT by analysis of BAM plot and vegetation data with reference to the BioNet Vegetation Classification database (NSW DCCEEW, 2025b). This process has involved the reconciliation of broad ecotones generated from several environmental and anthropogenic influences, with PCT boundaries ultimately determined from floristic surveys, field observations and analysis of available aerial imagery.

Fauna and flora diversity within the Subject Land should not be seen to be comprehensive, but rather a representation of sampling effort at the time of survey events. The potential for false negatives (i.e., not seeing a species that is present), was limited by utilisation of industry published guidelines applicable to the assessment. The inclusion of seasonal and multiple year sampling has reduced the likelihood of not detecting species relevant to this assessment.

Targeted field surveys for threatened flora and fauna have been conducted in habitat throughout the PREP area, leading to design refinements preceding the current Subject Land. A period of several seasons or years is often needed to identify all the species present in an area, especially as some species are only apparent at certain times of the year (e.g., orchids, migratory birds) and require specific weather conditions for optimum detection.

These potential limitations have been addressed by the application of the precautionary principle (assumed presence), applied where habitat was identified, or species were predicted to utilise habitat components at some stage during their life cycle and survey effort was insufficient to detect species.

### 2.2.7 LICENCING

Regarding the flora and fauna surveys conducted for this BDAR, ERM operated under the Scientific Licence of SL100196 and Animal Ethics Accreditation number 53055.

# 3. SITE CONTEXT

## 3.1 LANDSCAPE FEATURES

Site context features have been identified from an inspection of the Subject Land and proposed haul route through desktop assessment of publicly available, relevant digital mapping layers and aerial imagery (NSW Government, 2025b). Table 3-1 presents the site context features for the Subject Land and Table 3-2 for the proposed haul route.

TABLE 3-1 LANDSCAPE FEATURES (SUBJECT LAND)

| Landscape feature | Description |
|---|---|
| IBRA Bioregions and Subregions | The Subject Land and Assessment Area occur within the Murrumbidgee IBRA subregion of the Riverina IBRA Bioregion (Figure 2-1). |
| NSW Landscape Regions (Mitchell) | The Subject Land is situated across two NSW Landscape Regions (Figure 2-2):<br>• Murrumbidgee Scalded Plains; and<br>• Murrumbidgee Depression Plains.<br>Murrumbidgee Depression Plains has been applied to the BAM-C as it covers a greater portion of the Subject Land. |
| Rivers, streams, estuaries and wetlands | The Subject Land is located south of the Murrumbidgee River and north of the Coleambally Outfall Drain. NSW Hydrography mapping (Figure 2-2) shows that three (3) ephemeral creeks intersect the Subject Land:<br>• Telegraph Creek – first / second order<br>• Abercrombie Creek – first order<br>• Curtains Creek – first order.<br><br>Aquatic habitat associated with these creeks is assessed in Section 3.1.1. There are no Ramsar Wetlands or Important Wetlands, as listed in the Directory of Important Wetlands of Australia, located within the Subject Land. Large ephemeral wetlands largely associated with PCT 13 are present across the PREP area, particularly in the west. These wetlands have been mapped in **Error! Reference source not found.** and avoided by the Project.<br><br>Other wetland PCTs are mapped across the Subject Land, including:<br>• PCT 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains;<br>• PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains; and<br>• PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)<br>This vegetation, along with majority of the Subject Land, is likely to have been inundated during the Spring 2022 heavy rainfall events. However, inundation has not been observed during survey effort within the Subject Land, only within wetlands in the PREP area. Farm dams occur throughout the Subject Land (Figure 2-2). These artificial features are of relatively low quality with limited emergent or submerged vegetation. However, they still provide a valuable water resource for fauna. |
| Habitat connectivity | The Subject Land is predominantly in a modified condition following a long history of clearing and grazing. Treed vegetation is present in low densities across the broader PREP, largely restricted to natural drainage lines, with woodlands scattered on sandy rises. The extent of this woody vegetation cover has been dramatically reduced by land clearing for agriculture. Native shrubland and grasslands are present in high densities, largely lacking canopy and shrub layers >1m. Connectivity across this open landscape is considered substantially low for species dependent on woody vegetation. |

| Landscape feature | Description |
|---|---|
| | Threatened fauna species such as the Plains-wanderer (*Pedionomus torquatus*), White-fronted Chat (*Epthianura albifrons*), Southern Bell Frog (*Litoria raniformis*), Australasian Bittern (*Botaurus poiciloptilus*) and the Blue-billed Duck (*Oxyura australis*) utilise shrublands and grasslands. These areas within the Subject Land likely provide important connectivity between habitat patches, particularly movement between water sources and for shelter. However, fencing, overgrazing and land management practices has reduced the connectivity values of these areas. |
| Karst, caves, crevices, cliffs, rocks or other geological features of significance | The presence of habitat features including karst, caves, crevices and cliffs of other areas of geological significance were assessed throughout the Subject Land during detailed field surveys. There are no karsts, caves, crevices, cliffs or other geological features of significance within the Subject Land. |
| Soil hazard features | A search of the eSPADE database (NSW DPIE, 2025) found that there are no known significant soil hazard features within the Subject Land.<br>A search of the ASC Soil Type Map (NSW Government, 2025b) reveals that the Vertosol soil type dominates the Subject Land. Vertosols are categorised as clay soils with shrink-swell properties that exhibit strong cracking when dry and, at depth, have slickensides and / or lenticular peds. Although many soils exhibit gilgai microrelief, this feature is not used in their definition.<br>A search of the NSW Environment Protection Authority's (EPA) Contaminated Sites Register (NSW EPA, 2025), identified the closest contaminated sites to the Subject Land. The nearest sites were within the Hay township and other close sites were within the Edward River Council LGA. |
| Areas of outstanding biodiversity value | The Subject Land is not identified as an area of outstanding biodiversity value, listed under the BC Act. |
| Additional landscape features identified in SEARs | No additional landscape features were identified in the SEARs. |

## TABLE 3-2 LANDSCAPE FEATURES (HAUL ROUTE DF)

| Landscape feature | Description for the Haul Route DF |
|---|---|
| IBRA Bioregions and Subregions | The Haul Route DF occurs within the Barrier Range IBRA subregion of the Broken Hill Complex IBRA Bioregion (Figure 2-5). |
| NSW Landscape Regions (Mitchell) | The Haul Route DF occurs within the Barrier Downs NSW Landscape Region (Figure 2-5). |
| Rivers, streams, estuaries and wetlands | An unnamed tributary of Stirling Vale Creek runs south to north to the north-east of the Haul Route DF. Otherwise, no rivers, streams, estuaries or wetlands are present. |
| Habitat connectivity | The Haul Route DF is largely situated along existing tracks, bounded by acacia and chenopod shrublands. This vegetation is consistent with the surrounding landscape. Habitat connectivity may be reduced in a minor way for small, fauna species which require shelter for movement. |

| Landscape feature | Description for the Haul Route DF |
|---|---|
| Karst, caves, crevices, cliffs, rocks or other geological features of significance | Ground rocks and gibber are present within the Haul Route DF. |
| Soil hazard features | A review of the ASC Soil Type Map (NSW Government, 2025b) reveals sodosols occur across the Haul Route DF. Sodosols are texture-contrast soils with impermeable subsoils due to the concentration of sodium. Generally, sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed. |
| Areas of outstanding biodiversity value | The Haul Route DF is not identified as an area of outstanding biodiversity value, listed under the BC Act. |

### 3.1.1 AQUATIC HABITAT

The Subject Land is located south of the Murrumbidgee River and north of the Coleambally Outfall Drain. NSW Hydrography mapping (Figure 2-1) shows that three (3) creeks intersect the Subject Land, as follows:

- Telegraph Creek;
- Abercrombie Creek; and
- Curtains Creek.

All mapped creeks are ephemeral, first or second order waterways; likely to only be utilised for water passage during and post heavy rainfall events. During field survey events across 2021, 2022, 2023 and 2024 all natural creek lines were observed to be dry, presenting as minor depressions no greater than 1 m in relief. The creek line vegetation when present was dominated by Lignum (*Duma florulenta*), Canegrass (*Eragrostis australasica*) and Nitre Goosefoot (*Chenopodium nitrariaceum*), all common species in low-lying depressions of the Hay Plains. Chenopod shrublands also occurred in the creek lines.

Substantial rainfall and flooding events occurred across the Hay Plains, including within the Subject Land, during late Spring 2022. Assessment of the site during and following the flood event was limited, with planned surveys abandoned due to access restrictions. The site was accessed during February 2023, during which time mapped wetlands across the PREP area were observed to be inundated with water, however, creek lines within the Subject Land remained clear. It is noted that no woody debris nor instream aquatic vegetation was observed in creek lines within the Subject Land.

The NSW Department of Primary Industries and Regional Development (NSW DPI) Fisheries Spatial Data Portal (NSW DPI, 2025a) was reviewed to determine aquatic values and the potential presence of threatened species in the Subject Land. The Subject Land does not contain mapped Key Fish Habitat. However, parts of Abercrombie Creek, running through the northern portion of the Subject Land are mapped as providing habitat for the following:

- Flathead Galaxias (*Galaxias rostratus*) listed as critically endangered under the EPBC Act and NSW *Fisheries Management Act 1994* (FM Act); and
- Silver Perch (*Bidyanus bidyanus*) listed as endangered under the EPBC Act and vulnerable under the FM Act.

These listed species have been assessed in Section 3.1.1.1. The Subject Land is situated within the distribution of the Lower Murray River Endangered Ecological Community (EEC). All native fish and aquatic invertebrates in natural creeks within this distribution form part of the EEC. This EEC is further discussed in Section 3.1.1.2.

No aquatic habitat is present within the Haul Route DF, nor is aquatic habitat likely to be impacted by the remaining areas of the proposed haul route.

### 3.1.1.1 AQUATIC THREATENED SPECIES LIKELIHOOD OF OCCURRENCE ASSESSMENT

A likelihood of occurrence assessment was undertaken for threatened aquatic entities across the Subject Land, informed by desktop searches within 10 km of the Subject Land using the Protected Matters Search Tool (PMST) (Cwth DCCEEW, 2024b), ALA (ALA, 2025) and NSW BioNet (NSW DCCEEW, 2025b), and field survey results. Desktop sources identified several aquatic threatened species listed under the EPBC Act and FM Act that have been recorded previously or are predicted to occur within a 10 km buffer of the Subject Land. The likelihood of occurrence approach refines the desktop generated list using site-specific and species-specific habitat information.

The likelihood of occurrence criteria applied are outlined in Table 3-3. The likelihood of occurrence assessment is provided in Table 3-4.

TABLE 3-3 AQUATIC THREATENED SPECIES LIKELIHOOD OF OCCURRENCE CRITERIA

| Factor | Preferred habitat exists | Suitable habitat exists[1] | Habitat does not exist[2] |
|---|---|---|---|
| Records within Subject Land | Known | Known | Known |
| Records in the locality[3] | Likely | Potential | Unlikely |
| No records in the locality, but Subject Land is within known distribution | Potential | Unlikely | Unlikely |
| No records in the locality, and Subject Land is outside of distribution | Unlikely | Unlikely | Unlikely |

1. *Habitat may be considered suitable, but not preferred.*
2. *Based on sources reviewed and/or field survey results.*
3. *'Locality' refers to a 10 km buffer of the Subject Land.*

## TABLE 3-4 AQUATIC THREATENED SPECIES LIKELIHOOD OF OCCURRENCE ASSESSMENT

| Habitat | PMST/ALA/BioNet Records | Distribution | Likelihood within the Subject Land |
|---|---|---|---|
| **Flathead Galaxias (*Galaxias rostratus*)** | | | |
| Flathead Galaxias are found in still or slow-moving water bodies such as wetlands and lowland streams. They have been associated with a range of habitats including rock and sandy creek bottoms and aquatic vegetation (Cwth DCCEEW, 2025) . | No records within the Subject Land or Locality.<br><br>Historical ALA records along the Murrumbidgee River.<br><br>The Protected Matters Search Tool suggests that suitable habitat may occur within Subject Land. | The Flathead Galaxias is only known from the southern half of the Murray-Darling Basin system. They have not been recorded and are considered locally extinct in the lower Murray, Murrumbidgee, Macquarie and Lachlan River catchments (Cwth DCCEEW, 2025). | The Flathead Galaxias is considered **unlikely** to occur within the Subject Land as the suitable habitat in the form of slow-moving waterbodies is not present and there is a lack of records in the locality. |
| **Silver Perch *(Bidyanus bidyanus)*** | | | |
| Silver Perch formerly utilised a diversity of habitats within the Murray-Darling system. The species were consistently reported by anglers and researchers to show a general preference for faster-flowing water, including rapids and races, and more open sections of river, throughout the Murray-Darling Basin (Cwth DCCEEW, 2025). | No records within the Subject Land or Locality | Current core habitat is defined as the Murray River, from the base of Mulwala Weir through to Torrumbarry Weir, through to Euston Weir, and then through to the South Australian border; the lower reaches of the Darling River, from the base of the Menindee Lake weirs through to its junction with the Murray River; and the Edwards/Wakool anabranch system. Silver perch occurrences outside of this core habitat (in the Border Rivers and in the Namoi and Lachlan catchments) are in stocked impoundments which do not recruit juveniles of the species (Cwth DCCEEW, 2025). | The Silver Perch is considered **unlikely** to occur within the Subject Land as the suitable habitat in the form of fast-flowing waterbodies is not present and there is a lack of records in the locality. |

| Habitat | PMST/ALA/BioNet Records | Distribution | Likelihood within the Subject Land |
|---|---|---|---|
| **Murray Cod (*Maccullochella peelii*)** | | | |
| The Murray Cod, listed as vulnerable under the EPBC Act, occurs in a range of flowing and standing waters, from small, clear, rocky streams on the inland slopes and uplands of the Great Dividing Range, to the large, turbid, meandering slow-flowing waterbodies, and lakes and larger billabongs, of the inland plains of the Murray-Darling Basin (Cwth DCCEEW, 2025). | The PMST suggests that suitable habitat may occur within a 10 km buffer of the Subject Land.<br><br>There are no records for this species within 10 km of the Subject Land. | The Murray Cod is endemic to the Murray-Darling River system in south-eastern Australia. The species occurs throughout almost the entire system, with the exception of some of some small tributaries, where there may be localised extinctions (Cwth DCCEEW, 2025). | The Murray Cod is considered **unlikely** to occur within the Subject Land as the suitable habitat in the form of permanent waterbodies is not present and there is a lack of records in the locality. |
| **Macquarie Perch (*Macquaria australasica*)** | | | |
| The Macquarie Perch, listed as endangered under the EPBC and FM Acts, is a riverine species. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise large boulders, debris and overhanging banks. Spawning occurs just above riffles (shallow running water). Populations may survive in impoundments if able to access suitable spawning sites (Cwth DCCEEW, 2025). | The PMST suggests that suitable habitat may occur within Subject Land.<br><br>There are no records for this species within 10 km of the Subject Land. | Macquarie Perch are considered isolated within the upper reaches of the Lachlan and Murrumbidgee Rivers in southern NSW. It is also found in low numbers in the Mongarlowe River, Cataract Dam in the Nepean River catchment, and possibly from the Georges River near Campbelltown. It persists in the Burrinjuck, Cotter (Murrumbidgee) and Wyangala impoundments. (Cwth DCCEEW, 2025). | The Macquarie Perch is considered **unlikely** to occur within the Subject Land as the suitable habitat in the form of permanent waterbodies is not present and there is a lack of records in the locality. |

No threatened aquatic species are considered known or likely to occur within the Subject Land. As such, in accordance with the *Threatened species assessment guidelines* (NSW DPI, 2008), an assessment of significance for threatened species listed under the FM Act is not required.

#### 3.1.1.2 THREATENED AQUATIC ECOLOGICAL COMMUNITIES

The distribution of the Lower Murray River EEC incorporates the Subject Land as it is situated within the Murrumbidgee River catchment, downstream of Burrinjuck Dam. The EEC includes all native fish and aquatic invertebrates within all natural creeks, rivers, and associated lagoons, billabongs and lakes within its distribution (NSW DPI, 2025c).

The Lower Murray River EEC occurs in a lowland riverine environment, characterised by meandering channels and wide floodplains. The land is generally flat to gently sloping. In their natural state, these lowland rivers experienced extremely variable water flows, ranging from floods to droughts. The EEC's drainage system has been greatly modified since European settlement, through activities such as river regulation, agricultural practices and the introduction of non-native species (NSW DPI, 2025c).

The creek lines across the Subject Land are presented in Figure 2-1. They are largely present as degraded, dry creek beds with a lack of native fish and aquatic invertebrates. Water is only likely to flow within the creek lines following heavy rainfall events. Measures to avoid impact to the Lower Murray River EEC will be undertaken in accordance with the NSW DPI's 'Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013)' (NSW DPI, 2013) and 'Why Do fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (Fairfull & Witheridge, 2003).

## 3.2 NATIVE VEGETATION COVER AND PATCH SIZE

### 3.2.1 PERCENT NATIVE VEGETATION COVER IN THE ASSESSMENT AREA

The extent of native vegetation across the Assessment Area (500 m buffer around the Subject Land) is shown in Figure 3-1 and summarised in Table 3-5. These parameters have been used in the BAM-C as the percentage of native vegetation cover (97.63%) and the cover class (>70%). Assessment of native vegetation cover beyond that ground-truthed within the Subject Land relies on the NSW State Vegetation Type Map (SVTM) (NSW DCCEEW, 2020) and spatial analysis.

TABLE 3-5 NATIVE VEGETATION COVER IN THE ASSESSMENT AREA

| Description | Value |
|---|---|
| Assessment Area | 27,921.28 ha |
| Total area of native vegetation cover | 27,260.44 ha |
| Percentage of native vegetation cover | 97.63% |
| Cover class (0-10, >10-30, >30-70 or >70%) | >70% |

**Haul Route**

The extent of native vegetation cover for the Assessment Area (500 m buffer around the disturbance footprint) of the Haul Route DF is provided in Figure 3-2 and Table 3-6. The percentage of native vegetation cover is 26.65% and the cover class is >10-30%.

TABLE 3-6 NATIVE VEGETATION COVER IN THE HAUL ROUTE ASSESSMENT AREA

| Description | Value |
|---|---|
| Assessment Area | 607.74 ha |
| Total area of native vegetation cover | 161.99 ha |
| Percentage of native vegetation cover | 26.65% |
| Cover class (0-10, >10-30, >30-70 or >70%) | >10-30% |

### 3.2.2 PATCH SIZE

Patch size is defined in the BAM as '*an area of native vegetation that occurs on the development site and includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems)*' (NSW DPIE, 2020a). Patch size may extend onto adjoining land that is not part of the Subject Land. The patch size of the native vegetation on the Subject Land and for the Haul Route DF has been calculated as >100 ha for each VZ.

**Legend**

- Native Vegetation Cover
- Subject Land
- Assessment Area

**Source:**
Basedata: NSW DCDB/DTDB. NSW SEED
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 13/02/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

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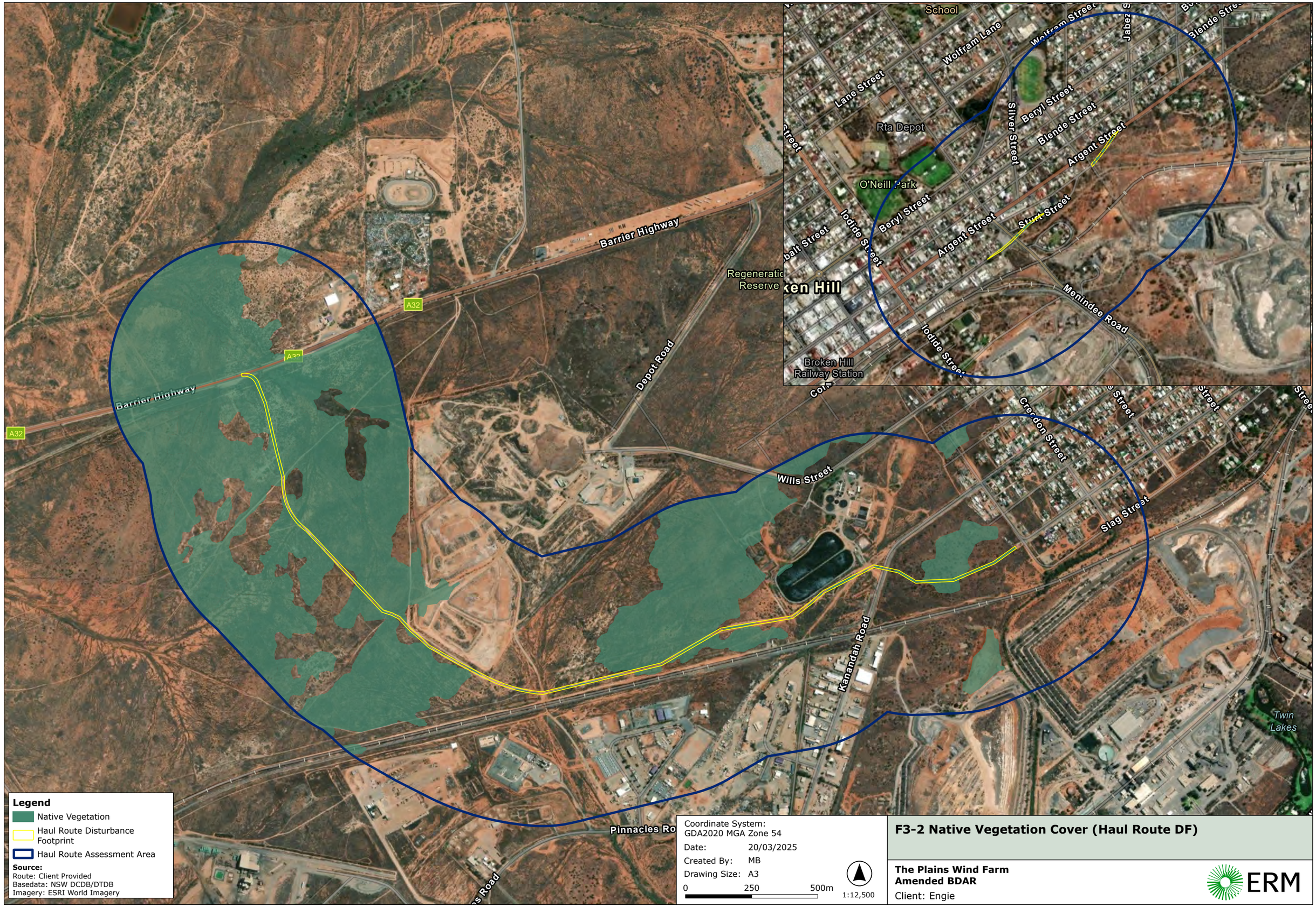
# F3-1 Native Vegetation Cover (Subject Land)

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

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# 4. NATIVE VEGETATION, THREATENED ECOLOGICAL COMMUNITIES AND VEGETATION INTEGRITY

## 4.1 NATIVE VEGETATION OVERVIEW

This section of the BDAR identifies native vegetation occurring on the Subject Land and along the proposed haul route in accordance with the requirements of Section 5 of the BAM.

PCTs within the Subject Land and in the Haul Route DF (the only section of the proposed haul route which contains native vegetation which will be subject to biodiversity impacts) are described using the following attributes:

- Vegetation formation and class;
- Area (ha) for each PCT;
- Species relied upon for PCT identification;
- Justification of evidence used to identify a PCT (as outlined in Paragraph 5.2.1.12 of the BAM);
- TEC status (as outlined in Paragraphs 5.2.1.14 – 5.2.1.15 of the BAM); and
- Estimate of percent cleared value of PCT (as outlined in Paragraph 5.2.1.16 of the BAM).

This section also includes the results of vegetation integrity assessments completed for the Project, including:

- Vegetation zones (in accordance with Subsection 5.3.1 of the BAM);
- Assessing vegetation integrity using benchmark data (in accordance with Subsection 5.3.3 of the BAM);
- Survey effort summary (as described in Subsection 5.3.4 of the BAM) (additional details provided in Section 2.2.3.30); and
- Vegetation integrity scores (in accordance with Appendix 6 of the BAM).

### 4.1.1 MAPPED NATIVE VEGETATION

Ground-verified vegetation mapping was conducted over the Subject Land and the Haul Route DF. Changes were made to the SVTM (NSW DCCEEW, 2020), including the reassignment and reshaping of polygons to better fit the occurrence of PCTs on the ground.

### 4.1.2 NON-NATIVE VEGETATION (SUBJECT LAND)

Seven (7) NGAs were undertaken across the Subject Land within areas mapped as ‘cropping’ on Figure 4-1 to determine whether these areas comprised native vegetation in accordance with Section 4.1.2 of the BAM. The NGA allowed for determination of the following:

- Average percentage of groundcover (native and non-native); and
- Average percentage of native groundcover across the area of interest.

Results from these surveys are presented in Table 4-1. The NGAs confirmed that the area of interest consisted of modified ground cover utilised for cropping and did not comprise native vegetation. The only other areas of non-native vegetation within the Subject Land are along formed tracks and around farm infrastructure. Refer to Figure 4-1. There is a total area of 65.88 ha of non-native vegetation within the Subject Land.

TABLE 4-1 NATIVE GROUNDCOVER ASSESSMENTS

| Quadrat | Total Vegetation Cover | Native Vegetation Cover |
|---|---|---|
| Q1_1 | 15 | 0 |
| Q1_2 | 80 | 0 |
| Q2_1 | 7 | 0 |
| Q2_2 | 35 | 0 |
| Q3_1 | 45 | 5 |
| Q3_2 | 30 | 7 |
| Q4_1 | 100 | 0 |
| **Average** | 44.57 | 1.71 |

**Haul Route**

The full length of the proposed Haul Route was driven by an ecologist, from the Port of Adelaide to the Subject Land. Survey effort across this area was restricted to rapid vegetation assessments during the initial survey event (Winter 2023) to determine any areas that required further assessment under the BAM, with a focus on identified pinch points.

The following pinch points were determined as requiring assessment under the BAM due to the presence of native vegetation:

- PP07A
- PP08A
- PP08B
- PP10.

However, note that PP10 is incorporated within the Subject Land and was not assessed separately for the proposed haul route.

The remaining pinch point was assessed for the presence of native vegetation:

- PP09

LCA transects were completed at PP08A and PP08B. The results of these LCA transects are provided in Table 4-2.

TABLE 4-2 HAUL ROUTE DF LAND CATEGORY ASSESSMENT TRANSECTS

| Location | Transect ID | Native Total | Exotic (Perennial) Total | Exotic (Annual) Total | Bare Ground Total | Outcome |
|---|---|---|---|---|---|---|
| PP08A | LCA01_MG | 16 | 29 | 0 | 63 | Native (PCT 158). Despite ground cover vegetation being dominated by exotic species and bare ground, there was a shrubby canopy of Old Man Saltbush (*Atriplex nummularia*). |

| Location | Transect ID | Native Total | Exotic (Perennial) Total | Exotic (Annual) Total | Bare Ground Total | Outcome |
|---|---|---|---|---|---|---|
| PP08B | LCA01_SDBS | 12 | 2 | 13 | 73 | Native (PCT 158). Despite ground cover vegetation being dominated by exotic species and bare ground, there was a shrubby canopy of Old Man Saltbush (*Atriplex nummularia*). |

In the Haul Route DF, there is a total of 1.24 ha of non-native vegetation associated with tracks and other infrastructure.

A small area of the proposed haul route, situated at PP09 in Hay, was determined as non-native vegetation. PCT 13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) is mapped on the SVTM (NSW DCCEEW, 2020) in the location where a hard stand is required to the south east of the Sturt Hwy and Cobb Hwy roundabout. PP09 was assessed through a rapid vegetation assessment and was dominated by non-native ground cover species (>50% cover). This vegetation did not constitute a PCT in accordance with the NSW PCT classification as described in the BioNet Vegetation Classification database (NSW DCCEEW, 2025b).

No additional areas were identified along the proposed haul route as requiring assessment using the BAM.

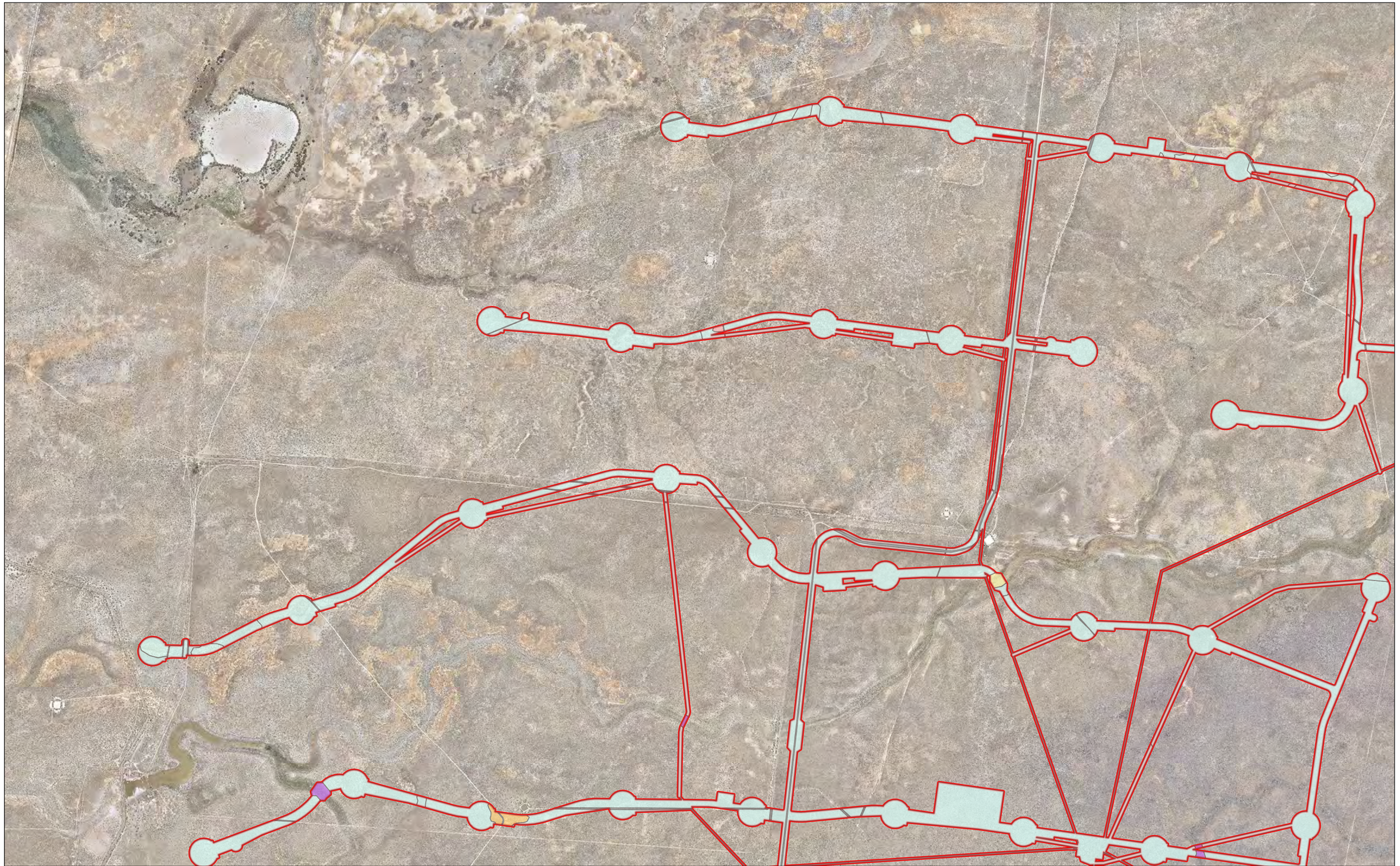
### 4.1.3 PLANT COMMUNITY TYPES

Vegetation within the Subject Land has been assessed as aligning with the BioNet Vegetation Classification PCTs identified within Table 4-3. The PCTs are mapped in Figure 4-1. A detailed description of each PCT within the Subject Land is provided in PCT 17 - Lignum shrubland wetland Table 4-4 to PCT 216 - Black Roly Poly low open shrubland Table 4-12.

#### TABLE 4-3 PCTS IDENTIFIED WITHIN THE SUBJECT LAND

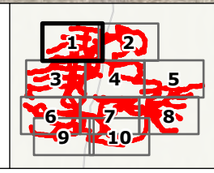
| PCT ID | PCT name | Subject Land area (ha) | Indicative Development Footprint area (ha) |
|---|---|---|---|
| 17 | Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | 1.02 | 1.02 |
| 24 | Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | 3.77 | 3.77 |

| PCT ID | PCT name | Subject Land area (ha) | Indicative Development Footprint area (ha) |
|---|---|---|---|
| 44 | Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion | 54.50 | 49.72 |
| 153 | Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones | 4.67 | 4.67 |
| 157 | Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | 13.65 | 12.45 |
| 160 | Nitre Goosefoot shrubland wetland on clays of the inland floodplains | 27.61 | 26.01 |
| 163 | Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | 28.82 | 27.37 |
| 164 | Cotton Bush open shrubland of the semi-arid (warm) zone | 1,878.08 | 1,700.58 |
| 216 | Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | 1.18 | 0.87 |
| **Total Area** | | 2,013.30 | 1,826.45 |



**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F4-1 Plant Community Types (Subject Land) Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land

Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F4-1 Plant Community Types (Subject Land) Map 2

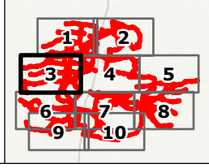
**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F4-1 Plant Community Types (Subject Land) Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

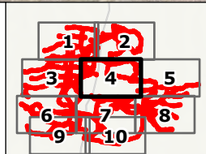
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F4-1 Plant Community Types (Subject Land) Map 4

**The Plains Wind Farm**
**Amended BDAR**

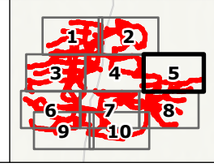
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System: GDA2020 MGA Zone 55
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F4-1 Plant Community Types (Subject Land) Map 5

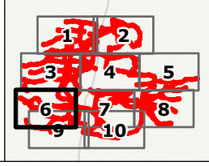
**The Plains Wind Farm Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F4-1 Plant Community Types (Subject Land) Map 6

**The Plains Wind Farm**
**Amended BDAR**

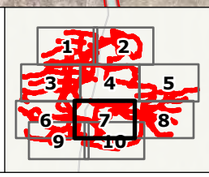
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025
Created By: MB
Drawing Size: A3

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# F4-1 Plant Community Types (Subject Land) Map 7

**The Plains Wind Farm**
**Amended BDAR**

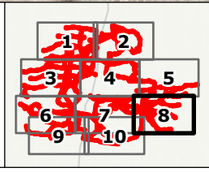
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F4-1 Plant Community Types (Subject Land) Map 8

**The Plains Wind Farm**
**Amended BDAR**

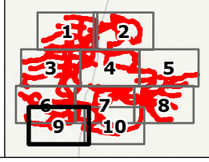
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F4-1 Plant Community Types (Subject Land) Map 9

**The Plains Wind Farm**
**Amended BDAR**

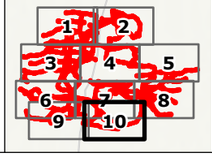
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

# F4-1 Plant Community Types (Subject Land) Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

## PCT 17 - Lignum shrubland wetland

TABLE 4-4 PCT 17 DESCRIPTION

| **PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)** | |
|---|---|
| PCT ID | 17 |
| PCT name | Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| Vegetation formation | Freshwater Wetlands |
| Vegetation class | Inland Floodplain Shrublands |
| TEC Status | PCT 17 is not associated with any EPBC Act or BC Act listed TECs |
| Percent cleared value | 63.00% |
| NSW BioNet Vegetation Classification PCT Description | Open shrubland usually up to 2 m high dominated by Lignum (*Muehlenbeckia florulenta*) often with Nitre Goosefoot (*Chenopodium nitrariaceum*) and low cover of Canegrass (*Eragrostis australasica*). Scattered trees of Black Box (*Eucalyptus largiflorens*) may be present. Cooba (*Acacia salicina*) and River Cooba (*Acacia stenophylla*) may be present as tall shrubs. Ground cover species include the small shrubs such as Giant Redburr (*Sclerolaena tricuspis*), Roly Poly (*Sclerolaena muricata* var. *muricata*), *Atriplex lindleyi, Atriplex suberecta* and *Salsola tragus* subsp. *tragus*, the fern *Marsilea drummondii*, the rush *Juncus flavidus*, the forbs *Rumex tenax, Einadia nutans* subsp. *nutans, Bulbine bulbosa, Senecio glossanthus* and *Senecio cunninghamii*. Grass species include *Walwhalleya proluata* and *Enteropogon ramosus*. Weed species include *Lolium perenne, Hordeum leporinum* and *Rapistrum rugosum*. Occurs on black, brown and grey-cracking clay soils and clay loam soils in river channels and depressions on floodplains subject to regular flooding in south-western NSW extending into Victoria and South Australia mainly in the semi-arid (warm) climate zone. Although very widespread it tends to have a consistent floristic composition. Grades into Black Box or River Red Gum woodlands near major rivers and into Bladder Saltbush or other chenopod shrublands on higher ground. Large areas of Lignum have been cleared for cropping in the middle-western and eastern parts of its range including in the Lowbidgee region on the Murrumbidgee River floodplain. Some stands remain in the west. This community is becoming increasingly threatened by clearing and altered flooding regimes due to irrigation developments. Reduced flooding is leading to the dieback of Lignum in some areas. Tree dieback from drought has increased since 2000. |
| Description within Subject Land | PCT 17 within the Subject Land occurs as a sparse low-mid to high shrubland between 0.8 and 1 m in height. It occurs on drainage channels on floodplain on grey and brown clay soils. The shrub layer is dominated by Lignum (*Duma florulenta* syn. *Muehlenbeckia florulenta*) with Canegrass (*Eragrostis australasica*) also commonly occurring. The ground cover includes Giant Redburr (*Sclerolaena tricuspis*), Black Rolypoly (*Sclerolaena muricata*), *Juncus* spp. and Climbing Saltbush (*Einadia nutans*). An upper stratum is absent. This PCT was distinguished by presenting as a shrubland dominated by Lignum. |

| **PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)** | |
|---|---|
| Associated species present | Lignum (*Duma florulenta*), Canegrass (*Eragrostis australasica*), Bladder Saltbush (*Atriplex vesicaria*), Black Rolypoly (*Sclerolaena muricata*), Giant Redburr (*Sclerolaena tricuspis*), Climbing Saltbush (*Einadia nutans*), Rough Burr-daisy (*Calotis scabiosifolia*), Curly Windmill Grass (*Enteropogon acicularis*) |
| Vegetation Zones and VIS | One distinct condition state for areas mapped as PCT 17 occurs within the Subject Land, as outlined below:<br><br>• Moderate condition, herein labelled as Vegetation Zone 1 (VZ01)<br><br>The vegetation zone was attributed to moderate condition due to moderate species diversity (18 native species recorded), coinciding with moderate levels of weed incursion, particularly *Lolium perenne*. The VIS for VZ01 is 67.6. This was a result of shrubs and grasses falling just below the benchmark for diversity and cover, and forbs falling well below the benchmark for this PCT. |
| Area (ha) within Subject Land | 1.02 |
| BAM plots within PCT | WF16<br>WF29 |

PHOTOGRAPH 1 PCT 17, VEGETATION ZONE 1

## PCT 24 - Canegrass swamp tall grassland wetland

TABLE 4-5 PCT 24 DESCRIPTION

| **PCT 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains** | |
|---|---|
| PCT ID | 24 |
| PCT name | Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| Vegetation formation | Freshwater Wetlands |
| Vegetation class | Inland Floodplain Shrublands |
| TEC Status | PCT 24 is associated with:<br>Artesian Springs Ecological Community in the Great Artesian Basin – *Critically Endangered* (BC Act) (part) |
| Percent cleared value | 20.00% |
| NSW BioNet Vegetation Classification PCT Description | Tall, tussock grassland dominated by Canegrass (*Eragrostis australasica*) growing to over 2 m high ranging in cover from dense to isolated plants. Sometimes growing with Glasswort (*Sclerostegia tenuis*) or samphire (*Halosarcia pergranulata*). Depending which part of NSW a range of grass species may be present including Windmill Grass (*Chloris truncata*), Blown Grass (*Lachnagrostis filiformis*), Plains grass (*Austrostipa aristiglumis*), Neverfail (*Eragrostis setifolia*) and *Eragrostis parviflora*. A range of low shrubs occur including *Sclerolaena* spp., *Atriplex* spp. and *Teucrium racemosum*. Sedges such as *Eleocharis acuta, Eleocharis pusilla* and *Eleocharis pallens* may be common along with rushes (*Juncus* spp.). The aquatic *Marsilea drummondii, M. costulifera, Azolla filiculoides* and *Myriophyllum* spp. may be present but die off in dry times. |
| Description within Subject Land | PCT 24 within the Subject Land occurs as a tall tussock grassland to 1.7 m in height, occurring in road swale drains on brown clay soils with no visible cracking. A shrub layer is present and consists of *Sclerolaena*, *Rhagodia, Maireana, Duma* and *Chenopodium* species. The groundcover is dominated by Canegrass (*Eragrostis australasica*), generally occurring in isolated clumps. In some instances, Flat Spike-sedge (*Eleocharis plana*) is co-dominant. No upper stratum is present. This PCT was distinguished by presenting as a grassland wetland dominated by Canegrass. |
| Associated species present | Canegrass (*Eragrostis australasica*), Lignum (*Duma florulenta*), Nitre Goosefoot (*Chenopodium nitrariaceum*), Black Rolypoly (*Sclerolaena muricata*), Grey Germander (*Teucrium racemosum*), Common Nardoo (*Marsilea drummondii*), Giant Redburr (*Sclerolaena tricuspis*) |
| Vegetation Zones | One distinct condition state for areas mapped as PCT 24 occurs within the Subject Land, as outlined below:<br><br>• Moderate condition, herein labelled as Vegetation Zone 2 (VZ02)<br><br>The vegetation zone was attributed to moderate condition due to moderate species diversity (22 native species recorded), coinciding with moderate levels of weed incursion, particularly *Lolium perenne*.<br>The VIS for VZ02 is 53.1. This was a result of a lack of shrub species' diversity and low shrub and forb cover. Grasses were just below the benchmark in species' diversity and much greater in cover than the benchmark. |
| Area (ha) within Subject Land | 3.77 |
| BAM plots within PCT | WF10<br>SF24 |

**PCT 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains**

PHOTOGRAPH 2 PCT 24, VEGETATION ZONE 2

## PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grassland

TABLE 4-6 PCT 44 DESCRIPTION

| **PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion** | |
|---|---|
| PCT ID | 44 |
| PCT name | Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| Vegetation formation | Grasslands |
| Vegetation class | Riverine Plain Grasslands |
| TEC Status | PCT 44 is associated with:<br>• Natural Grasslands of the Murray Valley Plains – Critically Endangered (EPBC Act) (Part) |
| Percent cleared value | 73.00% |
| NSW BioNet Vegetation Classification PCT Description | Open to closed grasslands usually about 0.3 m high composed of speargrass (*Austrostipa nodosa*), Windmill Grass (*Chloris truncata*) and Whitetop Wallaby Grass (*Austrodanthonia caespitosa*) with forbs including a range of daisies such as *Leucochrysum molle* and *Calotis scabiosifolia* and legumes such as *Swainsona* spp. The bluebush species *Maireana pentagona* and *Maireana excavata* are often present as scattered low shrubs. Occurs on grey-cracking clays and red-brown clays often including scalds on the plains of the southern part of the Riverine Plain Bioregion from Urana in the east to Deniliquin in the west and to the north. Several threatened plant species such as *Swainsona plagiotropis, Leptorhynchos scaber, Sclerolaena napiformis* and *Lepidium monoplocoides* have been recorded in this community. About 100 native species and over 40 exotic species have been recorded. Some annual exotic species such as Rye Grass (*Lolium* spp.) and Wild Oats (*Avena* spp.) can dominate cover in Spring then die off leaving native perennial grasses as dominants. This community is "disclimax" in that the grassland of today was probably mixed with chenopod shrublands prior to European settlement. A combination of sheep and rabbit grazing and a drought in the 1880s led to the destruction of the larger saltbushes. Grasslands in best condition are found on roadsides, in travelling stock reserves or in lightly grazed paddocks where ploughing has not occurred. |
| Description within Subject Land | PCT 44 occurs within the Subject Land as a sparse to open grassland between 0.4 and 0.5 m in height occurring on alluvial plains with red and brown clay soils. *Maireana pentagona* was commonly recorded in the shrub layer and Whitetop Wallaby Grass (*Rytidosperma caespitosum*) and Curly Windmill Grass (*Enteropogon acicularis*) are the main groundcover species with Fairy Grass (*Sporobolus caroli*) and Speargrasses (*Austrostipa* spp.) also occurring. An upper stratum is absent. The PCT was distinguished by presenting as a grassland where the species assemblage best aligns with the PCT description, native grasses are dominant, and shrub cover is less than 3%. |
| Associated species present | Hairy Bluebush (*Maireana pentagona*), Windmill Grass (*Chloris truncata*), Ringed Wallaby Grass (*Rytidosperma caespitosum*), Rough Speargrass (*Austrostipa scabra*), *Austrostipa nodosa,* Corrugated Sida (*Sida corrugata*), Small White Sunray (*Rhodanthe corymbiflora*) |

| **PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion** | |
|---|---|
| Vegetation Zones and VIS | One distinct condition state for areas mapped as PCT 44 occurs within the Subject Land, as outlined below:<br><br>• Moderate condition, herein labelled as Vegetation Zone 3 (VZ03)<br><br>The vegetation zone was attributed to moderate condition due to high species diversity (39 native species recorded), coinciding with moderate levels of weed incursion, particularly *Lolium perenne*. The VIS for VZ03 is 56.6. This was a result of species diversity falling just below the benchmark and cover percentages falling well below the benchmarks. |
| Area (ha) within Subject Land | 54.50 |
| BAM plots within PCT | WF07<br>WF12<br>WF20<br>WF48<br>SF25<br>SF26<br>SF27 |

PHOTOGRAPH 3 PCT 44, VEGETATION ZONE 3

## PCT 153 - Black Bluebush low open shrubland

TABLE 4-7 PCT 153 DESCRIPTION

| **PCT 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones** | |
|---|---|
| PCT ID | 153 |
| PCT name | Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Aeolian Chenopod Shrublands |
| TEC Status | PCT 153 is associated with:<br>• *Acacia loderi* shrublands – Endangered (BC Act) (part) |
| Percent cleared value | 40.00% |
| NSW BioNet Vegetation Classification PCT Description | Mid-high open shrubland generally less than 1 m high dominated by Black Bluebush (*Maireana pyramidata*) which may be dominant. Scattered low trees of Black Oak (*Casuarina pauper*) or Western Rosewood (*Alectryon oleifolius* subsp. *canescens*) may be present. Tall shrubs are rare or absent and may include *Eremophila sturtii*. Other chenopod shrub species include Thorny Saltbush (*Rhagodia spinescens*), bluebushes such as *Maireana georgei, Maireana sedifolia* and *Maireana appressa,* Bladder Saltbush (*Atriplex vesicaria sens lat*), *Atriplex lindleyi* and *Atriplex pumillio*, Cannonball (*Dissocarpus paradoxus*), Ruby Saltbush (*Enchylaena tom*entosa) and copperburrs such as *Sclerolaena obliquicuspis*, *Sclerolaena patenticuspis, Sclerolaena brachyptera, Sclerolaena lanicuspis, Sclerolaena divaricata, Sclerolaena tricuspis* and *Sclerolaena diacantha.* Grass species include the cork screw grasses *Austrostipa nitida, Austrostipa scabra* and *Austrostipa nodosa* and wallaby grass *Austrodanthonia caespitosa. Eragrostis dielsii* and *Enneapogon avenaceus* occur in northern areas. Forbs include *Calotis hispidula, Tetragonia tetragonioides, Goodenia pinnatifida, Plantago varia, Minuria integerrima, Senecio runcinifolius, Brachyscome lineariloba, Brachyscome ciliaris var. ciliaris, Calandrinia eremaea*. Bladder Saltbush may have been more common prior to stock grazing. Weeds include *Hordeum spp., Heliotropium europaeum, Salvia verbenaca, Medicago spp.* and *Salvia verbenacea*. Occurs on red-brown duplex soils with textures of clay loam, sandy-loam or light clay on low sandy rises, undulating sandplains, drainage depressions and prior stream levees in the semi-arid and arid zones of far western NSW extending into South Australia and northern Victoria. |
| Description within Subject Land | PCT 153 occurs within the Subject Land as a mid-high sparse to mid-dense shrubland between 0.8 and 1.2 m in height in drainage depressions on red clay soils. It is dominated by Black Bluebush (*Maireana pyramidata*) occurring with Thorny Saltbush (*Rhagodia spinescens*), Bladder Saltbush (*Atriplex vesicaria*) and Copperburrs (*Sclerolaena* spp.) in the shrub layer. The groundcover is dominated by Rough Speargrass (*Austrostipa scabra*) with Ringed Wallaby Grass (*Rytidosperma caespitosum*) also frequently recorded. An upper stratum is absent. The PCT was distinguished by presenting as a shrubland dominated by Black Bluebush (*Maireana pyramidata*). |
| Associated species present | Black Bluebush (*Maireana pyramidata*), Thorny Saltbush (*Rhagodia spinescens*), Bladder Saltbush (*Atriplex vesicaria*), Rough Speargrass (*Austrostipa scabra*), Ruby Saltbush (*Enchylaena tomentosa*), Grey Copperburr (*Sclerolaena diacantha*), Giant Redburr (*Sclerolaena tricuspis*), Ringed Wallaby Grass (*Rytidosperma caespitosum*). |

| **PCT 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones** | |
|---|---|
| Vegetation Zones | One distinct condition state for areas mapped as PCT 153 occurs within the Subject Land, as outlined below:<br><br>• Good condition, herein labelled as Vegetation Zone 4 (VZ04)<br><br>The vegetation zone was attributed to good condition due to moderate species diversity (24 native species recorded), and low levels of exotic species incursion.<br>The VIS for VZ04 is 86.5. This was a result of shrub species diversity falling below the benchmark and forb cover percentage below the benchmark. |
| Area (ha) within Subject Land | 4.67 |
| BAM plots within PCT | WF49<br>WF50<br>WF51 |

PHOTOGRAPH 4 PCT 153, VEGETATION ZONE 4

**PCT 157 - Bladder Saltbush shrubland**

TABLE 4-8 PCT 157 DESCRIPTION

| **PCT 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion** | |
|---|---|
| PCT ID | 157 |
| PCT name | Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Riverine Chenopod Shrublands |
| TEC Status | PCT 157 is not associated with any EPBC or BC Act listed TECs |
| Percent cleared value | 60.00% |
| NSW BioNet Vegetation Classification PCT Description | Low to mid-high to 90cm high, open to sparse chenopod shrubland dominated by Bladder Saltbush (*Atriplex vesicaria*) often with Desert Glasswort (*Pachycornia triandra*), Three-spined Copperburr (*Sclerolaena tricuspis*), *Sclerolaena intricata* and Pigface (*Disphyma crassifolium* subsp. *clavellatum*). Other commonly occurring small shrubs include Slender Glasswort (*Sclerostegia tenuis*), *Sclerolaena brachyptera, Sclerolaena tenuis, Maireana decalvans, Maireana aphylla, Malacocera tricornis, Dissocarpus biflorus* var. *biflorus, Atriplex lindleyi* and *Atriplex pseudocampanulata*. Grasses include *Chloris truncata, Austrodanthonia setacea* and *Sporobolus caroli*. Ephemeral daises occur after rains including *Minuria cunninghamii, Brachyscome smithwhitei* and *Rhodanthe corymbiflora*. The succulent forb *Calandrinia volubilis* often present. Myall (*Acacia pendula*) or Black Oak (*Casuarina pauper*) may occur as isolated trees. In heavily grazed regions Bladder Saltbush may be replaced by a disturbed shrubland complex composed of *Nitraria billardierei, Sclerolaena* spp. and Cotton Bush (*Maireana aphylla*) or Desert glasswort (*Pachycornia triandra*). |
| Description within Subject Land | PCT 157 occurs within the Subject Land as a low, sparse chenopod shrubland to 0.6 m in height occurring on alluvial plains on brown clay soils. It is dominated by Cotton Bush (*Maireana aphylla*) with Saltbush (*Atriplex* spp.) and Copperburr (*Sclerolaena* spp.) also commonly recorded in the shrub layer. Windmill Grass (*Chloris truncata*) and Fairy Grass (*Sporobolus caroli*) were commonly recorded in the groundcover, as were ephemeral daisy species *Rhodanthe corymbiflora*. An upper stratum is absent. The PCT was distinguished by presenting as a shrubland dominated by Bladder Saltbush (*Atriplex vesicaria*). |
| Associated species present | Bladder Saltbush (*Atriplex vesicaria*), Dillon Bush (*Nitraria billardierei*), Canegrass (*Eragrostis australasica*), Hairy Bluebush (*Maireana pentagona*), Black Cotton Bush (*Maireana decalvans*), Windmill Grass (*Chloris truncata*), Giant Redburr (*Sclerolaena tricuspis*), Short-winged Copperburr (*Sclerolaena brachyptera*), Rough Speargrass (*Austrostipa scabra*), Small White Sunray (*Rhodanthe corymbiflora*), *Maireana appressa*, Fairy Grass (*Sporobolus caroli*), Black Rolypoly (*Sclerolaena muricata*), *Vittadinia cuneata*, Small Copper-wire Daisy (*Podolepis muelleri*), Pale Beauty-heads (*Calocephalus sonderi*). |

| **PCT 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion** | |
|---|---|
| Vegetation Zones | One distinct condition state for areas mapped as PCT 157 occurs within the Subject Land, as outlined below:<br><br>• Good condition, herein labelled as Vegetation Zone 5 (VZ05).<br><br>The vegetation zone was attributed to good condition due to moderate species diversity (30 native species recorded), and low levels of exotic species incursion.<br>The VIS for VZ05 is 82.5. This was a result of shrub and forb diversity and cover falling just below the benchmarks. |
| Area (ha) within Subject Land | 13.65 |
| BAM plots within PCT | WF22<br>WF28<br>WF38<br>WF41<br>WF42<br>WF52<br>WF53 |

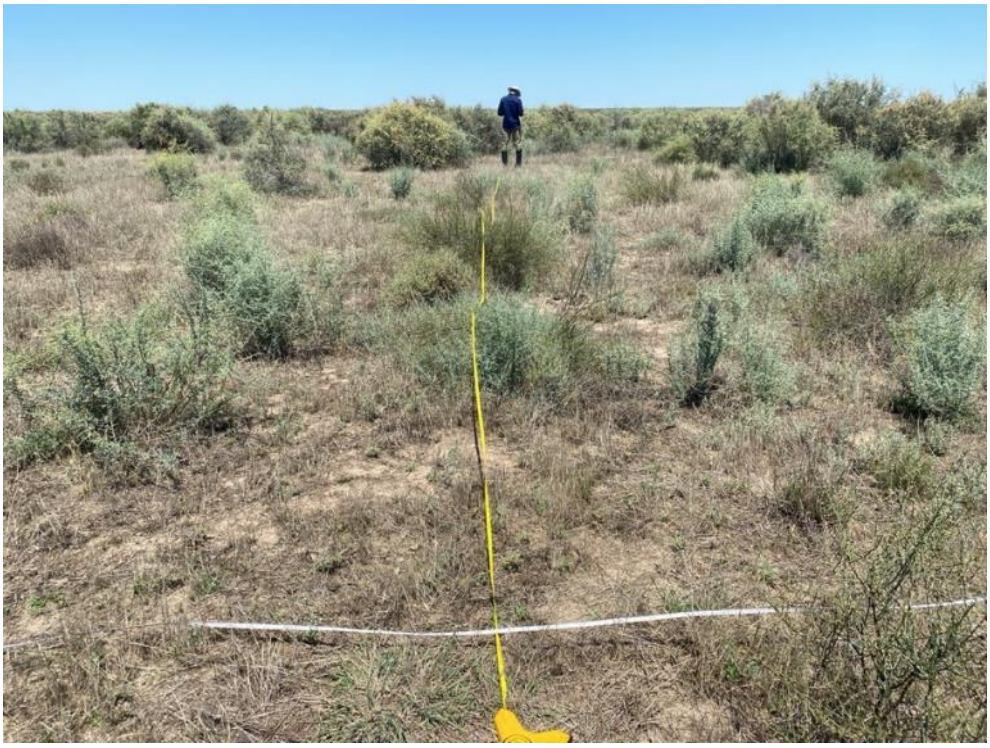
PHOTOGRAPH 5 PCT 157, VEGETATION ZONE 5

**PCT 160 - Nitre Goosefoot shrubland wetland**

TABLE 4-9 PCT 160 DESCRIPTION

| **PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains** | |
|---|---|
| PCT ID | 160 |
| PCT name | Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| Vegetation formation | Freshwater Wetlands |
| Vegetation class | Inland Floodplain Shrublands |
| TEC Status | PCT 160 is associated with:<br>• Artesian Springs Ecological Community in the Great Artesian Basin – *Critically Endangered* (BC Act) (part) |
| Percent cleared value | 28.00% |
| NSW BioNet Vegetation Classification PCT Description | Tall shrubland to two metres high, dominated by Nitre Goosefoot (*Chenopodium nitrariaceum*) often with Black Roly Poly (*Sclerolaena muricata*). Low shrubs include *Sclerolaena stelligera*, Soft Horns (*Malacocera tricornis*) and *Atriplex semibaccata*; forb species include *Omphalolappula concava, Harmsiodoxa blennodioides* and *Oxalis perennans*. Exotic species may be common including the grasses *Hordeum leporinum, Hordeum marinum, Lolium perenne* and *Avena fatua*. Common exotic forbs include *Brassica tournefortii; Cirsium vulgare; Echium plantagineum; Erodium cicutarium, Hedypnois rhagadioloides* subsp. *cretica* and *Medicago polymorpha*. Tall shrubs of Cooba (*Acacia salicina*) and River Cooba (*Acacia stenophylla*) may be present. Occurs on cracking clay or sandy clay soils in lake beds, low lying plains, drainage depressions and alluvial plains subject to flooding in the arid and semi-arid zones of far western NSW. Widespread but usually found in discrete stands. In some places this community may be derived from a previous Old Man Saltbush shrubland as it generally occurs in highly disturbed sites. Grades into Lignum communities in wetter sites where drainage is impaired. Grub infestation has killed large areas since the 1990s and is a potential major threat to this community. |
| Description within Subject Land | PCT 160 occurs within the Subject Land as a mid to tall shrubland between 1 and 2.2 m in height. It occurs in areas of slightly lower elevation than the surrounding areas, forming drainage depressions subject to flooding, on brown and grey-brown cracking clay soils. The shrub layer is dominated by Nitre Goosefoot (*Chenopodium nitrariaceum*) and Black Rolypoly (*Sclerolaena muricata*) and Creeping Saltbush (*Atriplex semibaccata*) were also commonly recorded. *Oxalis perennans* and *Lolium perenne* were often recorded in the groundcover. An upper stratum is absent. The PCT was distinguished by presenting as a shrubland dominated by Nitre Goosefoot (*Chenopodium nitrariaceum*). |
| Associated species present | Nitre Goosefoot (*Chenopodium nitrariaceum*), Lignum (*Duma florulenta*), Canegrass (*Eragrostis australasica*), Black Rolypoly (*Sclerolaena muricata*), Climbing Saltbush (*Einadia nutans*), *Oxalis perennans*, Creeping Saltbush (*Atriplex semibaccata*) |

| **PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains** | |
|---|---|
| Vegetation Zones | One distinct condition state for areas mapped as PCT 160 occurs within the Subject Land, as outlined below:<br><br>• Good condition, herein labelled as Vegetation Zone 6 (VZ06)<br><br>The vegetation zone was attributed to good condition due to high species diversity (32 native species recorded), and low levels of exotic species incursion.<br>The VIS for VZ06 is 72.6. This was a result of shrub and forb species diversity and cover falling below the benchmark. |
| Area (ha) within Subject Land | 27.61 |
| BAM plots within PCT | WF06<br>WF11<br>WF15<br>WF17<br>WF34 |



PHOTOGRAPH 6 PCT 160, VEGETATION ZONE 6

**PCT 163 - Dillon Bush (Nitre Bush) shrubland**

TABLE 4-10 PCT 163 DESCRIPTION

| **PCT 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones** | |
|---|---|
| PCT ID | 163 |
| PCT name | Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Riverine Chenopod Shrublands |
| TEC Status | PCT 163 is associated with:<br>• Artesian Springs Ecological Community in the Great Artesian Basin – *Critically Endangered* (BC Act) (part) |
| Percent cleared value | 26.00% |
| NSW BioNet Vegetation Classification PCT Description | Low to mid-high open to sparse shrubland dominated by Dillon Bush (*Nitraria billardierei*) with Cotton Bush (*Maireana aphylla*) and Thorny Saltbush (*Rhagodia spinescens*). The ground cover may be sparse or dense depending on the season. It includes low shrubs such as Giant Redburr (*Sclerolaena tricuspis*), *Sclerolaena divaricata* and *Sclerolaena obliquicuspis*, Cannonball Burr (*Dissocarpus paradoxus*), *Salsola tragus* subsp. *tragus, Atriplex lindleyi* and *Atriplex holocarpa*. Grasses may dominate a site, and they include the wallaby grasses *Austrodanthonia setacea* and *Austrodanthonia caespitosa,* Rough Spear Grass (*Austrostipa scabra*). A high proportion or the ground cover may be composed of weed species including *Hordeum* spp., *Bromus* spp. *Cucumis myriocarpus* subsp. *leptodermis* and medics (*Medicago* spp.). Dillon Bush (*Nitraria billardierei*) shrubland occurs in heavily disturbed sites and is probably a derived community possibly from previous Bladder Saltbush ID157) and Old Man Saltbush shrubland communities that were heavily modified by heavy grazing by domestic stock and rabbits. Dillon Bush shrubland also occurs on lands that have been cropped in the past. |
| Description within Subject Land | PCT 163 within the Subject Land occurs as a sparse, low shrubland between 0.5 and 1 m in height. It occurs on alluvial plains on red clay soils. The shrub layer is dominated by Dillon Bush (*Nitraria billardierei*) with Cotton Bush (*Maireana aphylla*) and Giant Redburr (*Sclerolaena tricuspis*) also commonly recorded. The groundcover is dominated by Ringed Wallaby Grass (*Rytidosperma caespitosum*) and Rough Speargrass (*Austrostipa scabra*). An upper stratum is absent. The PCT was distinguished by presenting as a shrubland dominated by Dillon Bush (*Nitraria billardierei*). |
| Associated species present | Dillon Bush (*Nitraria billardierei*), Cotton Bush (*Maireana aphylla*), Black Rolypoly (*Sclerolaena muricata*), Giant Redburr (*Sclerolaena tricuspis*), Ringed Wallaby Grass (*Rytidosperma caespitosum*), Rough Speargrass (*Austrostipa scabra*), Walwhalleya *proluta*, Climbing Saltbush (*Einadia nutans*) |
| Vegetation Zones | One distinct condition state for areas mapped as PCT 163 occurs within the Subject Land, as outlined below:<br>• Moderate condition, herein labelled as Vegetation Zone 7 (VZ07)<br>The vegetation zone was attributed to moderate condition due to moderate species diversity (28 native species recorded), and low levels of exotic species incursion.<br>The VIS for VZ07 is 64. This was a result of shrub and forb species diversity and cover falling below the benchmarks. |

| **PCT 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones** | |
|---|---|
| Area (ha) within Subject Land | 28.82 |
| BAM plots within PCT | WF24<br>WF39<br>WF40<br>WF43<br>WF54<br>SF28<br>SF29 |

PHOTOGRAPH 7 PCT 163, VEGETATION ZONE 7

**PCT 164 - Cotton Bush open shrubland**

TABLE 4-11 PCT 164 DESCRIPTION

| **PCT 164 - Cotton Bush open shrubland of the semi-arid (warm) zone** | |
|---|---|
| PCT ID | 164 |
| PCT name | Cotton Bush open shrubland of the semi-arid (warm) zone |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Riverine Chenopod Shrublands |
| TEC Status | PCT 164 has no associated BC Act or EPBC Act listed TECs |
| Percent cleared value | 8.00% |
| NSW BioNet Vegetation Classification PCT Description | Low to mid-high sparse to mid-dense shrubland usually about 0.8 m high dominated by Cotton Bush (*Maireana aphylla*) with occasional remnant shrubs of Bladder Saltbush (*Atriplex vesicaria* s.l.). Smaller shrubs include copperburrs (*Sclerolaena muricata, Sclerolaena tricuspis* and *Sclerolaena bicornis*) and annual saltbushes (*Atriplex lindleyi, Atriplex leptocarpa*). The sparse ground cover contains native forbs such as paper daisies (Rhodanthe spp.), *Minuria cunninghamii*, and *Calotis scabiosifolia* var. *scabiosifolia* and grasses such as *Austrodanthonia caespitosa*. Often contains a very high cover of weed species including *Hordeum* spp., *Bromus* spp., *Vulpia* spp., *Medicago* spp., *Avena fatua* and *Lolium perenne*. |
| Description within Subject Land | PCT 164 is the most extensively occurring PCT across the Subject Land. It occurs within the Subject Land as a low to mid high shrubland between 0.5 and 1.2 m in height, it occurs on alluvial plains associated with the Murrumbidgee River on red, red-brown and grey-brown clay soils. The shrub layer is dominated by Cotton Bush (*Maireana aphylla*) with Saltbush (*Atriplex* spp.) and Copperburr (*Sclerolaena* spp.) species also commonly recorded. The groundcover is dominated by Ringed Wallaby Grass (*Rytidosperma caespitosum*) or Lolium perenne. *Rhodanthe* spp., *Minuria cunninghamii* and *Vulpia* spp. were also commonly recorded. An upper stratum is absent. The PCT was distinguished by presenting as shrubland dominated by Cotton Bush (*Maireana aphylla*).<br><br>A small area of PCT 164 was found to be dominated by *Malacocera tricornis* and was therefore allocated an individual vegetation zone. |
| Associated species present | Cotton Bush (*Maireana aphylla*), Dillon Bush (*Nitraria billardierei*), Black Rolypoly (*Sclerolaena muricata*), Bladder Saltbush (*Atriplex vesicaria*), Lignum (*Duma florulenta*), Canegrass (*Eragrostis australasica*), Thorny Saltbush (*Rhagodia spinescens*), Hairy Bluebush (*Maireana pentagona*), Giant Redburr (*Sclerolaena tricuspis*), Ringed Wallaby Grass (*Rytidosperma caespitosum*), Fairy Grass (*Sporobolus caroli*), Small White Sunray (*Rhodanthe corymbiflora*), Pale Beauty-heads (*Calocephalus sonderi*), Small Copper-wire Dairy (*Podolepis muelleri*), Rough Burr-daisy (*Calotis scabiosifolia*), Bush Minuria (*Minuria cunninghamii*), Short-winged Copperburr (*Sclerolaena brachyptera*), Soft Horns (*Malacocera tricornis*), Slender-fruit Saltbush (*Atriplex leptocarpa*) |
| Vegetation Zones | Three distinct condition state for areas mapped as PCT 164 occur within the Subject Land, as outlined below:<br><br>• Good condition, herein labelled as Vegetation Zone 8 (VZ08) |

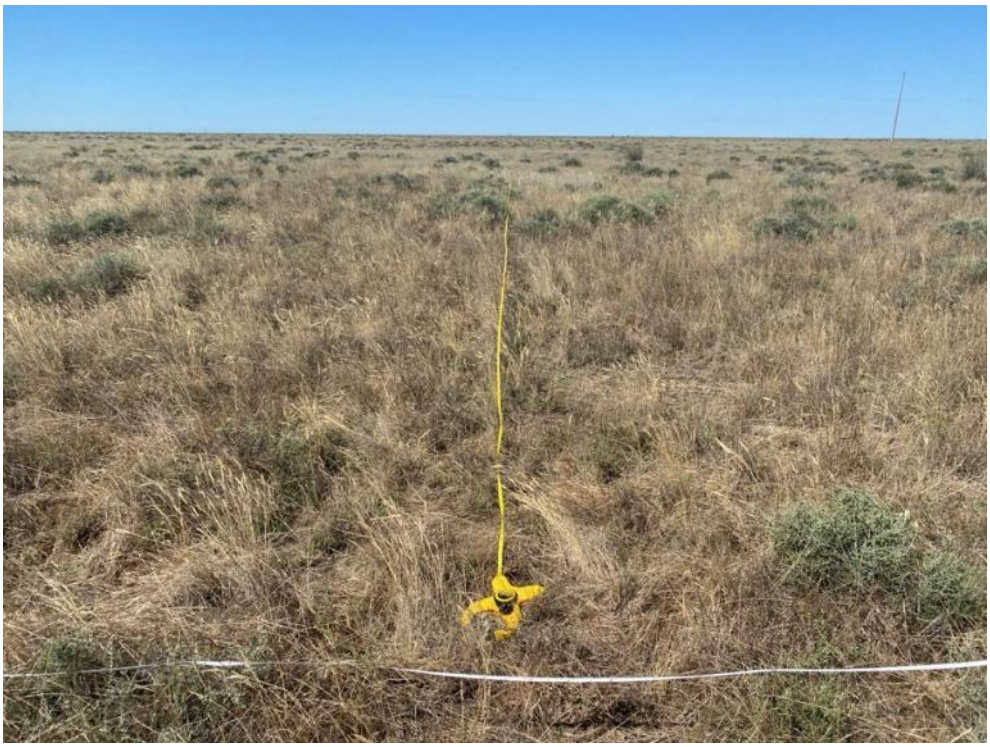
<table>
<tr><th colspan="4">PCT 164 - Cotton Bush open shrubland of the semi-arid (warm) zone</th></tr>
<tr><td></td><td colspan="3">The vegetation zone was attributed to good condition due to high species diversity (34 native species recorded), and low levels of exotic species incursion. The VIS for VZ08 is 80.4. This was a result of shrub, grass and forb species diversity and cover falling slightly below the benchmarks.<br><br>• Malacocera condition, herein labelled as Vegetation Zone 9 (VZ09)<br><br>The vegetation zone was attributed to Malacocera condition due to Malacocera tricornis being the dominant species while still presenting as PCT 164. The VIS for VZ09 is 80.5. This was a result of grass and forb covers falling below the benchmarks.<br><br>• Moderate condition, herein labelled as Vegetation Zone 10 (VZ10)<br><br>The vegetation zone was attributed to moderate condition due to high species diversity (33 native species recorded) but moderate levels of exotic species incursion, particularly Rough Dog’s Tail (Cynosurus echinatus) and Lolium perenne. The VIS for VZ10 is 39.8. This was a result of shrub and forb species diversity and cover falling below the benchmarks.</td></tr>
<tr><td>Area (ha) within Subject Land</td><td colspan="3">841.50 (VZ08) / 6.81 (VZ09) / 1029.77 (VZ10)</td></tr>
<tr><td>BAM plots within PCT</td><td><u>VZ08</u><br>WF03<br>WF08<br>WF18<br>WF19<br>WF23<br>WF30<br>WF32<br>WF33<br>WF45</td><td><u>VZ09</u><br>WF35<br>WF36<br>WF47</td><td><u>VZ10</u><br>WF01<br>WF04<br>WF05<br>WF09<br>WF13<br>WF14<br>WF21<br>WF26<br>WF31<br>WF37<br>WF44</td></tr>
</table>

## PCT 164 - Cotton Bush open shrubland of the semi-arid (warm) zone

PHOTOGRAPH 8 PCT 164, VEGETATION ZONE 8

PHOTOGRAPH 9 PCT 164, VEGETATION ZONE 9

## PCT 164 - Cotton Bush open shrubland of the semi-arid (warm) zone



PHOTOGRAPH 10 PCT 164, VEGETATION ZONE 10

## PCT 216 - Black Roly Poly low open shrubland

TABLE 4-12 PCT 216 DESCRIPTION

| **PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion** | |
|---|---|
| PCT ID | 216 |
| PCT name | Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Riverine Chenopod Shrublands |
| TEC Status | PCT 216 has no associated BC Act or EPBC Act listed TECs |
| Percent cleared value | 0.00% (not assessed) |
| NSW BioNet Vegetation Classification PCT Description | Low or mid-high open chenopod shrubland dominated by Black Roly Poly (*Sclerolaena muricata* var. *semiglabra*), with other low shrubs such as *Sclerolaena diacantha, Maireana microphylla, Leiocarpa panaetioides* and *Teucrium racemosum*. Scattered Black Box trees (*Eucalyptus largiflorens*) may be present. The ground cover is sparse and includes forbs such as *Atriplex semibaccata, Vittadinia cuneata, Vittadinia pterochaeta, Rhodanthe corymbiflora, Sida trichopoda, Geranium solanderi* var. *solanderi* and grass species such as *Austrostipa scabra* subsp. *scabra*, *Austrodanthonia caespitosa, Walwhalleya proluta* and *Chloris truncata*. Occurs on grey and brown clays on alluvial plains primarily in the Riverina and Murray-Darling Depression Bioregions of south-western NSW. Probably a derived community from a previous Bladder Saltbush-dominated community. Grades into Bladder Saltbush, Cotton Bush and Dillon Bush communities. |
| Description within Subject Land | PCT 216 within the Subject Land occurs as a sparse, low shrubland approximately 0.6 m in height. It occurs on alluvial plains on red-brown clay soils. The shrub layer is dominated by Black Roly Poly (*Sclerolaena muricata*) with Grey Copperburr (*Sclerolaena diacantha*) also occurring. The groundcover includes Climbing Saltbush (*Einadia nutans*) and Ringed Wallaby Grass (*Rytidosperma caespitosum*). An upper stratum is absent. The PCT was distinguished by presenting as a shrubland dominated by Black Roly Poly (*Sclerolaena muricata*). |
| Associated species present | Black Roly Poly (*Sclerolaena muricata*), Grey Copperburr (*Sclerolaena diacantha*), Climbing Saltbush (*Einadia nutans*), Ringed Wallaby Grass (*Rytidosperma caespitosum*) |
| Vegetation Zones | One distinct condition state for areas mapped as PCT 216 occurs within the Subject Land, as outlined below:<br><br>• Low condition, herein labelled as Vegetation Zone 11 (VZ11)<br><br>The vegetation zone was attributed to low condition due to low species diversity (11 native species recorded), and moderate levels of exotic species' incursion, particularly *Lolium perenne*.<br>The VIS for VZ11 is 34.2. This was a result of shrub and forb cover falling significantly below the benchmarks. |
| Area (ha) within Subject Land | 1.18 |
| BAM plots within PCT | WF25 |

**PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion**

PHOTOGRAPH 11 PCT 216, VEGETATION ZONE 11

**Haul Route**

Vegetation within the Haul Route DF has been assessed as aligning with the BioNet Vegetation Classification PCTs. These are identified within Table 4-13 with the extent shown in Figure 4-2. A detailed description of each PCT within the Subject Land is provided in PCT 123 - Mulga - Dead Finish on stony hills

Table 4-14, PCT 155 - Bluebush shrubland on stony rises and downs

Table 4-15 and Table 4-16.

Three locations along the proposed haul route, associated with PP07A, PP08A and PP08B (Haul Route DF), are consistent with the BioNet Vegetation Classification of PCTs. PP09 was determined to contain non-native vegetation and is a disturbed urban environment. PP10 does contain native vegetation but has been assessed as part of the Project's Subject Land.

TABLE 4-13 PLANT COMMUNITY TYPES (HAUL ROUTE DF)

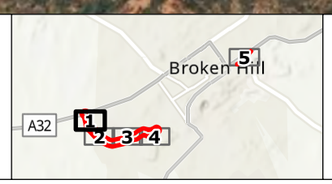
| PCT ID | PCT Name | Area (ha) |
|---|---|---|
| 123 | Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion | 0.29 |
| 155 | Bluebush shrubland on stony rises and downs in the arid and semi-arid zones | 0.69 |
| 158 | Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) | 0.22 |
| **Total Area** | | 1.20 |

Barrier Highway

Barrier Highway

**PCT ID - PCT Name**

- 0 - Infrastructure
- 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones
- Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F4-2 Plant Community Types (Haul Route DF) Map 1

**The Plains Wind Farm**
**Amended BDAR**

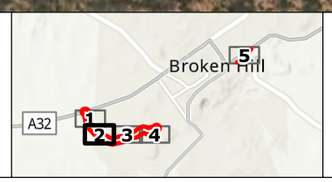
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Infrastructure
- 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones
- Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F4-2 Plant Community Types (Haul Route DF) Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Infrastructure
- 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones
- 158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)
- Haul Route Disturbance Footprint

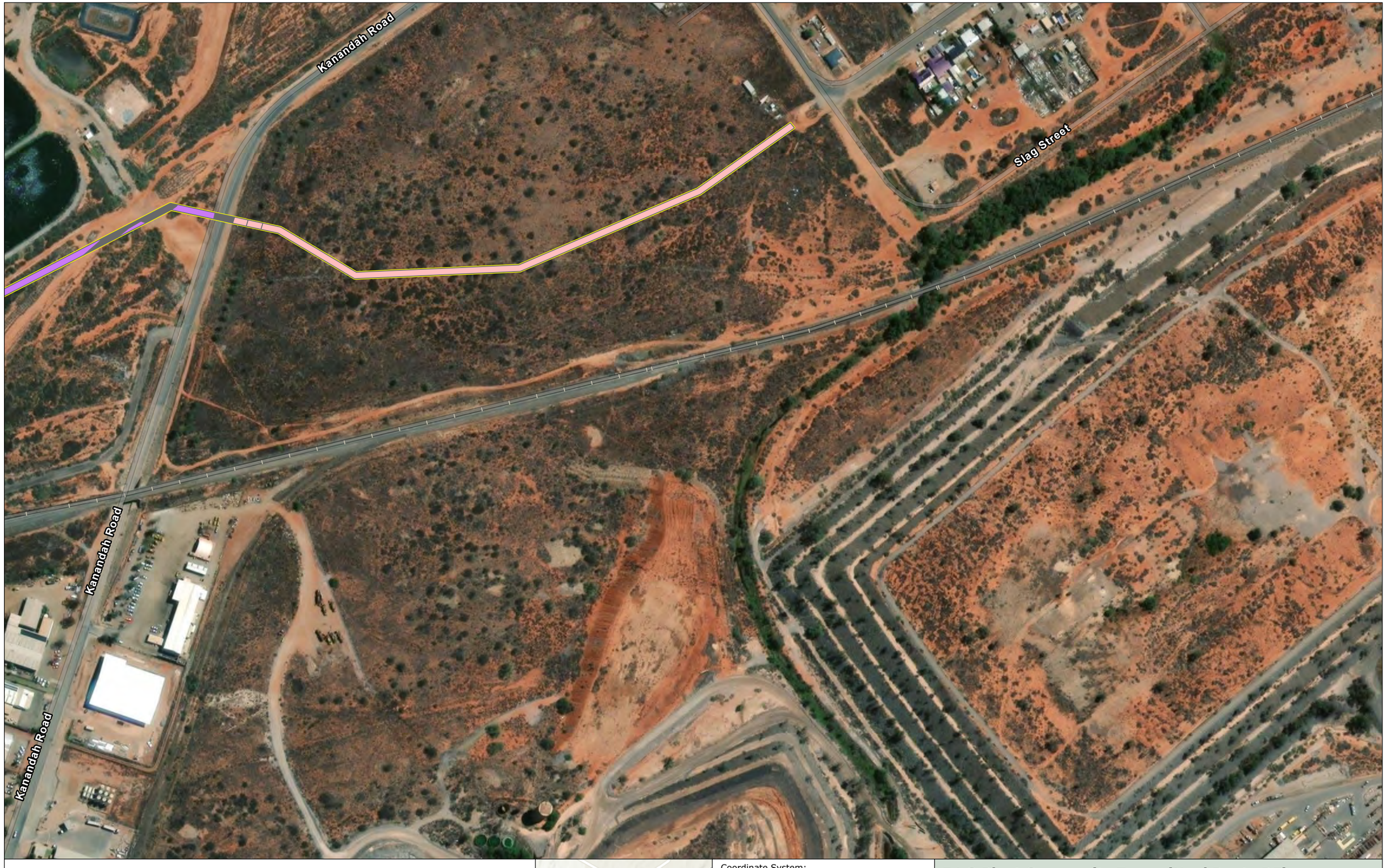
Coordinate System: GDA2020 MGA Zone 54
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 50 100m
1:3,000

# F4-2 Plant Community Types (Haul Route DF) Map 3

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx




**PCT ID - PCT Name**

- 0 - Infrastructure
- 123 - Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion
- 158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)
- Haul Route Disturbance Footprint

Coordinate System: GDA2020 MGA Zone 54
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 50 100m
1:3,000

# F4-2 Plant Community Types (Haul Route DF) Map 4

**The Plains Wind Farm Amended BDAR**
Client: Engie

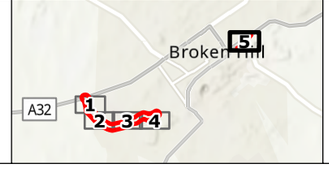
ERM

**PCT ID - PCT Name**

0 - Infrastructure

158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)

Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F4-2 Plant Community Types (Haul Route DF) Map 5

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT 123 - Mulga - Dead Finish on stony hills**

TABLE 4-14 PCT 123 DESCRIPTION

| **PCT 123 - Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion** | |
|---|---|
| PCT ID | 123 |
| PCT name | Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion |
| Vegetation formation | Arid Shrublands (Acacia sub-formation) |
| Vegetation class | Stony Desert Mulga Shrublands |
| TEC Status | PCT 123 has no associated BC Act or EPBC Act listed TECs |
| Percent cleared value | 17% |
| NSW BioNet Vegetation Classification PCT Description | Tall open shrubland of low open woodland dominated by Mulga (*Acacia aneura*) and Dead Finish (*Acacia tetrogonophylla*) often with Black Oak (*Casuarina pauper*) as a small tree. The understorey is usually sparse. Shrub species include Umbrella Mulga (*Acacia brachystachya*), Bastard Mulga (*Acacia sibirica*), *Eremophila duttonii, Eremophila freelingii, Eremophila la trobei*, Emubush (*Eremophila longifolia*), various species of hopbush (*Dodonaea* spp.), mintbush (*Prostanthera striatiflora*) and (Silver Senna) Senna form taxon 'artemisioides'. The ground cover varies depending on soil depth. Where there is reasonable soil depth scattered plants of bluebush, including *Maireana triptera* and *Maireana pyamidata* may be present with saltbushes including Bladder Saltbush (*Atriplex vesicaria*). On rockier or heavily grazed sites copperburrs (*Sclerolaena* spp.) predominate including *Sclerolaena convexula*. Common forb species include *Ptilotus obovatus* var. *obovatus, Ptilotus atriplicifolius* var. *atriplicifolius, Solanum quadriloculatum Chenopodium melanocarpum* and *Tetragonia eremaea*. Grass species include Bottle Washer (*Ennaepogon avenacea*), Kerosene Grass (*Aristida contorta*) and *Digitaria brownii*. Occurs on skeletal or shallow, stony, red earth soils on crests and steep slopes and terraced flats on stony hills and outcrops in far north western NSW from Milparinka in the north to its main occurrence on the Barrier Range and near Mutawintji in the south. It also occurs on the Peery Range and towards Tilpa in the east and extends westwards to the Olary Sur and eastern Flinders Ranges in South Australia. The main threat is overgrazing by stock and goats preventing the establishment of a new generation of Acacia and other species. Some species may be becoming rare due to goat grazing. Dieback in Mulga is common. For these reasons the long-term persistence of this community in some places is threatened. It may become a threatened community if regeneration of key species does not occur. Stands of the Hill White Cypress Pine community (ID68) are scattered through this community. |
| Description within Subject Land | PCT 123 within the Haul Route DF presented as a tall open shrubland with Mulga (*Acacia aneura*), Umbrella mulga (*Acacia brachystachya*), *Senna artemisioides* and *Sida petrophylla* within the shrub layer and a sparse groundcover mostly comprised of forbs with very little grass present. An upper stratum was absent. The PCT was distinguished by the vegetation formation and dominant shrub species present. |
| Associated species present | Mulga (*Acacia aneura*), Umbrella Mulga (*Acacia brachystachya*), Prickly Wattle (*Acacia victoriae* subsp. *arida*), *Senna artemisioides, Sida petrophila,* Ruby Saltbush (*Enchylaena tomentosa*), Silver Tails (*Ptilotus obovatus*), *Austrostipa nitida*, Bottle Washers (*Enneapogon avenaceus*), Thargomindah Nightshade (*Solanum sturtianum*), |

| **PCT 123 - Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion** | |
|---|---|
| | Climbing Saltbush (*Einadia nutans*) and Blue Crowfoot (*Erodium crinitum*) |
| Vegetation Zones | One distinct condition state for areas mapped as PCT 123 occurs within the Haul Route DF, as outlined below:<br><br>• Moderate condition, herein labelled as Vegetation Zone 12 (VZ12)<br><br>The vegetation zone was attributed to moderate condition due to high species diversity (26 native species recorded) but with a range of perennial and annual exotic species recorded, some high threat species, such as African Boxthorn (*Lycium ferocissimum*) and Ward's Weed (*Carrichtera annua*).<br>The VIS for VZ12 is 60.7. This was a result of moderate species diversity but a lack of tree and fern life forms and low grass diversity.<br>Note that a line of planted Gum coolibah (*Eucalyptus intertexta)* bisects the western area of PCT 123 in a north – south direction (refer to Figure 4-2). As the shrub and groundcover vegetation in this area conformed to PCT 123, the area was too small for a BAM plot (0.007 ha), and individuals of the tree species did not occur within the Haul Route DF, this area was incorporated into PCT 123 with the same condition state. |
| Area (ha) within Subject Land | 0.29 |
| BAM plots within PCT | BAM01_139 |

PHOTOGRAPH 12 PCT 123, VEGETATION ZONE 12

**PCT 155 - Bluebush shrubland on stony rises and downs**

TABLE 4-15 PCT 155 DESCRIPTION

| **PCT 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones** | |
|---|---|
| PCT ID | 155 |
| PCT name | Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Gibber Chenopod Shrublands |
| TEC Status | PCT 155 is associated with the following TEC:<br>• *Acacia loderi* shrublands – *Endangered* (Listed BC Act) (Part) |
| Percent cleared value | 50% |
| NSW BioNet Vegetation Classification PCT Description | Mid-high open shrubland dominated several species of bluebushes but mainly Black Bluebush (*Maireana pyramidata*) with Pearl Bluebush (*Maireana sedifolia*) occurring in more calcareous sites. Other shrubs include Thorny Saltbush (*Rhagodia spinescens*), Low Bluebush (*Maireana astrotricha*) and Bladder Saltbush (*Atriplex vesicaria* sens lat). Small shrubs include saltbushes such as *Atriplex fissivalvis* and *Atriplex stipitata*, Buckbush (*Salsola tragus*), Ruby Saltbush (*Enchylaena tomentosa*) and copperburrs such as *Sclerolaena longicuspis, Sclerolaena tricuspis, Sclerolaena obliquicuspis* and *Sclerolaena intricata*. Short grasses include bottlewasher (*Enneapogon avenaceus*), Neverfail (*Eragrostis setifolia*) and Button Grass (*Dactyloctenium radulans*). Ephemeral forbs are common after rain including *Sida intricata, Goodenia fascicularis, Portulaca oleracea, Solanum quadriloculatum, Swainsona campylantha, Lotus cruentus, Abutilon halophilum, Ixiochlamys cuneifolia, Brachyscome lineariloba* and *Rhodanthe floribunda*. Weed species include *Schismus barbatus* and *Carrichtera annua*. This community occurs on red or brown clays, calcareous red loams and skeletal soils derived from shales, ferruginous sandstone and other substrates, often containing gibbers on undulating gibber plains, stony rises, adjoining slopes and associated drainage lines. Distributed in the Barrier Ranges north of Broken Hill and the Noonthorangee Range west of White Cliffs in the arid zone of far north-western NSW and extending into South Australia. *Maireana sedifolia* tends to be more common on calcareous outcrops and more limey soil and in western-most areas while *Maireana pyramidata* dominates along drainage lines and on less limey soils. Degraded through grazing but large areas remain. May become threatened over the long term if grazing is too intense but as of 2005 this community is not threatened but is poorly represented in protected areas. |
| Description within Subject Land | PCT 155 within the Haul Route DF presents as a mid-dense shrubland dominated by Black Bluebush (*Maireana pyramidata*), occurring with other Bluebush species (*M. sclerolaenoides, M. turbinata, M. triptera*), as well as Cannonball Burr (*Dissocarpus paradoxus*) and Saltbush species (*Atriplex* spp.). The groundcover consists of *Austrostipa nitida*, Bottle Washers (*Enneapogon avenaceus*) and a range of native and exotic forbs. The PCT was distinguished by occurring as a shrubland dominated by Bluebush species. |

| **PCT 155 - Bluebush shrubland on stony rises and downs in the arid and semi-arid zones** | |
|---|---|
| Associated species present | Black Bluebush (*Maireana pyramidata*), Pearl Bluebush (*Maireana sedifolia*), Thorny Saltbush (*Rhagodia spinescens*), *Maireana sclerolaenoides*, Prickly Wattle (*Acacia victoriae* subsp. *arida*), *Senna artemisioides*, Bladder Saltbush (*Atriplex vesicaria*), Giant Redburr (*Sclerolaena tricuspis*), Bottle Washers (*Enneapogon avenaceus*), *Austrostipa nitida*, Salt Copperburr (*Sclerolaena ventricosa*), Ruby Saltbush (*Enchylaena tomentosa*), Corrugated Sida (*Sida corrugata*), Red-flowered Lotus (*Lotus cruentus*), *Abutilon halophilum,* Mallee Saltbush (*Atriplex stipitata*), Mallee Goodenia (*Goodenia fascicularis*), Variable Daisy (*Brachyscome ciliaris*), Native Carrot (*Daucus glochidiatus*), Climbing Saltbush (*Einadia nutans*) and Ringed Wallaby Grass (*Rytidosperma caespitosum*) |
| Vegetation Zones | One condition state occurs for areas mapped as PCT 155 within the Haul Route DF, as outlined below:<br><br>• Low condition, herein labelled as Vegetation Zone 13 (VZ13)<br><br>The vegetation zone was attributed to low condition due to high species diversity (53 native species recorded) but moderate levels of exotic species incursion, particularly Ward's Weed (*Carrichtera annua*).<br>The VIS for VZ13 is 36.8. The low score is due to the lack of shrub cover when compared to the benchmark. |
| Area (ha) within Subject Land | 0.69 |
| BAM plots within PCT | BAM03_352<br>BAM04_308<br>BAM05_242<br>BAM06_231 |

PHOTOGRAPH 13 PCT 155, VEGETATION ZONE 13

**PCT 158 - Old Man Saltbush - mixed chenopod shrubland**

TABLE 4-16 PCT 158 DESCRIPTION

| **PCT 158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)** | |
|---|---|
| PCT ID | 158 |
| PCT name | Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Vegetation formation | Arid Shrublands (Chenopod sub-formation) |
| Vegetation class | Riverine Chenopod Shrublands |
| TEC Status | PCT 158 is associated with the following TEC:<br>• Artesian Springs Ecological Community in the Great Artesian Basin – *Critically Endangered* (BC Act) (part) |
| Percent cleared value | 88% |
| NSW BioNet Vegetation Classification PCT Description | Tall shrubland to two metres high, dominated by Old Man Saltbush (*Atriplex nummularia*) often with Nitre Goosefoot (*Chenopodium nitrariaceum*), Black Bluebush (*Maireana pyramidata*) with *M. astrotricha* in far western areas and Lignum (*Muehlenbeckia florulenta*) with a lower shrub layer composed of copperburrs (*Sclerolaena* spp.) and other *Atriplex* species. The ground layer varies but typically is composed of forbs such as *Rhodanthe* spp., *Tetragonia eremaea, Bulbine alata, Centipeda minima* var. *minima, Goodenia pinnatifida* and *Plantago cunninghamii* and grasses such as *Chloris truncata* and *Sporobolus actinocladus*. In some areas the shrubland may be restricted in height and very sparse. Occurs in restricted patches on grey clay or texture contrast sandy clay soils on periodically inundated alluvial plains and rises on or adjacent to floodplains in the upper Darling, Paroo and Bulloo Rivers and other rivers in north western NSW. Also occurs on heavy clays on the beds of pans between dunes in dunefield country along with Canegrass (*Eragrostis australasica*) - for example in the Bulloo Overflow. Southernmost occurrence is near Wilcannia where it has apparently been severely reduced in extent. Also occurs along drainage lines in Bladder Saltbush communities. Prior to European settlement, and the introduction of stock and feral animals, this community would have covered large areas. Continuous grazing has eliminated a most of the Old Man Saltbush particularly from its eastern range in the northern NSW wheatbelt. This shrubland often grades into and becomes an understorey of Black Box or Coolabah communities - e.g. along the Macquarie River in the east and on the floodplain of the Darling River to the west. Over the last few decades, the species Old Man Saltbush has been planted in restoration projects including in parts of the previously denuded landscape surrounding the Broken Hill mines. It is also planted on properties for fodder and as a means of reducing rising saline water tables - including in parts east of its previous known range. |
| Description within Subject Land | PCT 158 within the Haul Route DF presents as a dense shrubland dominated by Old Man Saltbush (*Atriplex nummularia*), occurring with Cannonball Burr (*Dissocarpus paradoxus*), Black Bluebush (*Maireana pyramidata*) and Copperburrs (*Sclerolaena* spp.). The sparse groundcover consists of *Austrostipa nitida* and a range of native and exotic forbs. The PCT was distinguished by occurring as a shrubland dominated by Old Man Saltbush.<br>Note that it is possible that PCT 158 within the Haul Route DF consists of planted Old Man Saltbush for restoration purposes. This may explain why the groundcover species are not a good match for the PCT. |

| **PCT 158 - Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)** | |
|---|---|
| Associated species present | Old Man Saltbush (*Atriplex nummularia*), Black Bluebush (*Maireana pyramidata*) and Cannonball Burr (*Dissocarpus paradoxus*). |
| Vegetation Zones | One distinct condition state occurs for areas mapped as PCT 158 within the Haul Route DF, as outlined below:<br>• Moderate condition, herein labelled as Vegetation Zone 14 (VZ14)<br>The vegetation zone was attributed to moderate condition due to containing a mix of shrubs, forbs and exotic species (12 native species, 6 exotic species) with a dominant shrubby canopy of Old Man Saltbush.<br>The VIS for VZ14 is 61.5. This score is a result of tree, shrub, grass and forb species richness and cover falling below the benchmarks. |
| Area (ha) within Subject Land | 0.22 |
| BAM plots within PCT | BAM02_036 |

PHOTOGRAPH 14 PCT 158, VEGETATION ZONE 14

### 4.1.4 THREATENED ECOLOGICAL COMMUNITIES

Four (4) EPBC Act TECs were identified through desktop assessment using the Protected Matters Search Tool (Appendix F) (Cwth DCCEEW, 2024b) as having the potential to occur within the Subject Land. An additional three (3) TECs listed under either the BC Act and/or EPBC Act have the potential to occur based on their association with PCTs. These communities are presented in Table 4-17.

Based on field verification surveys undertaken across the Subject Land, no TECs have been identified as occurring within the Subject Land.

TABLE 4-17 THREATENED ECOLOGICAL COMMUNITIES INVESTIGATION (SUBJECT LAND)

| TEC | BC Act | EPBC Act | Associated PCT | Recorded within the Subject Land |
|---|---|---|---|---|
| *Acacia loderi* shrublands | Endangered | - | PCT 153 | No – No form of *Acacia* shrublands recorded across the Subject Land |
| Artesian Springs Ecological Community in the Great Artesian Basin | Critically Endangered | - | PCT 24, 160, 163 | No – Subject Land is situated outside distribution of TEC; TEC is restricted to northwest NSW. |
| Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions | - | Endangered | - | No - No associated PCTs nor observations of the key diagnostic species, Buloke (*Allocasuarina luehmannii*), recorded across Subject Land. |
| Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia | - | Endangered | - | No – No associated PCTs nor observations of the key diagnostic species, Grey Box (*Eucalyptus microcarpa*), recorded across Subject Land. |
| Natural Grasslands of the Murray Valley Plains | - | Critically Endangered | PCT 44 | No – Further discussed in section 4.1.4.1. |
| Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions | - | Critically Endangered | - | No - No associated PCTs nor mallee box woodland communities recorded across Subject Land. |
| Weeping Myall Woodlands | - | Endangered | - | No - No associated PCTs nor observations of the key diagnostic species, Weeping Myall (*Acacia pendula*), recorded across Subject Land.<br>This TEC is present in the PREP area. However, impacts to the community have been avoided, as discussed in Section 4.1.4.1. |

It is noted that two TECs have been mapped within the broader PREP area but have been avoided in full by the Project. These are:

- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions TEC; and
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions TEC.

This is discussed in Section 7.

#### 4.1.4.1 NATURAL GRASSLANDS OF THE MURRAY VALLEY PLAINS

The Natural Grasslands of the Murray Valley Plains TEC is listed as 'critically endangered' under the EPBC Act and is associated with PCT 44 on the Subject Land. A substantial part of the ecological community lies within Victoria, in which it is listed under the *Flora and Fauna Guarantee Act* (FFG Act) as the threatened Northern Plains Grassland ecological community.

According to the Commonwealth's Threatened Species Scientific Committee (Cwth TSSC), the TEC is characterised by native perennial tussock grasses with broad-leaved herbs interspersed between the tussocks and a lack of woody vegetation. The ecological community may display as a forb or herbland, depending on seasonal conditions, and forbs may be in equal or higher abundance to grasses. Soils on which the ecological community occurs are mostly restricted to heavy-textured grey, brown and red clays (Cwth TSSC, 2012)

The Conservation Advice for the community (Cwth DSEWPC, 2012) details that within Murrumbidgee IBRA subregion it is possible to distinguish the natural grasslands ecological community from derived grasslands, as follows:

- The patch should contain at least as many, preferably more, of the species in Table 1(A) than in Table 1(B); and
- The species in Table 1(A) are characteristic of the natural grasslands ecological community and not derived grasslands, and the opposite applies to Table 1(B).

Based on field surveys undertaken to date, one species from Table 1(A) in the Conservation Advice has been identified. Most of the species recorded in BAM plots undertaken in December 2024 in PCT 44 were those from Table 1(B) in the Conservation Advice (Cwth DSEWPC, 2012). The associated summary is presented in Table 4-18 .

Despite the Conservation Advice recommending that assessment of the Natural Grasslands of the Murray Valley Plains TEC be undertaken in late winter to spring, the majority of the species from Table 1(A) (Cwth DSEWPC, 2012) were detectable in December 2024 when the BAM plots were conducted. Flowering times for each species listed in Table 1(A), as described in PlantNet (Royal Botanic Gardens and Domain Trust, 2025), are provided in Table 4-19. With the exception of four (4) species, all species with a prescribed flowering time available on PlantNet were in season in December and thus accurate identification was possible.

Further assessment against key diagnostic features is provided in Table 4-20.

## TABLE 4-18 SPECIES ASSESSMENT - NATURAL GRASSLANDS OF THE MURRAY VALLEY PLAINS TEC

| BAM Plot ID | Table 1(A) (Cwth DSEWPC, 2012) species recorded in BAM plots | Table 1(B) (Cwth DSEWPC, 2012) species recorded in BAM plots |
|---|---|---|
| WF07 | *Austrostipa nodosa* | *Austrostipa scabra, Einadia nutans, Enchylaena tomentosa, Sclerolaena muricata* |
| WF12 | None | *Chenopodium nitrariaceum, Enchylaena tomentosa, Marsilea drummondii, Sporobolus caroli* |
| WF20 | None | *Atriplex vesicaria, Austrostipa scabra, Sclerolaena tricuspis, Sida trichopoda* |
| WF21 | None | *Atriplex vesicaria, Einadia nutans, Sclerolaena tricuspis, Sida trichopoda* |
| WF48 | None | *Atriplex vesicaria, Austrostipa scabra, Malacocera tricornis, Nitraria billardierei, Sclerolaena brachyptera, Sida trichopoda, Sporobolus caroli* |
| SF25 | None | *Atriplex vesicaria, Marsilea drummondii, Rhagodia spinescens, Sclerolaena brachyptera, Sclerolaena diacantha, Sclerolaena muricata, Sclerolaena tricuspis, Sida trichopoda, Sporobolus caroli* |
| SF26 | None | *Atriplex vesicaria, Austrostipa scabra, Rhagodia spinescens, Sclerolaena brachyptera, Sclerolaena diacantha, Sclerolaena muricata, Sclerolaena tricuspis, Sporobolus caroli* |

## TABLE 4-19 FLOWERING TIMES OF SPECIES FROM TABLE 1(A)

| Species | Flowering Time (Royal Botanic Gardens and Domain Trust, 2025) |
|---|---|
| *Alternanthera* sp. A | No flowering time specified; a perennial herb |
| *Arthropodium fimbriatum* | Flowers September to February |
| *Arthropodium milleflorum* | Flowers November to February |
| *Asperula conferta* | Flowers Spring to Summer |
| *Rytidosperma duttonianum* | Flowers Spring to Summer |
| *Austrostipa aristiglumis* | Flowers Spring to Summer |
| *Austrostipa nodosa* | Flowers in response to rain (recorded) |
| *Brachyscome chrysoglossa* | Flowers September to January |
| *Bulbine bulbosa* | Flowers September to March |
| *Calocephalus citreus* | Flowers late Spring to Autumn |
| *Chrysocephalum apiculatum* | Flowers throughout the year but mostly Spring |
| *Crassula decumbens* | No flowering time specified |
| *Eryngium plantagineum (Eryngium paludosum)* | Flowers mainly September to January |
| *Hyalosperma glutinosum* | Flowers in Spring |

| Species | Flowering Time (Royal Botanic Gardens and Domain Trust, 2025) |
|---|---|
| *Leiocarpa panaetioides* | Flowers Spring to Summer |
| *Leptorhynchos squamatus* | Flowers Summer to Autumn |
| *Linum marginale* | Flowers Spring to Summer |
| *Maireana excavata* | No flowering time specified |
| *Myriocephalus rhizocephalus* | Flowers in Spring |
| *Plantago gaudichaudii* | Flowers mostly September to April |
| *Ptilotus nobilis subsp. nobilis* | No flowering time specified |
| *Pycnosorus globosus* | Flowers early Spring to Summer (detected elsewhere in Subject Land) |
| *Swainsona behriana* | No flowering time specified |
| *Swainsona murrayana* | No flowering time specified (was surveyed as a threatened species in September; detected in Subject Land) |
| *Swainsona plagiotropis* | No flowering time specified (was surveyed as a threatened species in September; not detected) |
| *Swainsona procumbens* | No flowering time specified (detected elsewhere in Subject Land) |
| *Triptilodiscus pygmaeus* | Flowers in Spring |
| *Wahlenbergia gracilenta* | Flowers Winter to Summer |
| *Wurmbea dioica* | Flowers in Spring |

## TABLE 4-20 KEY DIAGNOSTIC FEATURES ASSESSMENT - NATURAL GRASSLANDS OF THE MURRAY VALLEY PLAINS TEC

| Key Characteristic (Cwth DSEWPC, 2012) | Response |
|---|---|
| In the Riverina Bioregion, Murray Darling Depression Bioregion or NSW South Western Slopes Bioregion? | **Yes,** Subject Land is within the Riverina Bioregion. |
| On a landscape of flat alluvial lowland plains with heavy-textured grey, brown and red clays? | **Yes**, landscape across the Subject Land consists of grey, brown and red clays. However, the Natural Grasslands of the Murray Valley Plains TEC is associated with Quaternary alluvial sediments (Cwth DSEWPC, 2012); the Subject Land is dominated by Cenozoic alluvial floodplain deposits (NSW DPI, 2025b). |
| Characteristic genera are present:<br>Grasses – *Rytidosperma, Austrostipa, Chloris* and *Enteropogon* species<br>Forbs – *Arthropodium, Bulbine, Calotis, Chrysocephalum, Leptorhynchos, Minuria, Ptilotus, Rhodanthe, Sida* and *Swainsona* species<br>Small shrubs - *Atriplex* and *Maireana* species | **Yes**, a few species present – one grass species (*Austrostipa* sp.), one forb species (*Sida* sp.) and one small shrub species (*Atriplex* sp.). |
| Trees and large shrubs >1 m are generally absent to sparse? | **Yes**, trees and shrubs >1 m generally absent. |

| Key Characteristic (Cwth DSEWPC, 2012) | Response |
|---|---|
| Presence or past records of 'diagnostic' indicator fauna species such as the Plains-wanderer, Striped Legless Lizard, Hooded Scaly-foot or Curl Snake within the patch? | **Yes**, indicator species present (Plains-wanderer) |
| The following applies to grasslands occurring in NSW in the Murrumbidgee IBRA subregion: | |
| There are more species present from Table 1(A) than in Table1(B)? | **No,** one species was recorded from Table 1(A) while 14 species were recorded from Table 1(B). As many of the BAM plots contained Bladder Saltbush (*Atriplex vesicaria*), this indicates that PCT 44 within the Subject Land may be derived from chenopod shrublands. |
| Is there reliable evidence that a patch was once a woodland or shrubland with > 10% cover of trees and shrubs > 1 m? (If yes, patch is not considered part of the ecological community) | **No,** PCT 44 was only mapped in areas where shrub cover was below 8% to differentiate it from shrubland PCTs. However, PCT 44 within the Subject Land occurs in areas that have been subject to historical, intensive livestock grazing which is likely to have depleted the chenopod shrubs that may have once been found in the area covered by PCT 44. Note that analysis of historical imagery is inconclusive due to lack of spatial detail. |
| Soil type and landscape position corresponds with the ecological community and not other vegetation types? | **Yes and no.** PCT 44 was found to occur on red and brown clay soils. While this corresponds with the ecological community, it is also typical of other PCTs found within the Subject Land. Note that PCT 44 is believed to be "disclimax" meaning the grassland found in the present day was probably mixed with chenopod shrublands prior to European settlement (NSW DCCEEW, 2025b). |
| **Determination of Presence** | **Unlikely to be present.** |

As assessed under the guidelines for a grassland occurring in the Murrumbidgee IBRA subregion (Cwth DSEWPC, 2012), the lack of species from Table 1(A), the dominance of species from Table 1(B) and likelihood that PCT 44 is derived from chenopod shrublands indicates that PCT 44 within the Subject Land is not a naturally occurring grassland and therefore the Natural Grasslands of the Murray Valley Plains TEC is determined as unlikely to be present.

### Haul Route

Three (3) PCTs have been mapped across the Haul Route DF, two of which are associated with TECs. PCT 155 is associated with the endangered *Acacia loderi shrublands* TEC and PCT 158 is associated with the critically endangered *Artesian Springs Ecological Community in the Great Artesian Basin* TEC. PCT 123 has no TEC associations.

*Acacia loderi shrublands* are a community dominated by the tall shrub or small tree, *Acacia loderi*, with a low, diverse understorey dominated by chenopod sub-shrubs, herbs and grasses. Other tree species may occur in association with *Acacia loderi* (NSW TSSC, 2011). During the field survey events, rapid vegetation assessments and BAM plots were conducted across the Haul Route DF to identify the vegetation present. No occurrences of *Acacia loderi* were recorded, nor communities dominated by the species.

A summary of the TEC Assessment for the Haul Route DF is presented in Table 4-21.

TABLE 4-21 THREATENED ECOLOGICAL COMMUNITIES INVESTIGATION (HAUL ROUTE)

| TEC | BC Act | EPBC Act | Associated PCT | Recorded within the Subject Land |
|---|---|---|---|---|
| *Acacia loderi* shrublands | Endangered | - | PCT 155 | No –*Acacia* shrublands not recorded within PCT 155 across the Haul Route DF |
| Artesian Springs Ecological Community in the Great Artesian Basin | Critically Endangered | - | PCT 158 | No – Haul Route DF is situated outside distribution of TEC; TEC is restricted to northwest NSW. |

### 4.1.5 VEGETATION ZONES

Vegetation zones across the Subject Land were identified and delineated based on confirmed PCTs with similar condition states, based on the levels of disturbance to growth form groups and/or the extent of exotic species. Eleven (11) VZs were identified based on field reconnaissance and 57 BAM plots were undertaken in accordance with the BAM. Each PCT was found to present in a single condition state, with the exception of PCT 164. Details are provided below:

- VZ01 – PCT 17 of moderate condition;
- VZ02 – PCT 24 of moderate condition;
- VZ03 – PCT 44 of moderate condition;
- VZ04 – PCT 153 of good condition;
- VZ05 – PCT 157 of good condition;
- VZ06 – PCT 160 of good condition;
- VZ07 – PCT 163 of moderate condition;
- VZ08 – PCT 164 of good condition;
- VZ09 – PCT 164 of Malacocera condition;
- VZ10 – PCT 164 of moderate condition; and
- VZ11 – PCT 216 of low condition.

A summary of the Subject Land's vegetation zones and associated BAM plots is provided in Table 4-22. The Table 4-22vegetation zones are presented in Figure 4-3.

## TABLE 4-22 VEGETATION ZONES WITHIN THE SUBJECT LAND

| VZ | PCT ID | Condition | Area (ha) in Subject Land | No. BAM plots required | No. BAM plots completed / used in assessment | BAM Plot ID |
|---|---|---|---|---|---|---|
| VZ01 | 17 | Moderate | 1.02 | 1 | 2 | • WF16<br>• WF29 |
| VZ02 | 24 | Moderate | 3.77 | 2 | 2 | • WF10<br>• SF24 |
| VZ03 | 44 | Moderate | 54.50 | 5 | 7 | • WF07<br>• WF12<br>• WF20<br>• WF48<br>• SF25<br>• SF26<br>• SF27 |
| VZ04 | 153 | Good | 4.67 | 2 | 3 | • WF49<br>• WF50<br>• WF51 |
| VZ05 | 157 | Good | 13.65 | 3 | 7 | • WF22<br>• WF28<br>• WF38<br>• WF41<br>• WF42<br>• WF52<br>• WF53 |
| VZ06 | 160 | Good | 27.61 | 4 | 5 | • WF06<br>• WF11<br>• WF15<br>• WF17<br>• WF34 |

| VZ | PCT ID | Condition | Area (ha) in Subject Land | No. BAM plots required | No. BAM plots completed / used in assessment | BAM Plot ID |
|---|---|---|---|---|---|---|
| VZ07 | 163 | Moderate | 28.82 | 4 | 7 | • WF24<br>• WF39<br>• WF40<br>• WF43<br>• WF54<br>• SF28<br>• SF29 |
| VZ08 | 164 | Good | 841.50 | 7 | 9 | • WF03<br>• WF08<br>• WF18<br>• WF19<br>• WF23<br>• WF30<br>• WF32<br>• WF33<br>• WF45 |
| VZ09 | 164 | Malacocera | 6.81 | 3 | 3 | • WF35<br>• WF36<br>• WF47 |
| VZ10 | 164 | Moderate | 1029.77 | 7 | 11 | • WF01<br>• WF04<br>• WF05<br>• WF09<br>• WF13<br>• WF14<br>• WF21<br>• WF26<br>• WF31<br>• WF37<br>• WF44 |
| VZ11 | 216 | Low | 1.18 | 1 | 1 | • WF25 |

WF38

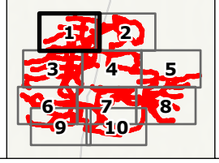
WF29

**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 17 – VZ01 - moderate
- PCT 157 – VZ05 - good
- PCT 160 – VZ06 - good
- PCT 163 – VZ07 - moderate
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F4-3 Vegetation Zones within Subject Land Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

WF17

WF18

**Legend**

BAM Plot

**Vegetation Zone**

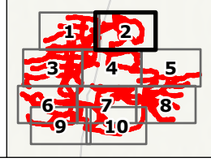
PCT 44 – VZ03 - moderate

PCT 160 – VZ06 - good

PCT 164 – VZ08 - good

PCT 164 – VZ10 - moderate

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F4-3 Vegetation Zones within Subject Land Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

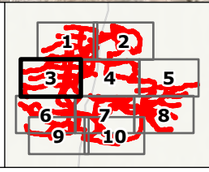
WF23
WF25
WF24
WF35
WF47
WF36
WF48
WF37
WF44
WF33
WF50
WF49
WF51

**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 44 – VZ03 - moderate
- PCT 153 – VZ04 - good
- PCT 160 – VZ06 - good
- PCT 163 – VZ07 - moderate
- PCT 164 – VZ08 - good
- PCT 164 – VZ09 - malacocera
- PCT 164 – VZ10 - moderate
- PCT 216 – VZ11 - low
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

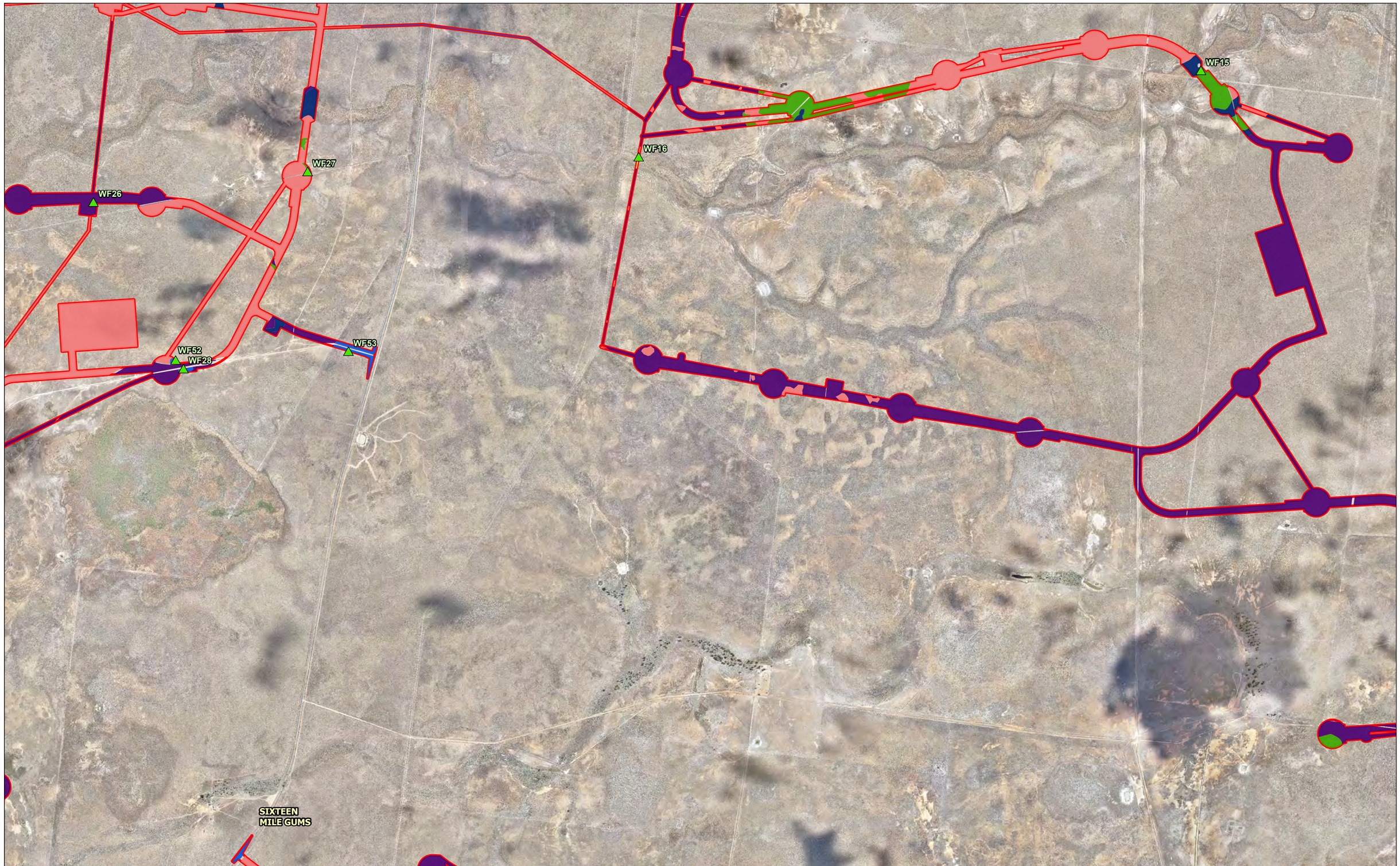
1:25,000

# F4-3 Vegetation Zones within Subject Land Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

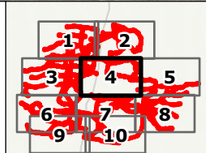



**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 17 – VZ01 - moderate
- PCT 44 – VZ03 - moderate
- PCT 157 – VZ05 - good
- PCT 160 – VZ06 - good
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F4-3 Vegetation Zones within Subject Land Map 4

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

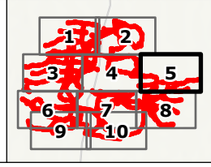
WF14
WF11
WF13
WF06
WF03
WF04
WF05

**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 44 – VZ03 - moderate
- PCT 160 – VZ06 - good
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

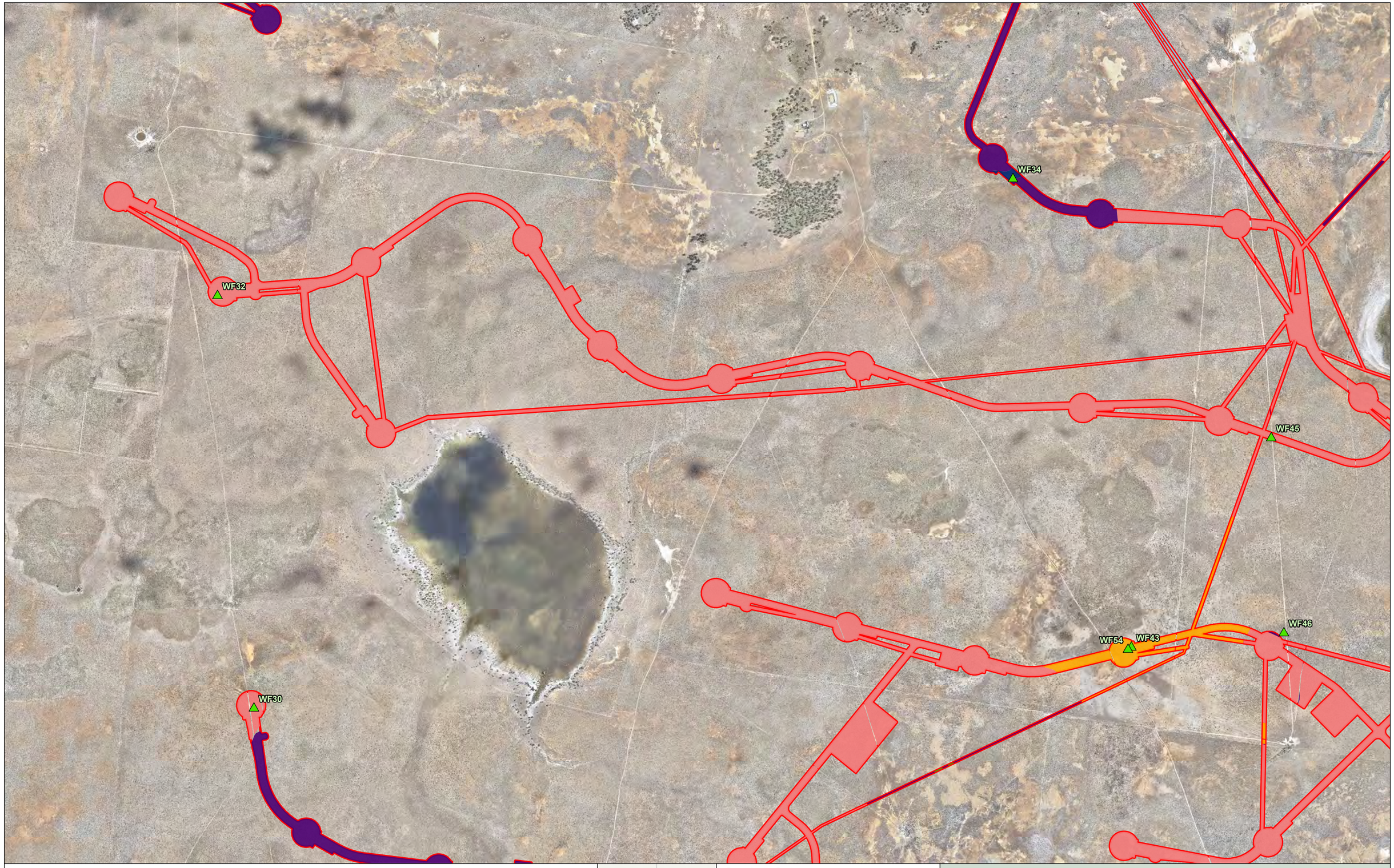
# F4-3 Vegetation Zones within Subject Land Map 5

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

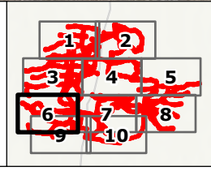



**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 44 – VZ03 - moderate
- PCT 153 – VZ04 - good
- PCT 160 – VZ06 - good
- PCT 163 – VZ07 - moderate
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025
Created By: MB
Drawing Size: A3

0 500 1,000m

1:25,000

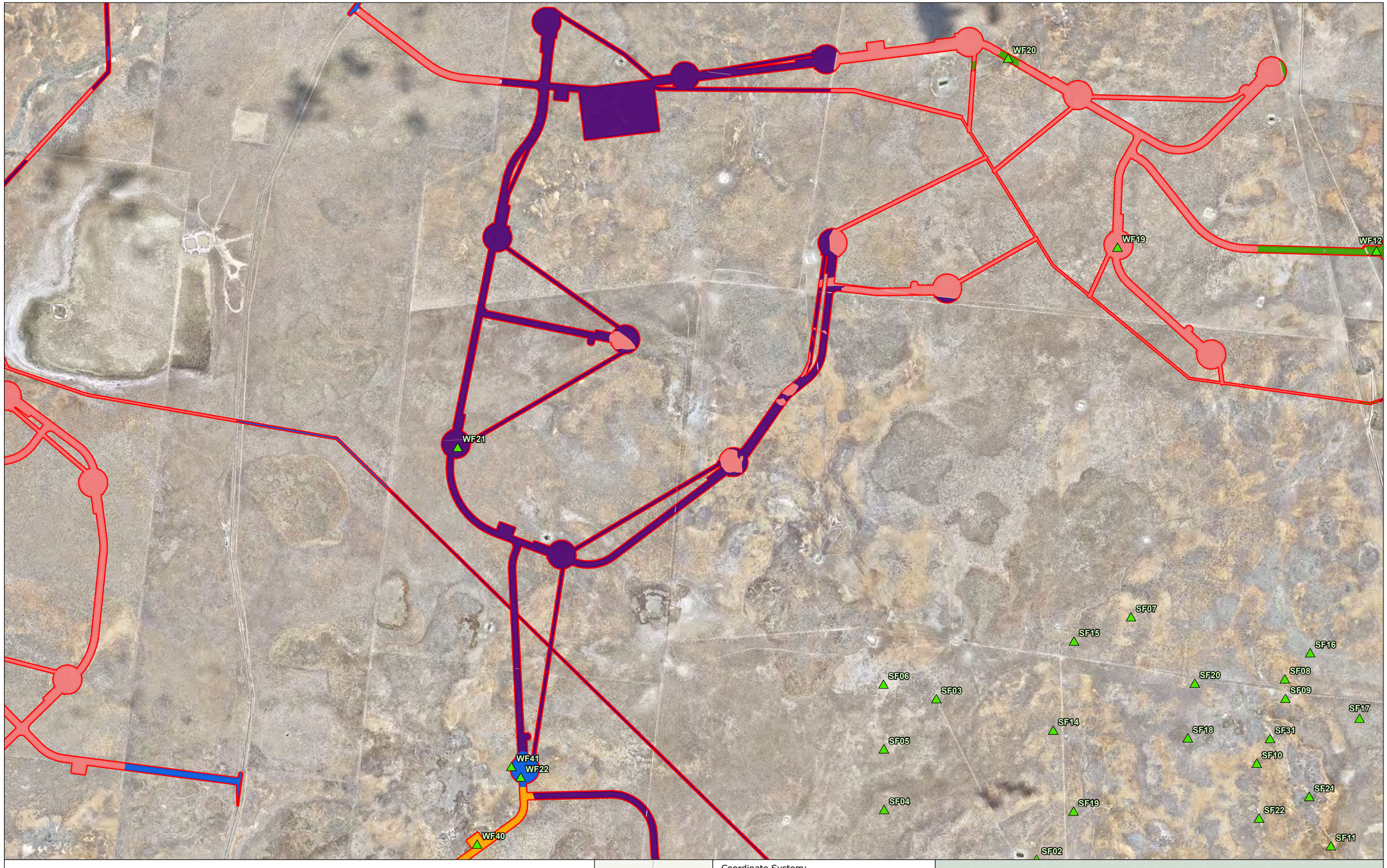
**F4-3 Vegetation Zones within Subject Land**
**Map 6**

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

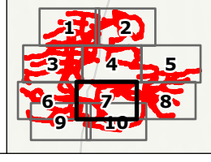



**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 44 – VZ03 - moderate
- PCT 157 – VZ05 - good
- PCT 163 – VZ07 - moderate
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025
Created By: MB
Drawing Size: A3

0 500 1,000m

1:25,000

# F4-3 Vegetation Zones within Subject Land Map 7

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

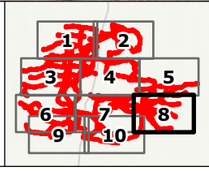
WF04
WF05
WF10
WF12
WF09
WF01
WF08
WF07
SF17
SF12

**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 24 – VZ02 - moderate
- PCT 44 – VZ03 - moderate
- PCT 160 – VZ06 - good
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- PCT 216 – VZ11 - low
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025
Created By: MB
Drawing Size: A3

0 500 1,000m

1:25,000

# F4-3 Vegetation Zones within Subject Land Map 8

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

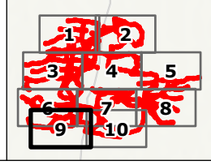
0667692_PlainsWF_Res_BDAR_R04.aprx

**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 24 – VZ02 - moderate
- PCT 44 – VZ03 - moderate
- PCT 157 – VZ05 - good
- PCT 160 – VZ06 - good
- PCT 163 – VZ07 - moderate
- PCT 164 – VZ08 - good
- PCT 164 – VZ10 - moderate
- Subject Land

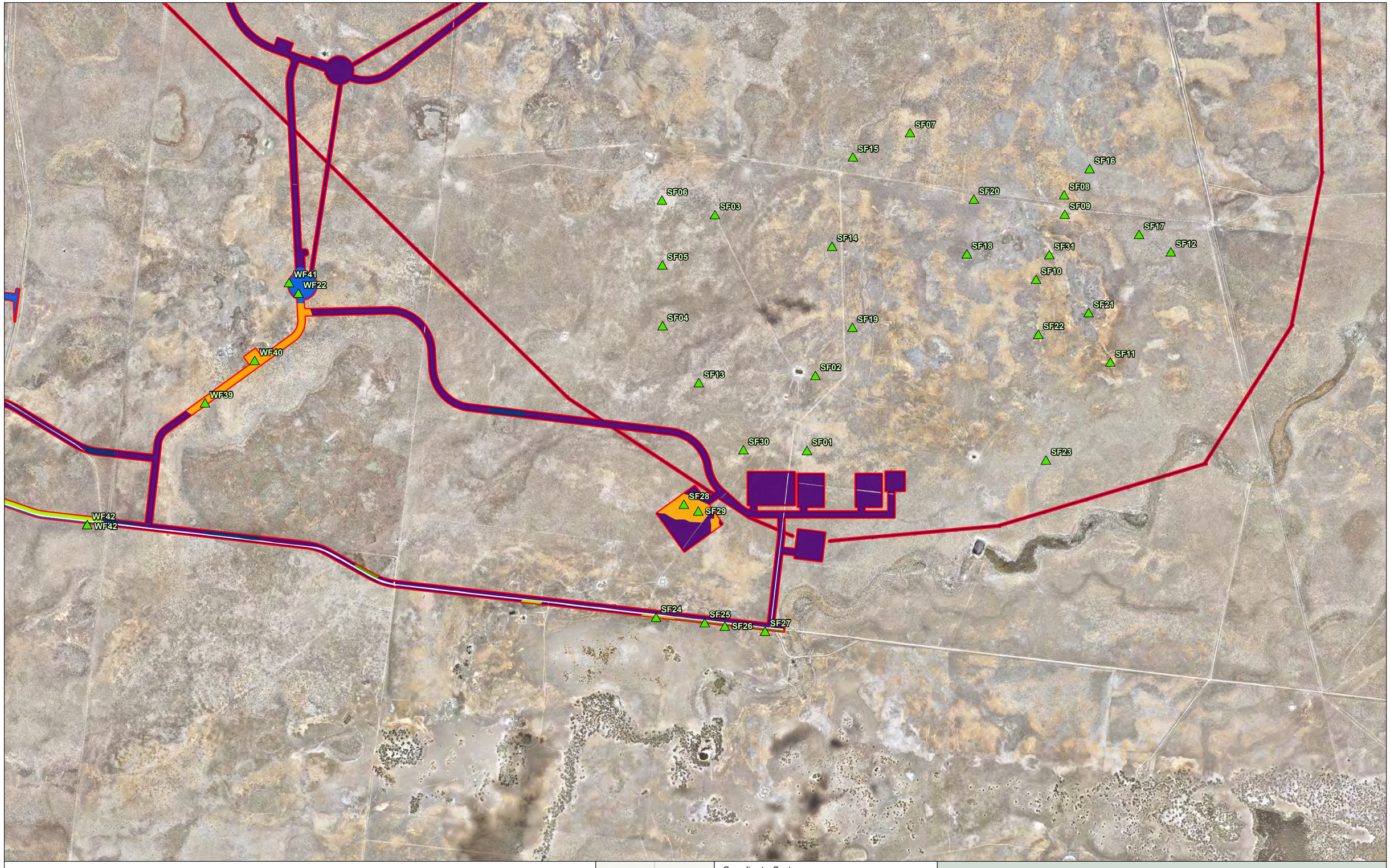



Coordinate System:
GDA2020 MGA Zone 55
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F4-3 Vegetation Zones within Subject Land Map 9

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

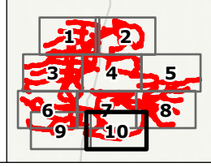



**Legend**

- BAM Plot

**Vegetation Zone**

- PCT 24 – VZ02 - moderate
- PCT 44 – VZ03 - moderate
- PCT 157 – VZ05 - good
- PCT 160 – VZ06 - good
- PCT 163 – VZ07 - moderate
- PCT 164 – VZ10 - moderate
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F4-3 Vegetation Zones within Subject Land Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

### Haul Route

Vegetation zones across the Haul Route DF were identified and delineated based on confirmed PCTs with similar condition states, based on the levels of disturbance to growth form groups and / or the extent of exotic species. Three (3) VZs were identified based on field reconnaissance and six (6) BAM plots were undertaken, in accordance with the BAM.

- VZ12 – PCT 123 of moderate condition;
- VZ13 – PCT 155 of low condition; and
- VZ14 – PCT 158 of moderate condition.

Note as the Haul Route DF occurs within a different IBRA bioregion from the Subject Land, a new BAM-C case had to be created. This meant that the VZs in the BAM-C case (00048619/BAAS23027/25/00054788 – Revision 01) automatically populated as VZ 1, 2 and 3. However, to distinguish the Haul Route DF's VZs from the Subject Land, they are referred to as VZ 12, 13 and 14 throughout this BDAR.

The Haul Route DF VZs and BAM plot requirements are provided in Table 4-23, and the Haul Route DF VZs are shown in Figure 4-4.

TABLE 4-23 VEGETATION ZONES WITHIN THE HAUL ROUTE DF

| VZ | PCT ID | Condition | Area (ha) in Haul Route DF | No. BAM plots required | No. BAM plots completed / used in assessment | BAM plot ID |
|---|---|---|---|---|---|---|
| VZ12 | 123 | Moderate | 0.29 | 1 | 1 | BAM01_139 |
| VZ13 | 155 | Low | 0.69 | 1 | 4 | BAM03_352<br>BAM04_308<br>BAM05_242<br>BAM06_231 |
| VZ14 | 158 | Moderate | 0.22 | 1 | 1 | BAM02_036 |

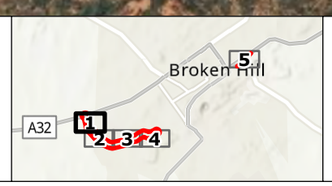
Barrier Highway

Barrier Highway

**Vegetation Zone**

VZ13_155_Low

Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

**F4-4 Vegetation Zones (Haul Route DF)**
**Map 1**

**The Plains Wind Farm**
**Amended BDAR**

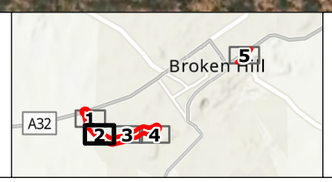
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Vegetation Zone**

- VZ13_155_Low
- Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F4-4 Vegetation Zones (Haul Route DF)
# Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Kanandah Road

**Vegetation Zone**

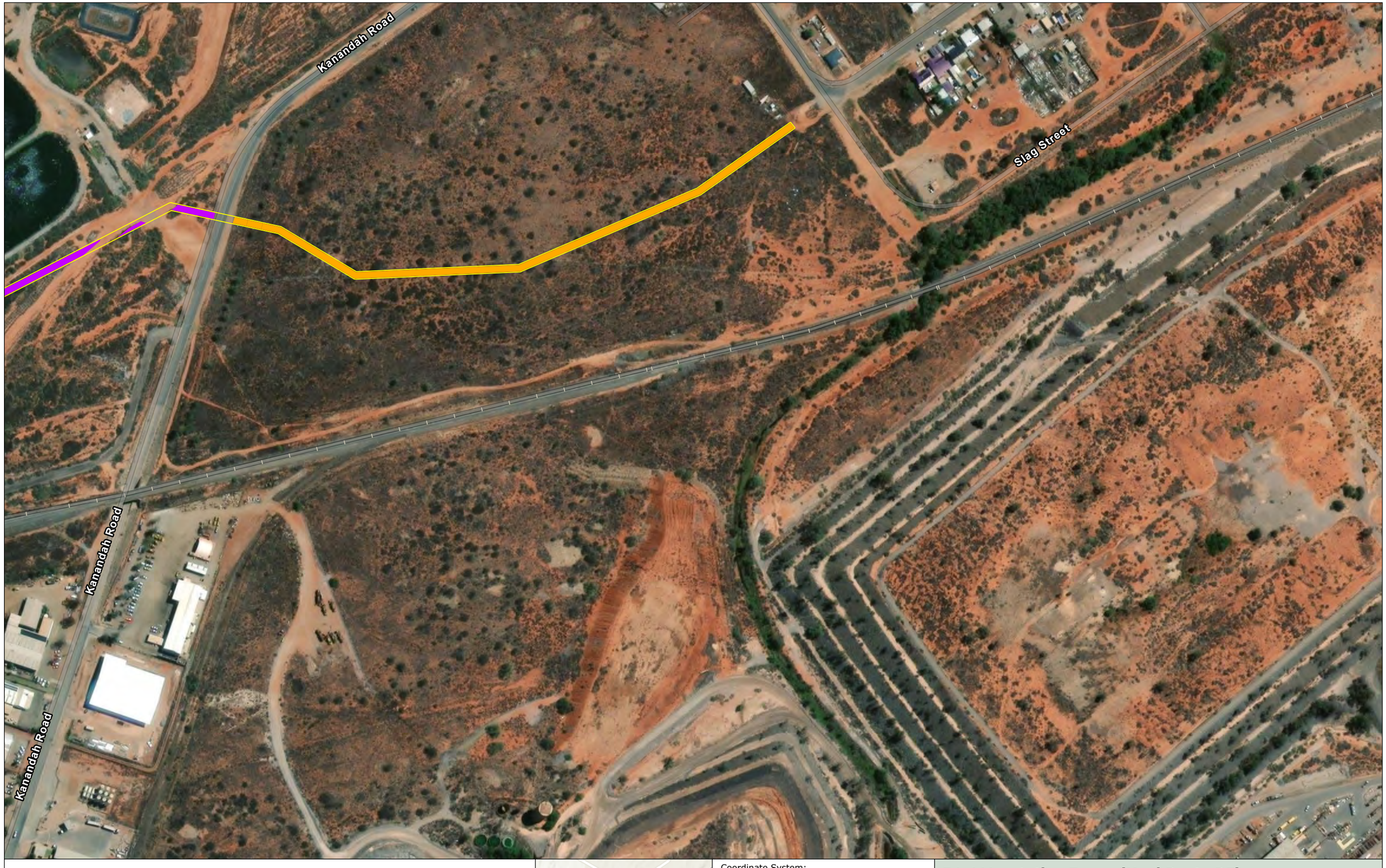
- VZ13_155_Low
- VZ14_158_Moderate
- Haul Route Disturbance Footprint

Coordinate System: GDA2020 MGA Zone 54
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 50 100m
1:3,000

# F4-4 Vegetation Zones (Haul Route DF) Map 3

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM




**Vegetation Zone**

- VZ12_123_Moderate
- VZ14_158_Moderate
- Haul Route Disturbance Footprint

Coordinate System:
GDA2020 MGA Zone 54

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F4-4 Vegetation Zones (Haul Route DF) Map 4

**The Plains Wind Farm**
**Amended BDAR**

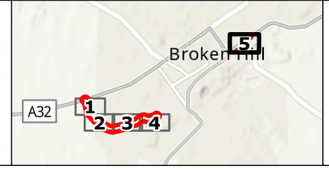
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Vegetation Zone**

- VZ14_158_Moderate
- Haul Route Disturbance Footprint




Coordinate System: GDA2020 MGA Zone 54
Date: 04/04/2025
Created By: MB
Drawing Size: A3
0 50 100m
1:3,000

**F4-4 Vegetation Zones (Haul Route DF)**
**Map 5**

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

### 4.1.6 VEGETATION INTEGRITY SCORES

The VIS has been calculated in the BAM-C using the BAM plot data (i.e., compositional, structural and functional values) for each vegetation zone mapped within the Subject Land. The VIS breakdown for the Subject Land is summarised in Table 4-24. Note that the Subject Land BAM-C reports are provided in Appendix G.

TABLE 4-24 SUBJECT LAND VEGETATION INTEGRITY SCORES

| VZ | Composition condition score | Structure condition score | Function condition score | Vegetation integrity score | Hollow bearing trees present? |
|---|---|---|---|---|---|
| VZ01 | 62 | 73.7 | - | 67.6 | No |
| VZ02 | 76.8 | 36.7 | - | 53.1 | No |
| VZ03 | 85.1 | 37.7 | - | 56.6 | No |
| VZ04 | 81.7 | 91.7 | - | 86.5 | No |
| VZ05 | 74 | 92 | - | 82.5 | No |
| VZ06 | 76.4 | 68.9 | - | 72.6 | No |
| VZ07 | 77.1 | 53.1 | - | 64 | No |
| VZ08 | 69.1 | 93.6 | - | 80.4 | No |
| VZ09 | 90.2 | 71.8 | - | 80.5 | No |
| VZ10 | 66.3 | 23.9 | - | 39.8 | No |
| VZ11 | 71.5 | 16.3 | - | 34.2 | No |

**Haul Route**

The VIS breakdown for the Haul Route DF is summarised in Table 4-25. Note that the Haul Route DF BAM-C reports are provided in Appendix H.

TABLE 4-25 HAUL ROUTE VEGETATION INTEGRITY SCORES

| Vegetation zone ID | Composition condition score | Structure condition score | Function condition score | Vegetation integrity score | Hollow bearing trees present? |
|---|---|---|---|---|---|
| VZ12 | 83.8 | 43.9 | - | 60.7 | No |
| VZ13 | 95.1 | 14.2 | - | 36.8 | No |
| VZ14 | 48 | 78.9 | - | 61.5 | No |

# 5. HABITAT SUITABILITY FOR THREATENED SPECIES

## 5.1 HABITAT SUITABILITY

'Ecosystem credit species' are threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. The BAM-C and NSW BioNet (NSW DCCEEW, 2025b) identify the threatened species assessed for ecosystem credits. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.

'Species credit species', also referred to as 'candidate species', are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence. These species are identified in the BAM-C and NSW BioNet (NSW DCCEEW, 2025b). A targeted survey or an expert report is required to confirm the presence or absence of these species on the Subject Land. Alternatively, for a development, activity, clearing or biodiversity certification proposal only, the Applicant may elect to assume the species is present.

In some circumstances NSW BioNet (NSW DCCEEW, 2025b) may identify a threatened species that requires assessment for ecosystem credits and species credits (referred to as 'dual credit species'). For dual credit species, part of the habitat is assessed as species credits (e.g., breeding habitat or land mapped on an important habitat map for a species) and the remaining habitat components for the species are assessed as ecosystem credits (e.g., foraging habitat).

For a small number of threatened species, a habitat constraint may refer to a mapped location (Important Mapped Area) that identifies areas that are considered important for those species. Important Mapped Areas for the Plains-wanderer (*Pedionomus torquatus*) are present within the Subject Land. In this instance, the Plains-wanderer is considered to occur within the Subject Land and targeted surveys are not required.

The following sections identify the ecosystem credit species, species credit species, dual credit species and species subject to potential serious and irreversible impacts (SAII) associated with the Subject Land and Haul Route DF.

### 5.1.1 ECOSYSTEM CREDIT SPECIES

The ecosystem credit species predicted to occur on or use the Subject Land by the BAM-C are listed in Table 5-1. Note that the Subject Land BAM-C reports are provided in Appendix G.

Nine (9) ecosystem credit species have been found to occur within or near the Subject Land, as presented in Figure 5-1. Ecosystem species observed and recorded within or near the Subject Land include:

- Black Falcon (*Falco subniger*);
- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*);
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*);
- Little Eagle (*Hieraaetus morphnoides*);
- Plains-wanderer (*Pedionomus torquatus*) (dual credit species);
- Southern Whiteface (*Aphelocephala leucopsis*);
- Spotted Harrier (*Circus assimilis*);
- Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*); and
- White-fronted Chat (*Epthianura albifrons*).

## TABLE 5-1 PREDICTED ECOSYSTEM CREDIT SPECIES (SUBJECT LAND)

| Common name | Scientific name | Listing Status | | Species retained for further assessment | Associated PCTs | Sensitivity to gain class |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Magpie Goose | *Anseranas semipalmata* | V | - | Yes | 24, 160, 163 | Moderate |
| Southern Whiteface | *Aphelocephala leucopsis* | V | V | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Low |
| Dusky Woodswallow | *Artamus cyanopterus cyanopterus* | V | - | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| Australasian Bittern | *Botaurus poiciloptilus* | E | E | Yes | 17, 24, 160 | Moderate |
| Curlew Sandpiper (Foraging) | *Calidris ferruginea* | CE | CE | Yes | 24 | High |
| Pied Honeyeater | *Certhionyx variegatus* | V | - | Yes | 24, 153, 163 | Moderate |
| Little Pied Bat | *Chalinolobus picatus* | V | - | Yes | 17, 24, 153, 157, 160, 163, 164, 216 | High |
| Spotted Harrier | *Circus assimilis* | V | - | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| White-fronted Chat | *Epthianura albifrons* | V | - | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| Grey Falcon | *Falco hypoleucos* | V | V | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| Black Falcon | *Falco subniger* | V | - | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| Brolga | *Grus rubicunda* | V | - | Yes | 17, 24, 160, 163 | Moderate |

| Common name | Scientific name | Listing Status | | Species retained for further assessment | Associated PCTs | Sensitivity to gain class |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| White-bellied Sea-Eagle (Foraging) | *Haliaeetus leucogaster* | V | - | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | High |
| Little Eagle (Foraging) | *Hieraaetus morphnoides* | V | - | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| White-throated Needletail | *Hirundapus caudacutus* | V | V | Yes | 17, 24, 44, 157, 160, 216 | High |
| Swift Parrot (Foraging) | *Lathamus discolor* | E | CE | Yes | 24 | Moderate |
| Pink Cockatoo (Foraging) | *Lophochroa leadbeateri* | V | E | Yes | 153, 163 | Moderate |
| Square-tailed Kite (Foraging) | *Lophoictinia isura* | V | - | Yes | 153 | Moderate |
| Blue-winged Parrot | *Neophema chrysostoma* | V | V | Yes | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Low |
| Blue-billed Duck | *Oxyura australis* | V | - | Yes | 24, 17, 160 | Moderate |
| Gilbert's Whistler | *Pachycephala inornata* | V | - | Yes | 17 | Moderate |
| Plains-wanderer (Foraging) | *Pedionomus torquatus* | E | CE | Yes | 44 | High |
| Grey-crowned Babbler (eastern subspecies) | *Pomatostomus temporalis temporalis* | V | - | Yes. Note species added to BAM-C as observed near Subject Land. | 17, 24, 44, 153, 157, 160, 163, 164, 216 | Moderate |
| Redthroat | *Pyrrholaemus brunneus* | V | - | Yes | 17, 24, 153, 163 | Moderate |

| Common name | Scientific name | Listing Status | | Species retained for further assessment | Associated PCTs | Sensitivity to gain class |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Australian Painted Snipe | *Rostratula australis* | E | E | Yes | 17, 24, 160 | Moderate |
| Yellow-bellied Sheathtail-bat | *Saccolaimus flaviventris* | V | - | Yes | 17, 24, 160 | High |
| Diamond Firetail | *Stagonopleura guttata* | V | V | Yes | 44 | Moderate |
| Freckled Duck | *Stictonetta naevosa* | V | - | Yes | 17, 24, 160 | Moderate |
| Western Blue-tongued Lizard | *Tiliqua occipitalis* | V | - | Yes | 153 | High |

**Haul Route**

The ecosystem species predicted to occur on or use the Haul Route DF, as advised by the BAM-C, are listed in Table 5-2. Note that the Haul Route DF BAM-C reports are provided in Appendix H.

No ecosystem credit species were observed or recorded within the Haul Route DF.

## TABLE 5-2 PREDICTED ECOSYSTEM CREDIT SPECIES (HAUL ROUTE DF)

| Common name | Scientific name | Listing Status | | Species retained for further assessment | Associated PCTs | Sensitivity to gain class |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Kultarr | *Antechinomys laniger* | E | - | Yes | 123, 155, 158 | High |
| Southern Whiteface | *Aphelocephala leucopsis* | V | V | Yes | 123, 155, 158 | Low |
| Dusky Woodswallow | *Artamus cyanopterus cyanopterus* | V | - | Yes | 123, 155, 158 | Moderate |
| Woma | *Aspidites ramsayi* | V | - | Yes | 123, 155, 158 | High |
| Rufous Fieldwren | *Calamanthus campestris* | V | - | Yes | 155 | Moderate |
| Pied Honeyeater | *Certhionyx variegatus* | V | - | Yes | 123, 155, 158 | Moderate |
| Little Pied Bat | *Chalinolobus picatus* | V | - | Yes | 123, 155, 158 | High |
| Spotted Harrier | *Circus assimilis* | V | - | Yes | 123, 155, 158 | Moderate |
| Wedgesnout Ctenotus | *Ctenotus brooksi* | V | - | Yes | 123, 155 | High |
| White-fronted Chat | *Epthianura albifrons* | V | - | Yes | 155, 158 | Moderate |
| Grey Falcon | *Falco hypoleucos* | V | V | Yes | 123, 155, 158 | Moderate |
| Black Falcon | *Falco subniger* | V | - | Yes | 123, 155, 158 | Moderate |
| Brolga | *Grus rubicunda* | V | - | Yes | 158 | Moderate |
| Black-breasted Buzzard (Foraging) | *Hamirostra melanosternon* | V | - | Yes | 158 | Moderate |
| Little Eagle (foraging) | *Hieraaetus morphnoides* | V | - | Yes | 123, 155, 158 | Moderate |
| Forrest's Mouse | *Leggadina forresti* | V | - | Yes | 123, 155, 158 | High |
| Pink Cockatoo (foraging) | *Lophochroa leadbeateri* | V | E | Yes | 123, 155, 158 | Moderate |
| Blue-winged Parrot | *Neophema chrysostoma* | V | V | Yes | 123 | Low |
| Scarlet-chested Parrot | *Neophema splendida* | V | - | Yes | 123 | High |

| Common name | Scientific name | Listing Status | | Species retained for further assessment | Associated PCTs | Sensitivity to gain class |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Dusky Hopping-mouse | *Notomys fuscus* | E | V | Yes | 155 | High |
| Flock Bronzewing | *Phaps histrionica* | E | - | Yes | 123, 155, 158 | High |
| Hall's Babbler | *Pomatostomus halli* | V | - | Yes | 123 | Moderate |
| Bolam's Mouse | *Pseudomys bolami* | E | - | Yes | 155 | High |
| Sandy Inland Mouse | *Pseudomys hermannsburgensis* | V | - | Yes | 123, 155 | High |
| Ringed Brown Snake | *Pseudonaja modesta* | E | - | Yes | 123, 155, 158 | Moderate |
| Redthroat | *Pyrrholaemus brunneus* | V | - | Yes | 155, 158 | Moderate |
| Long-haired Rat | *Rattus villosissimus* | V | - | Yes | 155, 158 | High |
| Yellow-bellied Sheathtail-bat | *Saccolaimus flaviventris* | V | - | Yes | 158 | High |
| Stripe-faced Dunnart | *Sminthopsis macroura* | V | - | Yes | 123, 155, 158 | High |

### 5.1.2 SPECIES CREDIT OR CANDIDATE SPECIES

The species credit species (candidate species) identified by the BAM-C for the Subject Land are listed in Table 5-3 (fauna species) and Table 5-4 (flora species). Note that the Subject Land BAM-C reports are provided in Appendix G.

TABLE 5-3 FAUNA CANDIDATE SPECIES (SUBJECT LAND)

| Common name | Scientific name | Listing status | | Dual credit species | Species retained for further assessment | Associated PCTs |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Pink-tailed Legless Lizard | *Aprasia parapulchella* | V | V | No | No (Subject Land does not contain rocky areas nor are within 50 m of rocky areas) | 157, 164, 216 |
| Australian Bustard | *Ardeotis australis* | E | - | No | Yes | 24, 44, 153, 157, 160, 163, 164, 216 |
| Curlew Sandpiper (Breeding) | *Calidris ferruginea* | CE | CE | Yes | No (Subject Land does not contain Important Habitat mapped areas) | 24 |
| White-bellied Sea-eagle (Breeding) | *Haliaeetus leucogaster* | V | - | Yes | No (No living or dead mature trees within suitable vegetation within 1 km of rivers, lakes, large dams or creeks, wetlands and coastlines within Subject Land) | 17, 24, 44, 153, 157, 160, 163, 164, 216 |
| Grey Snake | *Hemiaspis damelii* | E | E | No | Yes | 17, 24, 160 |
| Little Eagle (Breeding) | *Hieraaetus morphnoides* | V | - | Yes | No (No nest trees - live (occasionally dead) large old trees within vegetation) within Subject Land) | 17, 24, 44, 153, 157, 160, 163, 164, 216 |
| Swift Parrot (Breeding) | *Lathamus discolor* | E | CE | Yes | No (Subject Land does not contain Important Habitat mapped areas) | 24 |
| Southern Bell Frog | *Litoria raniformis* | E | V | No | Yes | 17, 24 |
| Pink Cockatoo (Breeding) | *Lophochroa leadbeateri* | V | E | Yes | Yes | 153, 163 |
| Square-tailed Kite (Breeding) | *Lophoictinia isura* | V | - | No | Yes | 153 |
| Southern Myotis | *Myotis macropus* | V | - | No | Yes | 17, 24, 160 |

| Common name | Scientific name | Listing status | | Dual credit species | Species retained for further assessment | Associated PCTs |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Plains-wanderer (Breeding) | *Pedionomus torquatus* | E | CE | Yes | Yes (Subject Land does contain Important Habitat mapped areas) | 44 |
| Koala | *Phascolarctos cinereus* | E | E | No | No (Koala use trees not present) | 17, 24, 153, 157, 160, 216 |
| Masked Owl | *Tyto novaehollandiae* | V | - | No | No (No living or dead trees with hollows >20 cm diameter that occur >4 metres above the ground within PCT 24) | 24 |

## TABLE 5-4 FLORA CANDIDATE SPECIES (SUBJECT LAND)

| Common name | Scientific name | Listing status | | Species retained for further assessment | Associated PCTs |
|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | |
| A Spear-grass | *Austrostipa wakoolica* | E | E | Yes | 17 |
| Claypan Daisy | *Brachyscome muelleroides* | V | V | Yes | 44 |
| Mossgiel Daisy | *Brachyscome papillosa* | V | V | Yes | 24, 44, 153, 157, 160, 163, 164, 216 |
| A burr-daisy | *Calotis moorei* | E | E | Yes | 153, 157 |
| Bindweed | *Convolvulus tedmoorei* | E | - | Yes | 17, 24, 44, 157, 160, 163, 164, 216 |
| Small Scurf-pea | *Cullen parvum* | E | - | Yes | 44 |
| Winged Peppercress | *Lepidium monoplocoides* | E | E | Yes | 24, 153, 160, 163, 216 |
| Lanky Buttons | *Leptorhynchos orientalis* | E | - | Yes | 24, 44 |
| Chariot Wheels | *Maireana cheelii* | V | V | Yes | 44, 157, 164 |
| Austral Pillwort | *Pilularia novae-hollandiae* | E | - | Yes | 44 |
| Turnip Copperburr | *Sclerolaena napiformis* | E | E | Yes | 44 |
| Menindee Nightshade | *Solanum karsense* | V | V | No (Subject Land not west of Maude) | 17, 24, 153, 160 |
| Slender Darling Pea | *Swainsona murrayana* | V | V | Yes | 44, 157, 163, 164, 216 |

| Common name | Scientific name | Listing status | | Species retained for further assessment | Associated PCTs |
|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | |
| Red Darling Pea | *Swainsona plagiotropis* | V | V | Yes | 44 |
| Silky Swainson-pea | *Swainsona sericea* | V | - | Yes | 44 |

**Haul Route**

Candidate species identified by the BAM-C for the Haul Route DF are listed in Table 5-5. Note that the Haul Route DF BAM-C reports are provided in Appendix H.

TABLE 5-5 CANDIDATE SPECIES (HAUL ROUTE DF)

| Common name | Scientific name | Listing status | | Dual Credit Species | Species retained for further assessment | Associated PCTs |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Mallee Golden Wattle | *Acacia notabilis* | E | - | No | Yes | 123, 155 |
| Creek Wattle | *Acacia rivalis* | E | - | No | Yes | 123 |
| Thick-billed Grasswren (north-west NSW subspecies) | *Amytornis modestus obscurior* | CE | CE | No | Yes | 155 |
| Stimson's Python (now Children's Python) | *Antaresia stimsoni* (now *Antaresia childreni*) | V | - | No | Yes | 123, 155, 158 |
| Australian Bustard | *Ardeotis australis* | E | - | No | Yes | 155, 158 |
| A saltbush | *Atriplex infrequens* | V | V | No | Yes | 158 |
| Bindweed | *Convolvulus tedmoorei* | E | - | No | Yes | 158 |
| Barrier Range Dragon | *Ctenophorus mirrityana* | E | - | No | Yes | 123, 155 |
| Eastern Fat-tailed Gecko | *Diplodactylus platyurus* | E | - | No | Yes | 123, 158 |
| Spike-Rush | *Eleocharis obicis* | V | V | No | Yes | 158 |
| Black-breasted Buzzard (Breeding) | *Hamirostra melanosternon* | V | - | Yes | No (Haul Route DF not within 40 m of riparian woodland on inland watercourses /waterholes containing dead or dying eucalypts) | 158 |

| Common name | Scientific name | Listing status | | Dual Credit Species | Species retained for further assessment | Associated PCTs |
|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | |
| Little Eagle (breeding) | *Hieraaetus morphnoides* | V | - | Yes | No (No nest trees - live (occasionally dead) large old trees within vegetation) within Haul Route DF | 123, 155, 158 |
| Showy Indigo | *Indigofera longibractea* | E | - | No | Yes | 123, 155 |
| Pink Cockatoo (breeding) | *Lophochroa leadbeateri* | V | E | Yes | No (No living or dead tree with hollows greater than 10 cm diameter in Haul Route DF) | 123, 155, 158 |
| Crowned Gecko (now Southern Sandplain Gecko) | *Lucasium stenodactylum* (now *Lucasium microplax*) | V | - | No | Yes | 123, 155 |
| Yellow-Keeled Swainsona | *Swainsona flavicarinata* | E | - | No | Yes | 155 |
| Slender Darling Pea | *Swainsona murrayana* | V | V | No | Yes | 155, 158 |
| Creeping Darling Pea | *Swainsona viridis* | E | - | No | Yes | 123, 155 |

### 5.1.3 EXCLUDED CANDIDATE SPECIES

Modification to the BAM-C generated list is appropriate where one or more of the following factors is relevant to the species:

- Habitat constraints
- Degraded habitat;
- Geographical limitations; and / or
- Vagrancy.

Eight (8) candidate species have been excluded from assessment across the Subject Land as outlined below:

- Two (2) species excluded based on the absence of Important Habitat Mapping for the species across the Subject Land;
- One (1) species excluded based on BAM-C and NSW BioNet (NSW DCCEEW, 2025b) listed geographical constraints; and
- Five (5) species excluded based on BAM-C and NSW BioNet (NSW DCCEEW, 2025b) listed habitat constraints.

Justification for the exclusion of threatened candidate species in this assessment is provided in Table 5-6. Further assessment was undertaken for the remaining species credit species.

TABLE 5-6 JUSTIFICATION FOR EXCLUSION OF CANDIDATE SPECIES ACROSS THE SUBJECT LAND

| Common Name | Scientific Name | Justification for Exclusion |
|---|---|---|
| Pink-tailed Legless Lizard | *Aprasia parapulchella* | Subject Land does not contain rocky areas, nor is it situated within 50 m of rocky areas. |
| Curlew Sandpiper (Breeding) | *Calidris ferruginea* | Subject Land does not contain Important Mapped Areas for the species. |
| White-bellied Sea-Eagle (Breeding) | *Haliaeetus leucogaster* | Subject Land does not contain living or dead mature trees in suitable vegetation within 1 km of rivers, lakes, large dams or creeks, wetlands and coastlines. |
| Little Eagle (Breeding) | *Hieraaetus morphnoides* | Subject Land does not contain live or dead large old trees within vegetation for nesting. |
| Swift Parrot (Breeding) | *Lathamus discolor* | Subject Land does not contain Important Mapped Areas for the species. |
| Menindee Nightshade | *Solanum karsense* | Subject Land is not situated west of Maude, NSW. |
| Koala | *Phascolarctos cinereus* | Subject Land does not contain koala use trees. |
| Masked Owl | *Tyto novaehollandiae* | Subject Land does not contain living or dead trees with a hollow > 20 cm diameter, 4 m above the ground. |

**Haul Route**

Three (3) candidate species have been excluded from assessment across the Haul Route DF based on NSW BioNet (NSW DCCEEW, 2025b) listed habitat constraints and habitat assessment within the Haul Route DF. Justification for the exclusion of threatened candidate species in this assessment is provided in Table 5-7.

TABLE 5-7 JUSTIFICATION FOR EXCLUSION OF CANDIDATE SPECIES ACROSS HAUL ROUTE DF

| Common Name | Scientific Name | Justification for Exclusion |
|---|---|---|
| Black-breasted Buzzard (Breeding) | *Hamirostra melanosternon* | Haul Route DF is not within 40 m of riparian woodland on inland watercourses or waterholes containing dead or dying eucalypts. |
| Little Eagle (Breeding) | *Hieraaetus morphnoides* | The Haul Route DF does not contain live or dead large old trees within vegetation for nesting. |
| Pink Cockatoo (Breeding) | *Lophochroa leadbeateri* | The Haul Route DF does not contain living or dead trees with hollows greater than 10 cm diameter. |

## 5.2 HABITAT SURVEYS: CANDIDATE SPECIES

A targeted survey or an expert report is required to confirm the presence or absence of candidate species. Alternatively, for a development activity, the Applicant may elect to assume the species is present.

### 5.2.1 CANDIDATE SPECIES SURVEY EFFORT

Survey effort for threatened fauna candidate species assessed as having the potential to occur within the Subject Land is presented in Table 5-8.

Threatened fauna species were surveyed in accordance with their relevant guidelines and NSW BioNet (NSW DCCEEW, 2025b) survey specifications, as detailed in Table 5-8.

Survey effort for threatened flora candidate species assessed as having the potential to occur within the Subject Land is presented in Table 5-9.

Threatened flora species were surveyed in accordance with *Surveying threatened plants and their habitats* (DPIE, 2020a) using a combination of the parallel field traverse and two-phase grid-based survey approach as described in Section 2.2.3.3 of this BDAR.

TABLE 5-8 SUBJECT LAND THREATENED FAUNA CANDIDATE SPECIES FIELD SURVEY EFFORT

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| Australian Bustard (*Ardeotis australis*) | All year. | 24, 44, 153, 157, 160, 163, 164, 216 | **Diurnal Driven Transects**<br>Diurnal driven transects were conducted for avian species due to the large Subject Land. Diurnal transects were completed in a slow-moving vehicle (<20 km per hour) while looking for the Australian Bustard and other birds. It is noted these species were searched for during all movements across the Subject Land, across all survey events, by teams of two ecologists. | Targeted diurnal driven transects were completed to survey for this species within the PREP area; 26.5 person hours during February 2022, and 15 person hours during February / March 2023. In addition, 419.74 ha of the Subject Land was surveyed in September 2024. | Targeted diurnal driven transect effort completed within the Subject Land equates to an area covered of 482.93 ha, broken down as follows:<br><br>PCT 0: 117.62 ha<br>PCT 24: 2.18 ha<br>PCT 44: 25.34 ha<br>PCT 157: 3.92 ha<br>PCT 160: 7.75 ha<br>PCT 163: 6.95 ha<br>PCT 164: 319.17 ha.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | **Species not detected.**<br><br>Survey effort met.<br><br>There are no species-specific survey guidelines available for this species, however, the combination of the diurnal driven transects, the BUS, the targeted avian surveys and the cumulative hours spent traversing the Subject Land is considered adequate for detection of the species and therefore the species is determined not to occur. |
| | | | **Bird Utilisation Surveys (BUS)**<br>The BUS method involved observers stationed at a fixed survey point for 20 minutes, recording abundance of all bird species. For each observation, flight height was documented. All birds were identified to the species level, either through direct observation or identification of calls**.** | 51 established BUS sites, visited across 9 survey events: Spring 2021, Summer 2022, Autumn 2022 and Winter 2022, Spring 2023, Summer 2024, Autumn 2024, Winter 2024 and Spring 2024. | 23 BUS sites are currently situated within the Assessment Area. A total of 70 BUS have been conducted across these BUS sites between 2021 and 2024, for a minimum of 20-minutes each.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11 and Figure 6-1. | |
| | | | **Targeted Avian Area Searches**<br>Targeted area searches to detect threatened avian species by sight or call was conducted in suitable habitat. Observations of signs of species presence (bark stripping, scratches, pellets), suitable roosting and nesting sites recorded within each survey site location. | 43 hours during the Spring 2021 survey event at 21 sites undertaken by two to four ecologists. | Survey effort from 2021 does not overlap with Subject Land.<br><br>Opportunistic species detection was undertaken as survey teams traversed the Subject Land.<br>No detection of the species was made.<br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | |
| Grey Snake (*Hemiaspis damelii*) | October – February | 17, 24, 160 | **Spotlighting**<br>Spotlighting was conducted in conjunction with the Southern Bell Frog (*Litoria raniformis*) survey efforts in December 2024 which focused on dams across the Subject Land.<br>Frogs, a potential food source for the Grey Snake were present, and conditions remained above 15°C. Survey conditions | - | Thirteen (13) sites (dams) were visited over four nights by two ecologists. Each survey was conducted between 10 - 30 minutes. A total of 13.91 hours of survey effort was conducted during the December 2024 survey event. | **Species assumed present.**<br><br>Survey effort not met.<br>Surveys identified the Curl Snake (*Suta suta*) but the Grey Snake was not detected.<br>SURVEY GUIDELINES PROVIDED BY NSW BIONET (NSW DCCEEW, |

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| | | | were considered suitable for detection of the species.<br><br>Survey effort used information in the guidelines *Threatened reptiles – Biodiversity Assessment Method survey guide* (DPE, 2022a). Note that specific survey guidelines for the Grey Snake are not detailed. | | Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | 2025B) SPECIFY 120 MINUTES PER 50 HA OF SUITABLE HABITAT (SOIL CRACKS ON CRACKING CLAY FLOODPLAINS) SHOULD BE SURVEYED, IRRESPECTIVE OF DISTANCE FROM WETLANDS OR RIVERS. IN THE SUBJECT LAND, THIS WOULD EQUATE TO APPROXIMATELY 78 HOURS IN TOTAL IN ALL ASSOCIATED PCTS (17, 24, 160). THE GREY SNAKE HAS BEEN ASSUMED PRESENT IN UNSURVEYED AREAS IN PCTS 17, 24 AND 160 AND A SPECIES' POLYGON HAS BEEN CREATED, FURTHER DISCUSSED IN SECTION 5.2.25.2.2.3 AND SHOWN IN FIGURE 5-1 THREATENED SPECIES RECORDS WITHIN THE SUBJECT LAND<br><br>Figure 5-2. |
| Southern Bell Frog (*Litoria raniformis*) | October – January | 17, 24 | **Water Source Survey**<br>Review of aerial imagery was undertaken to identify potential artificial dams, drainage lines, and creek lines across the Subject Land. The spatial analysis informed the survey effort during field survey events.<br><br>Field surveys in September 2024 targeted all identified potential water sources suitable for the Southern Bell Frog. Forty-five locations were assessed.<br>Field analysis determined whether water and emergent vegetation was present within the waterbody and whether vegetation was growing close to waterbodies. | Aural-visual surveys were undertaken on the edges of the PREP area in February 2023. These surveys are no longer relevant as they are too far from the Subject Land. | September 2024 - Full extent of Subject Land and a 200 m buffer assessed.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | **Species detected.**<br><br>Survey effort met.<br><br>A species' polygon for the Southern Bell Frog has been created. This is further discussed in Section 5.2.25.2.2.3 and shown in Figure 5-3.<br><br>Conditions for detecting this species were suitable, and the frog was detected at four locations during the December 2024 event.<br><br>Refer to Figure 5-1. |
| | | | **Aural-visual Survey:**<br>Aural visual surveys were completed along the edge of suitable habitat for the Southern Bell Frog, i.e., waterbodies with emergent vegetation.<br>In Summer 2022 and Summer 2023, these were completed at water tank locations with the water overflow causing pooling and the growth of emergent vegetation. Surveys were also conducted within inundated Nitre Goosefoot (*Chenopodium nitrariaceum*) swamps.<br>In December 2024, surveys focused on water sources in or within 200 m of the Subject | Summer 2022 - one location visited over four nights by two ecologists. Each survey event conducted for 30 minutes. Note an additional survey location was surveyed over 4 nights outside the PREP area.<br><br>All Summer 2023 survey effort is now outside the PREP area. Surveys were conducted at three locations over four nights by two ecologists. Each | December 2024 - 13 sites visited over four nights by two ecologists. Each survey conducted between 10 - 30 minutes or until the species was detected.<br><br>Species recorded during the December 2024 frog survey include:<br>• Southern Bell Frog (*Litoria raniformis)* | |

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| | | | Land (or 200m) identified during spatial analysis. All potential water sources were visited and assessed, and any suitable habitat present was surveyed.<br><br>At each survey location, an aural-visual survey for the species was undertaken, following the guidelines in the *NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method* (NSW DPIE, 2020c). Note that pro-rata effort was applied for waterbodies which were less than 500 m.<br><br>At least 10-minutes of aural-visual and call playback surveys were conducted at each location for up to 4 nights or until the species was detected. | survey event was conducted for 30 minutes.<br><br>December 2024 - 13 locations (dams) visited over four nights by two ecologists. Each survey conducted between 10 - 30 minutes or until the species was detected. Survey guidelines specify that 120 mins of effort is completed per 500 m of suitable breeding habitat per night (or until species is detected) (NSW DPIE, 2020c). Each location contained approximately 50 m of suitable breeding habitat. | • Spotted Marsh Frog (*Limnodynastes tasmaniensis*)<br>• Striped Marsh Frog (*Limnodynastes peronii*)<br>• Giant Bango Frog (*Limnodynastes interioris*)<br>• European Fox (*Vulpes vulpes*)<br>• Curl Snake (*Suta suta*)<br>• Rakali (*Hydromys chrysogaster*)<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | |
| Pink Cockatoo (*Lophochroa leadbeateri*) | September - December | 153, 163 | **Tree Hollow Census**<br>Tree hollow censuses to confirm the presence or absence of suitably sized hollows for the Pink Cockatoo were undertaken in June and September 2024. This involved driving the full extent of the Subject Land, and searching each tree within 200 m of the Subject Land. Where a suitable hollow was identified (in a living or dead tree with hollows greater than 10 cm diameter), the tree species, dimensions and signs of usage were recorded. The result of these efforts informed targeted survey effort for the species. | - | Full extent of Subject Land and 200 m buffer assessed.<br><br>Two (2) suitable hollow bearing trees identified within 200 m of the Subject Land. | **Species not detected.**<br><br>Survey effort met.<br><br>There are no species-specific survey guidelines available for this species, however, the combination of the tree hollow censuses, the BUS, the targeted avian surveys and the cumulative hours spent traversing the Subject Land is considered adequate for detection of the species and therefore the species is determined not to occur.<br><br>Note that the hollow bearing tree census permitted exclusion of suitable breeding habitat for the Masked Owl (*Tyto novaehollandiae*) as suitably-sized hollows were not present within the Subject Land. |
| | | | **Targeted Pink Cockatoo survey**<br>Two (2) suitable hollow bearing trees were identified within 320 m of one another, within Black Box (*Eucalyptus largiflorens*) woodland fringing wetland habitat. This area was surveyed using targeted area searches, with a focus on the hollow bearing trees, over four mornings in October 2024.<br><br>Initially, two survey locations containing suitable hollow bearing trees were identified. One of these locations was surveyed for one morning only as the habitat was unsuitable. The hollow was in a scattered tree, situated approximately 3 km from the nearest woodland patch. | - | Two (2) suitable hollow bearing trees surveyed in October 2024 over four (4) mornings by two ecologists.<br><br>A total of 1.6 hours of targeted survey effort was completed.<br><br>All suitable habitat within 200 m of the Subject Land surveyed.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | |
| | | | **Bird Utilisation Surveys (BUS)**<br>The BUS method involved observers stationed at a fixed survey point for 20 minutes, recording abundance of all bird species. For each observation, flight height was documented. All birds were identified to the species level, either through direct observation or identification of calls**.** | 51 established BUS sites, visited across 9 survey events: Spring 2021, Summer 2022, Autumn 2022 and Winter 2022, Spring 2023, Summer 2024, Autumn 2024, Winter 2024 and Spring 2024. | 23 BUS sites are currently situated within the Assessment Area. A total of 70 BUS have been conducted across these BUS sites between 2021 and 2024, for a minimum of 20-minutes each. | |

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| | | | | | Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11 and Figure 6-1. | |
| | | | **Targeted Avian Area Searches**<br>Targeted area searches to detect threatened avian species by sight or call was conducted in suitable habitat. Observations of signs of species presence (bark stripping, scratches, pellets), suitable roosting and nesting sites recorded within each survey site location. | 43 hours during the Spring 2021 survey event at 21 sites undertaken by two to four ecologists. | Survey effort from 2021 does not overlap with Subject Land.<br><br>Opportunistic species detection was undertaken as survey teams traversed the Subject Land.<br><br>No detection of the species was made.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | |
| Square-tailed Kite (*Lophoictinia isura*)<br><br>Raptors | September - January | 153 | **Bird Utilisation Surveys (BUS)**<br>The BUS method involved observers stationed at a fixed survey point for 20 minutes, recording abundance of all bird species. For each observation, flight height was documented. All birds were identified to the species level, either through direct observation or identification of calls**.** | 51 established BUS sites, visited across 9 survey events: Spring 2021, Summer 2022, Autumn 2022 and Winter 2022, Spring 2023, Summer 2024, Autumn 2024, Winter 2024 and Spring 2024. | 23 BUS sites are currently situated within the Assessment Area. A total of 70 BUS have been conducted across these BUS sites between 2021 and 2024, for a minimum of 20-minutes each.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11 and Figure 6-1. | **Species not detected.**<br><br>Survey effort met.<br><br>There are no species-specific survey guidelines available for this species, however, the combination of the nest surveys, the BUS, the targeted avian surveys and the cumulative hours spent traversing the Subject Land is considered adequate for detection of the species and therefore the species is determined not to occur.<br><br>Note that the Little Eagle observed in 2021 was over 1.5 km from the Subject Land and not assessed in this BDAR. Another Little Eagle nest was observed opportunistically in September 2024, but this was approximately 280 m outside the Assessment Area. |
| | | | **Nest Census**<br>A full nest census was undertaken to confirm the presence or absence of stick nests of suitable sizes for raptors was completed in Spring 2021, Summer 2023 and Spring 2024. This involved driving the full extent of the Subject Land and searching each tree or structure within the Assessment Area.<br><br>The census was undertaken to confirm the presence of previously identified nests between 2021 to 2023, and to determine usage (whitewash, animal remains etc.), and to identify new nests. Nest diameters were assigned to the following categories:<br><br>• Small: 10 cm to 19 cm<br>• Medium: 20 cm – 49 cm<br>• Large: 50 cm – 99 cm<br>• Very large: ≥ 100cm<br><br>A record was made of the following: | In 2021, 18 stick nests were identified; 15 were very large and occupied by the Wedge-tailed Eagle (*Aquila audax*), two were large and were occupied by the Whistling Kite (*Haliastur sphenurus*) and the Little Eagle (*Hieraaetus morphnoides*), and one was medium and occupied by the Nankeen Kestrel (*Falco cenchroides*).<br>In 2022, 13 stick nests were identified; 11 were very large and were occupied by the Wedge-tailed Eagle, two were medium and were occupied by the Nankeen Kestrel and an unidentified raptor.<br>In 2023, nine stick nests were identified; one was very large and likely occupied by the | The full extent of the Assessment Area was surveyed for stick nests in September 2024. The following nests were found:<br>• 9 very large stick nests recorded. All were occupied by the Wedge-tailed Eagle, with offspring present.<br>• 5 large stick nests recorded. Three were occupied by the Wedge-tailed Eagle but raptor occupation was unconfirmed for the other two nests.<br>• All the other stick nests recorded were either small or medium and were occupied by the Nankeen Kestrel, the Black-shouldered Kite | |

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| | | | • All very large stick nests within the Assessment Area (White-bellied Sea-eagle (*Haliaeetus leucogaster*))<br>• All large stick nests within 300 m of the Subject Land (Little Eagle (*Hieraaetus morphnoides*), Square-tailed Kite (*Lophoictinia isura*) and the Black Falcon (*Falco subniger*).<br><br>Opportunistic observations of all stick nests were undertaken during all survey events. | Wedge-tailed Eagle; four were large but no raptors were observed utilising three of the nests and the Whistling Kite was observed near the fourth nest, two were medium and occupied by the Nankeen Kestrel, and no raptors were observed near the last two nests (no size provided). | (*Elanus axillaris*), the Brown Falcon (*Falco berigora*), the Australian Hobby (*Falco longipennis*) and non-raptors such as the Australian Magpie (*Gymnorhina tibicen*) and the Australian Raven (*Corvus coronoides*).<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | |
| | | | **Targeted Raptor Surveys**<br>Targeted raptors surveys were undertaken in October 2024 to observe the large stick nests (where occupation couldn't be confirmed) for the Square-tailed Kite and other threatened raptors. These two locations were surveyed in the morning for 20 minutes (from a distance) to determine nest occupancy. | - | One repeat survey completed at two locations in October 2024; surveys not repeated due to confirmed occupancy by the Nankeen Kestrel.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11. | |
| Southern Myotis (*Myotis macropus*)<br><br>Microbats | October - March | 17, 24, 160 | **Echolocation Call Detectors**<br>Titley echolocation call detection devices were placed in proximity to water sources, or beside a 'flyway', pointing towards the expected flight path of microbats, and programmed to record from dusk to dawn. Bat call analysis was completed by Green Tape Solutions, with the results presented in Appendix C (2022), Appendix D (2023) and Appendix E (2024). | February 2022 - eight devices deployed for ten nights (Anabat 1, Anabat 2, Anabat 6, Anabat 10, Anabat 11, Anabat 12, SD1 and SD2).<br>February/March 2023:<br>Three devices deployed for nine nights (Site 10, Site 14 and Site 17).<br>Three devices deployed for 10 nights (Site 1, Site 2 and Site 27).<br>Two devices (Site 1 and Site 2) did not record any bat calls.<br>December 2023 - March 2024 in two locations:<br><u>Location 1:</u><br>One device deployed over seven nights (Chorus 22) and six devices deployed over five nights (Chorus 3, Chorus 9, Chorus 13, Chorus 16, Chorus 17 and Chorus 18).<br><u>Location 2:</u><br>One device deployed over 17 nights (Chorus 13). | Anabats deployed within, or near the Subject Land include:<br><br>Summer 2024: three devices (Chorus 16, Chorus 22 and Chorus 9).<br><br>Bat acoustic recordings reports are presented in Appendix C, Appendix D and Appendix E.<br><br>Note that there are coordinate errors in the report in Appendix E. The correct locations of the call detection devices are presented in Figure 6-1. | **Species detected.**<br><br>Survey effort met.<br><br>There were possible recordings of the Southern Myotis at all eight survey locations in Summer 2022, at survey locations 10, 17 and 27 in Summer 2023, and at survey locations 9, 13, 16, 17 and 18 in 2024.<br><br>Refer to Figure 2-11 Targeted Fauna Survey Effort (Subject Land)Figure 2-11 and Figure 6-1.<br><br>The species is considered to occur within the Subject Land and a species' polygon has been created, further discussed in Section 5.2.2.3 and shown in Figure 5-4.<br><br>Note that other threatened microbat species were detected acoustically – Yellow-bellied Sheathtail-bat (*Saccolaimus* flaviventris) and threatened *Nyctophilus* spp. (unconfirmed).<br><br>Refer to Figure 5-1. |

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| | | | | Four devices deployed over 18 nights (Chorus 3, Chorus 9, Chorus 16 and Chorus 22).<br>Two devices deployed over 19 nights (Chorus 17 and Chorus 18).<br><u>Met Mast:</u><br>Microphone set at 75 m.<br>March – May 2023 - one device deployed on a met mast for 51 recording nights (Met Mast Anabat 1).<br>June - September 2024 - one device deployed on the same met mast for three months (Met Mast Anabat 2). | | |
| Plains-wanderer (*Pedionomus torquatus*) | All year | 44 | **Nocturnal Driven Transects**<br>Nocturnal driven transects were conducted in suitable habitat from a slow-moving vehicle (<20 km per hour) using hand-held spotlights and vehicle headlights. | Two nights of survey were undertaken by four ecologists in a single vehicle in Spring 2021. | Targeted nocturnal driven transect effort completed in Spring 2021 covered approximately 0.19 ha of the Subject Land in PCT 164. Note that changes to the Project design and PCT mapping meant that much of the original survey effort undertaken for the species in 2021 is not applicable to the current design. | **Important Mapped Areas present within Subject Land therefore breeding habitat present.**<br><br>Survey effort met.<br><br>A species' polygon for the Plains-wanderer has been created. This is further discussed in Section 5.2.25.2.2.3 and shown in Figure 5-5.<br><br>Surveys for this species are not required under the BAM as breeding habitat is determined by Important Mapped Areas, however, surveys for the species were conducted in 2024 to inform assessment of the Plains-wanderer (*Pedionomus torquatus*) habitat in accordance with the EPBC Act controlled actions' assessment approach.<br><br>Species detected during survey effort as ecosystem credit species.<br><br>Refer to Figure 5-1. |
| | | | **Habitat Assessments**<br>Habitat assessments were conducted by opportunistically assessing suitable habitat while driving across the Subject Land in Spring and Summer 2024.<br><br>Grassland suitability was informed by the species' Conservation Advice (Cwth TSSC, 2015) and the publication *Multi-scale habitat selection by a cryptic, critically endangered grassland bird—The Plains-wanderer (Pedionomus torquatus): Implications for habitat management and conservation* (Nugent, et al., 2022). The Subject Land was surveyed by vehicle, with a total of 179 km travelled, mapping suitable habitat based on the composition, structure and soil types. Grassland habitat supporting a cover of 50% bare-ground, 10% litter and 40% consisting of grasses and herbs was categorised as 'ideal' Plains-wanderer habitat (Cwth TSSC, 2015; Nugent, et al., 2022). To provide further detail on habitat suitability across the Subject Land, 50 'golf-ball' method habitat assessments were completed, in accordance with the methodology described in Nugent et al. (2022). In addition, nine rapid habitat assessments were conducted. At each location the vegetation, groundcover height, shrub height, soil type and structural | - | Spring 2024 - survey effort was principally undertaken by vehicle, with a total of 179 km travelled.<br><br>Summer 2024 – survey effort focused on areas not surveyed in the Spring 2024 event and included 50 habitat assessments using the 'golf-ball' method and nine rapid habitat assessments.<br><br>Refer to Figure 2-11.<br><br>Survey effort resulted in 711.38 ha of suitable habitat mapped for the Plains-wanderer.<br><br>Refer to Figure 5-17. | |

| Target Species | Recommended Survey Period | Associated PCTs | Method | PREP Area Effort | Subject Land Effort | Outcome |
|---|---|---|---|---|---|---|
| | | | composition were recorded to determine habitat suitability. | | | |
| Koala (*Phascolarctos cinereus*)<br><br>Little Eagle (*Hieraaetus morphnoides*)<br>Masked Owl (*Tyto novaehollandiae*) | All year | 17, 24, 153, 157, 160, 216 | **Scattered Tree Assessment**<br>Scattered trees across the Subject Land were recorded in Spring 2021, Summer 2022, Autumn 2022, Winter 2022, Summer 2023 and opportunistically. Tree species, height, diameter at breast height (DBH), presence of hollows, stick nests, and signs of fauna usage were recorded. | Completed opportunistically throughout PREP area. | Subject Land fully assessed; no treed habitat was identified. | **Species excluded from assessment within the Subject Land.**<br><br>Survey effort met. |

TABLE 5-9 SUBJECT LAND THREATENED FLORA CANDIDATE SPECIES SURVEY EFFORT

| Scientific Name | Common name | Associated PCTs | Recommended Survey Period | Area (ha) of Associated PCTs | Area (ha) Surveyed | Survey Method | Outcome |
|---|---|---|---|---|---|---|---|
| *Austrostipa wakoolica* | A Spear-grass | 17 | October - December | 1.02 | 0 | Parallel field traverses were carried out in December 2024 targeting this species, equating to 2.65 hours of effort. However, revisions to the PCT mapping after this survey event resulted in no effort completed within the associated PCT for this species. | **Species assumed present.**<br><br>Survey effort not met.<br><br>Assumed present in all areas of PCT 17 within the Subject Land, equating to 1.02 ha. A species' polygon has been created for the species, further discussed in Section 5.2.2 and shown in Figure 5-6. |
| *Brachyscome muelleroides* | Claypan Daisy | 44 | September - November | 54.50 | 15.07 | 0.3 hours of parallel field traverse effort conducted in PCT 44 in September 2023 covering approximately 1.21 ha.<br><br>12 two-phase, grid-based systematic surveys conducted within PCT 44 in Subject Land in September 2024 covering approximately 13.86 ha. | **Species not detected**.<br><br>Survey effort met.<br><br>15.07 ha have been surveyed within the Subject Land within the associated PCT (44) for this species, in addition to historical efforts conducted in the PREP area. The species has not been detected, and survey effort is considered sufficient. |
| *Brachyscome papillosa* | Mossgiel Daisy | 24, 44, 153, 157, 160, 163, 164, 216 | September - November | 2,012.28 | 319.61 | 8.6 hours of parallel field traverse effort conducted in September 2023 covering approximately 34.62 ha.<br><br>480 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs in Subject Land covering approximately 284.99 ha. | **Species detected**.<br><br>Survey effort not met.<br><br>319.61 ha have been surveyed within the Subject Land in associated PCTs for this species, in addition to historical efforts conducted in the PREP area. The species has been found to occur within the Subject Land and a species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-7. |
| *Calotis moorei* | A burr-daisy | 153, 157 | September - November | 18.32 | 3.42 | 6 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 3.42 ha. | **Species assumed present.**<br><br>Survey effort not met.<br><br>3.42 ha have been surveyed within the Subject Land within associated PCTs (153, 157), in addition to historical efforts conducted in the PREP area. The species was detected within the PREP area and has been avoided by the Project. However, survey effort within the Subject Land is considered insufficient and, therefore, the species has been assumed present in unsurveyed areas in PCTs 153 and 157. A species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-8. |

| Scientific Name | Common name | Associated PCTs | Recommended Survey Period | Area (ha) of Associated PCTs | Area (ha) Surveyed | Survey Method | Outcome |
|---|---|---|---|---|---|---|---|
| *Convolvulus tedmoorei* | Bindweed | 17, 24, 44, 157, 160, 163, 164, 216 | June – September | 2,008.63 | 319.03 | 8.6 hours of parallel field traverse effort conducted in September 2023 covering approximately 34.62 ha.<br><br>478 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 284.41 ha. | **Species not detected**.<br><br>Survey effort met.<br><br>319.03 ha have been surveyed within the Subject Land within associated PCTs (17, 24, 44, 157, 160, 163, 164), in addition to historical efforts conducted in the PREP area.<br><br>Note that the normal distribution of the species in NSW is approximately 425 km northwest of the Subject Land, in the Barrier Range and Barrier Range Outwash IBRA subregions, and outside the Murrumbidgee IBRA subregion.<br>The Subject Land is situated over 60 km west from the sole Murrumbidgee IBRA subregion record, now over 50 years old (1969) and not recorded since. This is despite extensive targeted surveys being undertaken for other proposed renewable energy projects in the South West REZ, including:<br><br><u>September 2022 / 2023</u><br>Dinawan Wind Farm (162.42 ha)<br><br><u>September 2023 / 2024:</u><br>Pottinger Wind Farm (305.52 ha)<br>Bullawah Wind Farm (1863.33 ha)<br>Baldon Wind Farm (2,500.59 ha).<br><br>In light of this combination of factors, and the lack of detection of the species within the Subject Land, ERM considers that survey effort is sufficient. |
| *Cullen parvum* | Small Scurf-pea | 44 | December – January | 54.50 | 1.06 | 0.3 hours of parallel field traverse effort conducted in December 2024 covering approximately 1.06 ha.<br><br>Additional effort was made to survey this species in December 2024, however, changes to the PCT mapping after the survey event reduced the effort completed for this species within the Subject Land. | **Species assumed present.**<br><br>Survey effort not met.<br><br>1.06 ha have been surveyed within the Subject Land within the associated PCT (44). The species has not been detected; however, survey effort is considered insufficient and the species has been assumed present in unsurveyed areas of PCT 44, and a species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-9. |

| Scientific Name | Common name | Associated PCTs | Recommended Survey Period | Area (ha) of Associated PCTs | Area (ha) Surveyed | Survey Method | Outcome |
|---|---|---|---|---|---|---|---|
| *Lepidium monoplocoides* | Winged Peppercress | 24, 153, 160, 163, 216 | September - December | 66.05 | 21.85 | 0.5 hours of parallel field traverse effort conducted in September 2023 covering approximately 2.19 ha.<br><br>1.3 hours of parallel field traverse effort conducted in December 2024 covering approximately 5.06 ha.<br><br>14 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 14.59 ha. | **Species detected.**<br><br>Survey effort not met.<br><br>21.85 ha have been surveyed within the Subject Land within associated PCTs (24, 153, 160, 163, 216), in addition to historical efforts conducted in the PREP area.<br><br>The species has been found to occur within the Subject Land. A species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-10. |
| *Leptorhynchos orientalis* | Lanky Buttons | 24, 44 | September – November | 58.27 | 15.85 | 0.4 hours of parallel field traverse effort conducted in September 2023 covering approximately 1.68 ha.<br><br>12 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 14.17 ha. | **Species assumed present.**<br><br>Survey effort not met.<br><br>15.85 ha have been surveyed within the Subject Land within associated PCTs (24, 44), in addition to historical efforts conducted in the PREP area.<br><br>The species has not been detected; however, survey effort is considered insufficient and the species has been assumed present in unsurveyed areas of PCT 24 and 44. A species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-11. |
| *Maireana cheelii* | Chariot Wheels | 44, 157, 164 | September - December | 1,946.23 | 319.38 | 8.1 hours of parallel field traverse effort conducted in September 2023 covering approximately 32.43 ha.<br><br>4.1 hours of parallel field traverse effort conducted in December 2024 covering approximately 16.58 ha.<br><br>466 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 270.40 ha. | **Species detected.**<br><br>Survey effort not met.<br><br>319.41 ha have been surveyed within the Subject Land within associated PCTs (44, 157, 164), in addition to historical efforts conducted in the PREP area.<br><br>The species has been found to occur within the Subject Land and a species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-12. |
| *Pilularia novae-hollandiae* | Austral Pillwort | 44 | October – December | 54.50 | 1.06 | 0.3 hours of parallel field traverse effort conducted in December 2024 covering approximately 1.06 ha.<br><br>Additional effort was made to survey this species in December 2024, however, changes to the PCT mapping after the survey event reduced the effort completed for this species within the Subject Land. | **Species assumed present.**<br><br>Survey effort not met.<br><br>Presence is assumed for this species in all unsurveyed areas of PCT 44 and a species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-13. |

| Scientific Name | Common name | Associated PCTs | Recommended Survey Period | Area (ha) of Associated PCTs | Area (ha) Surveyed | Survey Method | Outcome |
|---|---|---|---|---|---|---|---|
| *Sclerolaena napiformis* | Turnip Copperburr | 44 | September - December | 54.50 | 16.13 | 0.3 hours of parallel field traverse effort conducted in September 2023 covering approximately 1.21 ha.<br><br>0.3 hours of parallel field traverse effort conducted in December 2024 covering approximately 1.06 ha.<br><br>12 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 13.86 ha. | **Species detected.**<br><br>Survey effort not met.<br><br>16.13 ha have been surveyed within the Subject Land within the associated PCT (44), in addition to historical efforts conducted in the PREP area.<br><br>The species has been found to occur within the Subject Land and a species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-14. |
| *Swainsona murrayana* | Slender Darling Pea | 44, 157, 163, 164, 216 | September | 1,976.23 | 314.78 | 8.1 hours of parallel field traverse effort conducted in September 2023 covering approximately 32.43 ha.<br><br>467 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 282.37 ha. | **Species detected.**<br><br>Survey effort not met.<br><br>314.80 ha have been surveyed within the Subject Land within associated PCTs (44, 157, 163, 164, 216), in addition to historical efforts conducted in the PREP area.<br><br>The species has been found to occur within the Subject Land and a species' polygon has been created, further discussed in Section 5.2.2 and shown in Figure 5-15. |
| *Swainsona plagiotropis* | Red Darling Pea | 44 | September | 54.50 | 15.07 | 0.3 hour of parallel field traverse effort conducted in September 2023 covering approximately 1.21 ha.<br><br>12 two-phase grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 13.86 ha. | **Species detected.**<br><br>Survey effort not met.<br><br>15.07 ha have been surveyed within the Subject Land within the associated PCTs (44), in addition to efforts conducted in the PREP area.<br><br>The species has been found to occur within the Subject Land and a species' polygon has been created, further discussed in Section 5.2.2.3 and shown in Figure 5-16. |
| *Swainsona sericea* | Silky Swainson-pea | 44 | September - November | 54.50 | 15.07 | 0.3 hour of parallel field traverse effort conducted in September 2023 covering approximately 1.21 ha.<br><br>12 two-phase, grid-based systematic surveys conducted in September 2024 within associated PCTs covering approximately 13.86 ha. | **Species not detected**.<br><br>Survey effort met.<br><br>15.07 ha have been surveyed within the Subject Land within associated PCTs (44) for this species, in addition to efforts conducted in the PREP area. The species has not been detected, and survey effort is considered sufficient. |

### Haul Route

Survey effort for threatened fauna candidate species assessed as having the potential to occur within the Haul Route DF is presented in Table 5-10.

Threatened fauna species were surveyed in accordance with their relevant guidelines and NSW BioNet (NSW DCCEEW, 2025b) survey specifications, as detailed in Section 2.2.

Survey effort for threatened flora candidate species assessed as having the potential to occur within the Haul Route DF is presented in Table 5-11.

Threatened flora species were surveyed in accordance with *Surveying threatened plants and their habitats* (DPIE, 2020a) using the parallel field traverse survey approach as described in Section 2.2.3.3 of this BDAR.

TABLE 5-10 HAUL ROUTE THREATENED FAUNA CANDIDATE SPECIES SURVEY EFFORT

| Season | Target Species | Surveys completed |
|---|---|---|
| Winter 2023: 18 – 20 July 2023 | • Pink Cockatoo (*Lophochroa leadbeateri*)<br>• Little Eagle (*Hieraaetus morphnoides*)<br>• Black-breasted Buzzard (breeding) (*Hamirostra melanosternon*) | Tree assessment was undertaken to assess for the presence of hollows, stick nests or other habitat features. No hollows, nests or other significant habitat features were observed in the Haul Route DF.<br><br>No threatened fauna were observed.<br><br>Refer to Figure 2-12. |
| Spring 2024: 9 – 13 September 2024 | • Australian Bustard (*Ardeotis australis*)<br>• Thick-billed Grasswren (*Amytornis modestus obscurior*) | Bird census: three locations were surveyed for three consecutive mornings in PCTs 123 and 155. The areas were systematically searched for 20 minutes.<br><br>Note that PCT 123 is not associated with the Australian Bustard nor the Thick-billed Grasswren but PCT mapping was updated following survey the September 2024 effort.<br><br>The target species were not observed.<br><br>Refer to Figure 2-12. |
| | • Pink Cockatoo (*Lophochroa leadbeateri*)<br>• Little Eagle (*Hieraaetus morphnoides*)<br>• Habitat assessment for threatened reptiles. | Six habitat assessments were conducted in PCTs 123, 155 and areas near the Haul Route DF, and opportunistic habitat assessment was conducted along the Haul Route DF. Habitat searches focused on assessing for the presence of rocky areas, particularly gibber rock, burrows, nests, hollows, patches of remnant woody vegetation and disturbance.<br><br>No hollow bearing trees were identified during searches, necessary for breeding habitat for the Pink Cockatoo. |

| Season | Target Species | Surveys completed |
|---|---|---|
| | | Areas of potential shelter for threatened reptiles were observed and gibber rock was present along the length of the Haul Route DF.<br><br>No patches of remnant vegetation or large stick nests were present within the Haul Route DF, necessary for breeding habitat for the Little Eagle.<br><br>The target species were not observed.<br><br>Refer to Figure 2-12. |
| Spring 2024: 18 – 22 November 2024 | • Stimson's Python (*Antaresia stimsoni*)<br>• Crowned Gecko or Southern Sandplain Gecko (*Lucasium stenodactylum* or *Lucasium microplax*)<br>• Eastern Fat-tailed Gecko (*Diplodactylus platyurus*)<br>• Barrier Range Dragon (*Ctenophorus mirrityana*) | Threatened reptile transects were undertaken along the length of the Haul Route DF, in PCTs 123, 155 and 158 and areas of non-native vegetation. Four repeat transects were conducted over four nights.<br><br>Surveys were conducted up to approximately 120 minutes, or on a pro-rata basis depending on the area to be surveyed.<br><br>Spotlighting was undertaken along the length of the Haul Route DF. Inspection was undertaken in any areas of potential shelter such as rock crevices, underground holes, cracks in the ground, abandoned burrows, low hollows, fallen trees and termite mounds.<br><br>The target species were not observed.<br><br>Refer to Figure 2-12. |
| | • Australian Bustard (*Ardeotis australis*) | Bird census: four locations were surveyed for three consecutive afternoons in PCTs 123, 155 and 158. The areas were systematically searched for 20 minutes.<br><br>Note that PCT 123 is not associated with the Australian Bustard, but a bird census was completed in this PCT to provide a comprehensive record of birds present in the vicinity of the Haul Route DF.<br><br>The target species was not observed.<br><br>Refer to Figure 2-12. |

## TABLE 5-11 HAUL ROUTE THREATENED FLORA CANDIDATE SPECIES SURVEY EFFORT

| Target Species | Common Name | Associated PCTs | Recommended Survey Period | Area (ha) of Associated PCTs | Survey Methods |
|---|---|---|---|---|---|
| *Acacia notabilis* | Mallee Golden Wattle | 123, 155 | All year | 0.98 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCTs in the Haul Route DF in September and November 2024.<br><br>The target species was not detected. |
| *Acacia rivalis* | Creek Wattle | 123 | All year | 0.29 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCT in the Haul Route DF in September and November 2024.<br><br>The target species was not detected. |
| *Atriplex infrequens* | A saltbush | 158 | November - February | 0.22 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCT in the Haul Route DF in November 2024.<br><br>The target species was not detected. |
| *Convolvulus tedmoorei* | Bindweed | 158 | June - September | 0.22 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCT in the Haul Route DF in September 2024.<br><br>The target species was not detected. |
| *Eleocharis obicis* | Spike-Rush | 158 | October - November | 0.22 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCT in the Haul Route DF in November 2024.<br><br>The target species was not detected. |

| Target Species | Common Name | Associated PCTs | Recommended Survey Period | Area (ha) of Associated PCTs | Survey Methods |
|---|---|---|---|---|---|
| *Indigofera longibractea* | Showy Indigo | 123, 155 | All year | 0.98 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCTs in the Haul Route DF in September and November 2024.<br><br>The target species was not detected. |
| *Swainsona flavicarinata* | Yellow-Keeled Swainsona | 155 | June - October | 0.69 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCT in the Haul Route DF in September 2024.<br><br>The target species was not detected. |
| *Swainsona murrayana* | Slender Darling Pea | 155, 158 | September | 0.91 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCTs in the Haul Route DF in September 2024.<br><br>The target species was not detected. |
| *Swainsona viridis* | Creeping Darling Pea | 123, 155 | September-October | 0.98 | Parallel field traverses by two ecologists were conducted along the length and width of the associated PCTs in the Haul Route DF in September 2024.<br><br>The target species was not detected. |

## 5.2.2 CANDIDATE SPECIES OCCURRENCE

### 5.2.2.1 CANDIDATE SPECIES FOUND NOT TO OCCUR FOLLOWING SURVEY EFFORT

Following the targeted survey effort for threatened candidate species, as described in Table 5-8 and Table 5-9, the following eight (8) species were considered not to occur within the Subject Land:

Fauna

- Australian Bustard (*Ardeotis australis*)
- Pink Cockatoo (*Lophochroa leadbeateri*)
- Square-tailed Kite (*Lophoictinia isura*)

Flora

- Claypan Daisy (*Brachyscome muelleroides*)
- Silky Swainson-pea (*Swainsona sericea*)

**Haul Route**

All threatened candidate species were considered not to occur following survey effort within the Haul Route DF. Survey effort for each target species was met.

#### 5.2.2.2 CANDIDATE SPECIES ASSUMED PRESENT

Threatened fauna survey effort was not met for one (1) candidate species:

- Grey Snake (*Hemiaspis damelii*).

The Grey Snake was not previously assessed as a candidate species and specific survey guidelines were not available for the species. As such, spotlighting transects were only undertaken in proximity to dams within the Subject Land for this species. Based on recent updates to the BAM-C and NSW BioNet (NSW DCCEEW, 2025b), the species is now considered as a candidate for the Project, and survey guidelines have been stipulated. All associated PCTs, irrespective of distance from wetlands or rivers should now be surveyed. Therefore, the species has been assumed present in any unsurveyed areas of PCT associated with the species (PCT 17, 24, 160).

Threatened flora survey effort was not met for five (5) flora candidate species, including:

- A Spear-grass (*Austrostipa wakoolica*);
- A burr-daisy (*Calotis moorei*);
- Small Scurf-pea (*Cullen parvum*);
- Lanky Buttons (*Leptorhynchos orientalis*); and
- Austral Pillwort (*Pilularia novae-hollandiae*).

These species have been assumed to be present within areas of associated PCTs that were insufficiently surveyed.

**Haul Route**

No candidate species will be required to be assumed present for the Haul Route DF.

#### 5.2.2.3 CANDIDATE SPECIES FOUND TO OCCUR FOLLOWING SURVEY EFFORT

Nine (9) candidate species have been observed within the Subject Land; three (3) fauna species and six (6) flora species, as listed below:

Fauna

- Southern Bell Frog (*Litoria raniformis*);
- Southern Myotis (*Myotis macropus*); and
- Plains-wanderer* (*Pedionomus torquatus*) (dual credit species, Subject Land contains Important Area mapping).

Flora

- Mossgiel Daisy (*Brachyscome papillosa*);
- Winged Peppercress (*Lepidium monoplocoides*);
- Chariot Wheels (*Maireana cheelii*);
- Turnip Copperburr (*Sclerolaena napiformis*);
- Slender Darling Pea (*Swainsona murrayana*); and
- Red Darling Pea (*Swainsons plagiotropis*).

Threatened species recorded in the Subject Land and the broader PREP area are presented in Figure 5-1. This Figure displays all threatened species recorded including ecosystem species, candidate species and species listed under the EPBC Act.

Detected threatened species, other than candidate species, which were recorded within or near the Subject Land or in the PREP Area, include the following:

- Sharp-tailed Sandpiper (*Calidris acuminata*), listed as vulnerable and migratory under the EPBC Act, was observed in wetland habitat during the Summer 2023 and December 2024 survey events. The wetlands were subsequently avoided by the Project.
- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*);
- Southern Whiteface (*Aphelocephala leucopsis*);
- Burr Daisy (*Calotis moorei*);
- Spotted Harrier (*Circus assimilis*);
- White-fronted Chat (*Epthianura albifrons*);
- Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*);
- Black Falcon (*Falco subniger*);
- Little Eagle (*Hieraaetus morphnoides*);
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*);
- Plains-wanderer (*Pedionomus torquatus*) (dual credit species);
- Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*);
- Possible echolocation call recording of Corben's Long-eared Bat (*Nyctophilus corbeni*) was made across The PREP Area; however, not within the Subject Land.

**Haul Route**

No candidate species were detected within the Haul Route DF.

## 5.3 SPECIES' POLYGONS

Species' polygons are required to be prepared for each candidate species present, or assumed to be present, in accordance with the BAM, within the Subject Land.

Species' polygons have been developed for candidate species found present and assumed to be present within the Subject Land based on the species' polygon specifications outlined in NSW BioNet (NSW DCCEEW, 2025b) and relevant guidelines for the species. Species' polygons are described below and presented in Figure 5-2 to Figure 5-16. A summary of all candidate species known or assumed to be present, with details of their threatened and SAII status and biodiversity risk weighting, is provided in Table 5-28.

### 5.3.1 FAUNA SPECIES' POLYGONS

**Grey Snake (*Hemiaspis damelii*)**

The Grey Snake was targeted during the December 2024 survey event to align with the aural-visual surveys for the Southern Bell Frog (*Litoria raniformis*) at the dams within the Subject Land. However, this survey effort did not meet all the guidelines specified in NSW BioNet (NSW DCCEEW, 2025b) which recommends the following:

- *Suitable habitat is soil cracks particularly on cracking clay floodplains.*
- *Survey should occur across all associated PCTs, irrespective of distance from wetlands or rivers.*
- *The best chance of detection is on warm humid nights when frogs and insects are abundant.*
- *Nights with a minimum temperature above 15 degrees Celsius are preferable for survey.*
- *The recommended survey technique is spotlighting.*
- *Survey effort should be at least 120 person-minutes per 50 ha of suitable habitat replicated over 4 consecutive nights.*

Survey effort was not undertaken in all associated PCTs. No specific guidelines are provided in NSW BioNet (NSW DCCEEW, 2025b) regarding creation of the species' polygon and, therefore, species presence has been assumed in all areas of PCT 17, 24 and 160, which all occur on clay floodplains.

The total area of species' polygon is 32.40 ha. The breakdown by VZ is provided in Table 5-12. Refer to Figure 5-2 for a map of the species' polygon.

TABLE 5-12 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR THE GREY SNAKE WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 17 / VZ01_moderate | PCT 24 / VZ02_moderate | PCT 160 / VZ06_ good |
|---|---|---|---|
| Grey Snake (*Hemiaspis damelii*) | 1.02 | 3.77 | 27.61 |

**Southern Bell Frog (*Litoria raniformis*)**

THE SOUTHERN BELL FROG WAS TARGETED DURING THE DECEMBER 2024 SURVEY EVENT THROUGH AURAL-VISUAL SURVEYS IN ACCORDANCE WITH THE SPECIES GUIDELINES DESCRIBED IN *NSW SURVEY GUIDE FOR THREATENED FROGS* (NSW DPIE, 2020C). DIURNAL SEARCHES FOR THE PLAGUE MINNOW (*GAMBUSIA HOLBROOKI*) AND WATER SOURCE SURVEYS HAD PREVIOUSLY BEEN CONDUCTED IN SEPTEMBER 2024 AT 45 LOCATIONS AND 13 LOCATIONS WERE FOUND TO CONTAIN SUITABLE BREEDING HABITAT AND WERE THUS SUBJECT TO TARGETED SURVEYS. IN DECEMBER 2024, EACH OF THE 13 LOCATIONS WAS SURVEYED FOR UP TO FOUR (4) NIGHTS OR UNTIL THE TARGET SPECIES WAS DETECTED. THE SPECIES WAS DETECTED AT FOUR SURVEY LOCATIONS. REFER TO PHOTOGRAPH 15 SOUTHERN BELL FROG (*LITORIA RANIFORMIS*)

for an example of an observation of the species.

The species' polygon for the Southern Bell Frog was developed in accordance with the *NSW Survey Guide for Threatened Frogs* (NSW DPIE, 2020c), which states that '*the species' polygon boundary should align with aquatic habitats linked directly to the record and a buffer, incorporating the PCTs with which the species is associated, of 200 metres radius from the top*

*of bank. Where relevant this should include minimum 50 metre wide corridors of native and non-native vegetated areas linking the available waterbodies*'.

One of the locations in which the Southern Bell Frog was observed, in the south-east of the Subject Land (refer to Figure 5-3) was within in dam which is not within the Subject Land, there are no PCTs associated with the species nearby (PCTs 17 and 24) and there were no waterbodies, including drainage and irrigation channels, linking the dam to the Subject Land. Instead, the dam links to Curtains Creek which does not cross Subject Land in this area. The other three farm dams in which the species was observed, in the north-west of the Subject Land (refer to Figure 5-3) are each spaced approximately 3.5 km apart from one another, and have no associated PCTs within 200 m of the dam. However, 50 m corridors of non-native and native vegetation (PCT 163 and PCT 164) along irrigations channels connecting these dams to other farm dams and / or creeks have been included in species' polygon.

The total area of species' polygon is 8.84 ha, including 1.86 ha of non-native vegetation. The breakdown by VZ is provided in Table 5-13. Refer to Figure 5-3 for a map of the species' polygon.

TABLE 5-13 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR THE SOUTHERN BELL FROG WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 0 | PCT 163 / VZ07_moderate | PCT 164 / VZ08_ good | PCT 164 / VZ10_moderate |
|---|---|---|---|---|
| Southern Bell Frog (*Litoria raniformis*) | 1.86 | 0.23 | 1.88 | 4.87 |

PHOTOGRAPH 15 SOUTHERN BELL FROG (*LITORIA RANIFORMIS*)

**Southern Myotis (*Myotis macropus*)**

The Southern Myotis was surveyed using echolocation call detection devices deployed during multiple survey events. In February 2022, eight devices were deployed for a period of ten nights. A subsequent survey took place between February and March 2023, during which six devices were deployed for three months. From March to May 2023, one device was deployed on a met mast for 51 recording nights. A deployment occurred between December 2023 and March 2024, with seven devices operating over 17 nights. Additionally, one recorder was attached to the same met mast for another extended period of three months from June to September 2024. More details are provided in Appendix C, Appendix D and Appendix E.

Possible detections of the Southern Myotis were recorded at all eight recording locations in Summer 2022. In Summer 2023, detections were noted at Sites 10, 17, and 27 and in 2024, at survey locations 9, 13, 16, 17 and 18.

Species' polygons for the Southern Myotis have been developed in accordance with '*Species credit' threatened bats and their habitats - NSW survey guide for the Biodiversity Assessment Method* (NSW DPIE, 2021) which states:

*Use aerial imagery, or ground data to locate and map the high bank of any medium to large permanent creeks, rivers or other waterbodies within 200 metres of the subject land. Species' polygon boundaries should align with all PCTs on the subject land with which the species is associated that occur within 200 metres of the high bank, or high tide mark of creeks, rivers or other waterbodies mapped. If the species was recorded in any additional PCTs on the subject land these PCTs should also be included in the species' polygon.*

Accordingly, all dams and waterbodies within the PREP area were buffered by 200 metres. The PCT mapping for the Subject Land was then clipped to the buffered areas so each area of vegetation zone within the buffered waterbody area could be calculated. Areas of non-native vegetation were deleted from this clipped layer. The final species' polygon for the Southern Myotis was in the buffered areas of the waterbodies overlapping Subject Land, broken down by veg zone. Note as the species was recorded acoustically across the Subject Land, a precautionary approach has been taken for calculating the species' polygon. It has been situated within all PCTs which fall within 200 m of waterbodies in the Subject Land, rather than only associated PCTs.

The total area of species' polygon for the Southern Myotis is 339.18 ha. The breakdown by VZ is provided in Table 5-14. Refer to Figure 5-4 for a map of the species' polygon.

TABLE 5-14 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR THE SOUTHERN MYOTIS WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 17 / VZ01_moderate | PCT 24 / VZ02_moderate | PCT 44 / VZ03_moderate | PCT 157 / VZ05_good | PCT 160 / VZ06_ good | PCT 163 / VZ07_moderate | PCT 164 / PCT VZ08_ good | 164 / VZ10 moderate |
|---|---|---|---|---|---|---|---|---|
| Southern Myotis (*Myotis macropus*) | 1.02 | 0.18 | 18.77 | 0.81 | 11.73 | 5.89 | 107.53 | 193.25 |

### Plains-wanderer (*Pedionomus torquatus)*

The species' polygon for the Plains-wanderer aligns with the Important Mapped Areas present within the Subject Land as stipulated in NSW BioNet (NSW DCCEEW, 2025b) and Section 5.2.5, Box 2 of the BAM (NSW DPIE, 2020a). All other observations and habitat for the species have been aligned with ecosystem credits. Refer to Photograph 16 and Photograph 17 for examples of observations of the species.

The total area of species' polygon for the Plains-wanderer is 0.18 ha. The breakdown by VZ is provided in Table 5-15. Refer to Figure 5-5 for a map of the species' polygon.

TABLE 5-15 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR THE PLAINS-WANDERER WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 164 / VZ08_ good |
|---|---|
| Plains-wanderer (*Pedionomus torquatus*) | 0.18 |

However, to satisfy the requirements of the Commonwealth Government which recommended that further habitat assessment be undertaken across the Subject Land for the Plains-wanderer (EPBC ref: 2023/09584, November 2023), ERM conducted grassland assessments for the species in the Subject Land in Spring and Summer 2024. Grassland suitability was informed by the species' Conservation Advice (Cwth TSSC, 2015) and the *publication Multi-scale habitat selection by a cryptic, critically endangered grassland bird—The Plains-wanderer (Pedionomus torquatus): Implications for habitat management and conservation* (Nugent, et al., 2022). The Subject Land was surveyed by vehicle, with a total of 179 km travelled, mapping suitable habitat based on the composition, structure and soil types. Grassland habitat supporting a cover of 50% bare-ground, 10% litter and 40% consisting of grasses and herbs was categorised as 'ideal' Plains-wanderer habitat (Cwth TSSC, 2015; Nugent, et al., 2022). To provide further detail on habitat suitability across the Subject Land, 50 'golf-ball' method habitat assessments were completed, in accordance with the methodology described in Nugent et al. (2022). In addition, nine rapid habitat assessments were conducted. At each location the vegetation, groundcover height, shrub height, soil type and structural composition were recorded to determine habitat suitability.

The outcome of these habitat assessments determined that 708.82 ha of suitable habitat occurs for the Plains-wanderer across the Subject Land. This is broken down by VZ in Table 5-16 and provided spatially in Figure 5-17.

TABLE 5-16 AREA OF SUITABLE HABITAT BY VEGETATION ZONE FOR THE PLAINS-WANDERER WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 17 / VZ01_moderate | PCT 44 / VZ03_moderate | PCT 153 / VZ04_good | PCT 157 / VZ05_good | PCT 160 / VZ06_ good | PCT 163 / VZ07 moderate | PCT 164 / VZ08_good | PCT 164 / VZ09_ Malacocera | 164 / VZ10 moderate |
|---|---|---|---|---|---|---|---|---|---|
| Plains-wanderer (*Pedionomus torquatus*) | 0.01 | 31.64 | 4.26 | 0.61 | 9.49 | 5.49 | 204.76 | 4.14 | 448.43 |

PHOTOGRAPH 16 ADULT PLAINS-WANDERER (*PEDIONOMUS TORQUATUS*)

PHOTOGRAPH 17 IMMATURE PLAINS-WANDERER (*PEDIONOMUS TORQUATUS*)

### 5.3.2 FLORA SPECIES' POLYGONS

**A Spear-grass (*Austrostipa wakoolica*)**

Parallel field traverses were carried out in December 2024 but subsequent revisions to the PCT mapping after this survey event resulted in no effort completed within the associated PCT (PCT 17). The unit of measurement used to determine the species' polygon is area and thus *Austrostipa wakoolica* has been assumed to be present in all areas of PCT 17. This is the only PCT associated with the species within the Subject Land.

The total area of species' polygon for *Austrostipa wakoolica* is 1.02 ha. The breakdown by VZ is provided in Table 5-17. Refer to Figure 5-6 for a map of the species' polygon.

TABLE 5-17 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *AUSTROSTIPA WAKOOLICA* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 17 / VZ01_moderate |
|---|---|
| A Spear-grass (*Austrostipa wakoolica*) | 1.02 |

**Mossgiel Daisy (*Brachyscome papillosa*)**

*Brachyscome papillosa* was surveyed in September 2023 using parallel field traverses and in September 2024 using the two-phase, grid-based systematic approach. Conditions were appropriate for the detection of the species, with flowering and fruiting records confirmed. The species was mainly recorded to the east of the Cobb Highway, with only a few observations to the west (refer to Figure 5-7). Observations appeared in association with grey soils within *Maireana aphylla* shrublands (PCT 164 of good and moderate condition), aligning with habitat described by the species' conservation advice (Cwth DEWHA, 2008) and NSW BioNet (NSW DCCEEW, 2025b). The species was also recorded occasionally in grassland habitat associated with PCT 44 in moderate condition. The species was not recorded on red clays.

Refer to Photograph 18 for an example of an observation of the species.

However, survey effort was not met across the entire Subject Land in all associated PCTs. *Brachyscome papillosa* has been assumed present in areas not surveyed in PCTs 24, 44, 157, 160, 164 and 216 which occur on brown or grey clay soil. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses) or survey point (for grid-based systematic surveys). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

The species has not been assumed present in PCT 153 and 163 which occur on red clay soil.

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Brachyscome papillosa* has been developed based on:

- Areas in which the species has been assumed to be present in associated PCTs on brown and grey clay soils; and
- The areas in which observations of individuals occurred. A 30 m buffer was applied to all observations, which was dissolved if the buffered areas overlapped with nearby observations of *Brachyscome papillosa*. While this buffer is normally applied to flora species assessed by 'count', it was considered that the buffer allowed for seasonal variation and expansion of the species into surrounding suitable microhabitats.

The total area of species' polygon for *Brachyscome papillosa* is 662.26 ha. The breakdown by VZ is provided in Table 5-18. Refer to Figure 5-7 for a map of the species' polygon.

TABLE 5-18 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *BRACHYSCOME PAPILLOSA* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 24 / VZ02_moderate | PCT 44 / VZ03_moderate | PCT 157 / VZ05_good | PCT 160 / VZ06_ good | PCT 164 / VZ08_ good | PCT 164 / VZ09_ Malacocera | 164 / VZ10_moderate | 216 / VZ11_low |
|---|---|---|---|---|---|---|---|---|
| Mossgiel Daisy (*Brachyscome papillosa*) | 1.46 | 13.82 | 7.95 | 16.78 | 247.11 | 2.33 | 371.63 | 1.18 |

PHOTOGRAPH 18 MOSSGIEL DAISY (*BRACHYSCOME PAPILLOSA)*

### A burr daisy (*Calotis moorei*)

*Calotis moorei* was surveyed during the September 2024 survey event. Two-phase, grid-based systematic surveys were conducted within the associated PCTs 153 and 157 covering approximately 3.42 ha. However, survey effort was insufficient in some areas of these PCTs. *Calotis moorei* had previously been detected in the PREP area and the Project was redesigned to avoid known *Calotis moorei* occurrences. However, a precautionary approach has been applied as the species may occur in unsurveyed areas (as it is known to occur in the locality) and thus the species has been assumed present in these areas. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest grid-based survey point. This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

Microhabitat requirements for *Calotis moorei* could not further delineate where the species is likely to be found within the Subject Land as it is known to grow on sandy soil on flats and is associated with chenopod shrublands (NSW DCCEEW, 2025b). Chenopod shrublands on flats occur across PCT 153 and PCT 157 within the Subject Land and fine scale soil mapping indicating where there is a higher proportion of sand in the soil occur is not available.

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Calotis moorei* is based on assumed presence in all areas of associated PCT not sufficiently surveyed (PCTs 153, 157).

The total area of species' polygon for *Calotis moorei* is 10.12 ha. The breakdown by VZ is provided in Table 5-19. Refer to Figure 5-8 for a map of the species' polygon.

TABLE 5-19 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *CALOTIS MOOREI* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 153 / VZ04_good | PCT 157 / VZ05_good |
|---|---|---|
| A burr daisy (*Calotis moorei*) | 2.95 | 7.17 |

### Small scurf-pea (*Cullen parvum*)

*Cullen parvum* was surveyed during the December 2024 survey event covering approximately 1.06 ha in the Subject Land. Additional targeted surveys were undertaken for this species in December 2024, however, subsequent revisions to the PCT mapping after this survey event resulted in less effort completed within the associated PCT (PCT 44). As a result, *Cullen parvum* has been assumed present within all unsurveyed areas of PCT 44 which met its microhabitat requirements. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

Microhabitat requirements for *Cullen parvum* further delineated where the species is likely to be found in PCT 44 within the Subject Land. The species is known to grow on grasslands, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses (NSW DCCEEW, 2025b).

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Cullen parvum* is based on all unsurveyed areas of PCT 44 which occur within a 200 m buffer of all waterbodies, including artificial drainage lines and irrigation channels.

The total area of species' polygon for *Cullen parvum* is 18.56 ha. The breakdown by VZ is provided in Table 5-20. Refer to Figure 5-9 for a map of the species' polygon.

TABLE 5-20 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *CULLEN PARVUM* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 44 / VZ03_moderate |
|---|---|
| Small scurf-pea (*Cullen parvum*) | 18.56 |

**Winged Peppercress (Lepidium monoplocoides)**

*Lepidium monoplocoides* was surveyed in September 2023 using parallel field traverses and in September 2024 using the two-phase, grid-based systematic approach. In September 2023, parallel field traverse surveys covered approximately 2.19 ha and, in September 2024, the two-phase, grid-based systematic surveys covered approximately 14.59 ha. In addition, parallel field traverses were conducted in December 2024 covering approximately 5.06 ha. In total, 21.85 ha have been surveyed within the Subject Land within associated PCTs (24, 153, 160, 163, 216). Conditions were appropriate for the detection of the species, with fruiting records confirmed. The species was recorded in association with red claypan microhabitats, and often in areas also occupied by Chariot Wheels (*Maireana cheelii*). The observed microhabitats align with those described by the National Recovery Plan for the species (Mavromihalis, 2010), being in open, sparsely vegetated sites on a range of habitats on heavy clay or clay-loam soils, usually seasonally flooded or prone to waterlogging, in arid to semi-arid areas. The species has been observed in association with *Eucalyptus largiflorens* woodland in the broader PREP, however, within the Subject Land, *Lepidium monoplocoides* was only recorded in claypan microhabitats, despite the presence of other suitable habitats, such as wetland-grassland communities (e.g. PCT 24) described as suitable in NSW BioNet (NSW DCCEEW, 2025b).

Refer to Photograph 19 for an example of an observation of the species.

However, survey effort was not met across the entire Subject Land in all associated PCTs. *Lepidium monoplocoides* has been assumed present in areas not surveyed in PCTs 153, 160, 163 and 216 which occur on open, sparsely vegetated claypans. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses) or survey point (for grid-based systematic surveys). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Lepidium monoplocoides* has been developed based on:

- Areas in which the species has been assumed to be present in associated PCTs on open, sparsely vegetated claypans; and

- The areas in which observations of individuals occurred. A 30 m buffer was applied to all observations, which was dissolved if the buffered areas overlapped with nearby observations of *Lepidium monoplocoides*. While this buffer is normally applied to flora species assessed by 'count', it was considered that the buffer allowed for seasonal variation and expansion of the species into surrounding suitable microhabitats. Note that the species was observed in a small area of PCT 164 (VZ08 and VZ10) despite this PCT not being associated with *Lepidium monoplocoides.*

The total area of species' polygon for *Lepidium monoplocoides* is 26.95 ha. The breakdown by VZ is provided in Table 5-21. Refer to Figure 5-10 for a map of the species' polygon.

TABLE 5-21 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *LEPIDIUM MONOPLOCOIDES* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 153 / VZ04_ good | PCT 160 / VZ06_ good | PCT 163 / VZ07_ moderate | PCT 164 / VZ08_ good | 164 / VZ10_ moderate | 216 / VZ11_ low |
|---|---|---|---|---|---|---|
| Winged Peppercress (*Lepidium monoplocoides*) | 2.95 | 14.05 | 5.90 | 0.06 | 2.80 | 1.18 |

PHOTOGRAPH 19 WINGED PEPPERCRESS (*LEPIDIUM MONOPLOCOIDES*)

### Lanky Buttons (*Leptorhynchos orientalis*)

*Leptorhynchos orientalis* was surveyed during the September 2023 and September 2024 survey events. During the September 2023 survey event, parallel field traverse effort covered approximately 1.68 ha in the Subject Land, and the two-phase, grid-based systematic survey conducted in September 2024 covered approximately 14.17 ha. In total, 15.85 ha have been surveyed within the Subject Land within associated PCTs (24, 44) in addition to historical efforts conducted in the PREP area.

The species has not been detected; however, survey effort is considered insufficient, and the species has been assumed present in unsurveyed areas of PCT 24 and 44. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest grid-based survey point. This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

Microhabitat requirements for *Leptorhynchos orientalis* could not further delineate where the species is likely to be found within the Subject Land as it is known to grow in grassland, sometimes on the margins of swamps (NSW DCCEEW, 2025b). Grassland occurs across PCT 24 and PCT 44 within the Subject Land but swampy, wetland areas have been excluded. However, as the species is known to 'sometimes' grow on the margins of swamps, this characteristic has not been used to narrow down where it may occur within PCTs 24 and 44 within the Subject Land.

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Leptorhynchos orientalis* is based on assumed presence in all areas of associated PCT not sufficiently surveyed (PCTs 24, 44).

The total area of species' polygon for *Leptorhynchos orientalis* is 15.28 ha. The breakdown by VZ is provided in Table 5-22. Refer to Figure 5-11 for a map of the species' polygon.

TABLE 5-22 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *LEPTORHYNCHOS ORIENTALIS* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 24 / VZ02_moderate | PCT 44 / VZ03_moderate |
|---|---|---|
| Lanky Buttons (*Leptorhynchos orientalis*) | 1.46 | 13.82 |

### Chariot Wheels (*Maireana cheelii*)

*Maireana cheelii* was surveyed in September 2023 using parallel field traverses and in September 2024 using the two-phase, grid-based systematic approach. In September 2023, parallel field traverse surveys covered approximately 32.43 ha and, in September 2024, the two-phase, grid-based systematic surveys covered approximately 270.40 ha. In addition, parallel field traverses were conducted in December 2024 covering approximately 16.58 ha. In total, 319.41 ha have been surveyed within the Subject Land within associated PCTs (44, 157, 164). Conditions were appropriate for the detection of the species, with fruiting records confirmed. The species was recorded in association with red claypan microhabitats, and often in areas also occupied by Winged Peppercress (*Lepidium monoplocoides*) and often along the edges of or on scalded surfaces with Hairy Bluebush (*Maireana pentagona*). The observed microhabitats align with those described by NSW BioNet (NSW DCCEEW, 2025b).

Refer to Photograph 20 for an example of an observation of the species.

However, survey effort was not met across the entire Subject Land in all associated PCTs. *Maireana cheelii* has been assumed present in areas not surveyed in PCTs 44, 157 and 164 which occur on open, sparsely vegetated claypans. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses) or survey point (for grid-based systematic surveys). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Maireana cheelii* has been developed based on:

- Areas in which the species has been assumed to be present in associated PCTs on open, sparsely vegetated claypans; and
- The areas in which observations of individuals occurred. A 30 m buffer was applied to all observations, which was dissolved if the buffered areas overlapped with nearby observations of *Maireana cheelii*. While this buffer is normally applied to flora species assessed by 'count', it was considered that the buffer allowed for seasonal variation and expansion of the species into surrounding suitable microhabitats. Note that the species was observed in a small area of PCT 163 (VZ07) despite this PCT not being associated with *Maireana cheelii.*

The total area of species' polygon for *Maireana cheelii* is 643.09 ha. The breakdown by VZ is provided in Table 5-23. Refer to Figure 5-12 for a map of the species' polygon.

TABLE 5-23 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *MAIREANA CHEELII* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 44 / VZ03_moderate | PCT 157 / VZ05_good | PCT 163 / VZ07_moderate | PCT 164 / VZ08_ good | PCT 164 / VZ09_ Malacocera | 164 / VZ10_moderate |
|---|---|---|---|---|---|---|
| Chariot Wheels (*Maireana cheelii*) | 15.35 | 9.55 | 2.03 | 237.76 | 2.33 | 376.07 |

PHOTOGRAPH 20 CHARIOT WHEELS (*MAIREANA CHEELII*)

**Austral Pillwort (*Pilularia novae-hollandiae*)**

*Pilularia novae-hollandiae* was surveyed during the December 2024 survey event covering approximately 1.06 ha in the Subject Land. Additional targeted surveys were undertaken for this species in December 2024, however, subsequent revisions to the PCT mapping after this survey event resulted in less effort completed within the associated PCT (PCT 44). As a result, *Pilularia novae-hollandiae* has been assumed present within all unsurveyed areas of PCT 44 which met its microhabitat requirements. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

Microhabitat requirements for *Pilularia novae-hollandiae* further delineated where the species is likely to be found in PCT 44 within the Subject Land. The species is known to grow in shallow swamps and waterways (NSW DCCEEW, 2025b).

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Pilularia novae-hollandiae* is based on all unsurveyed areas of PCT 44 which occur within a 200 m buffer of all waterbodies, including artificial drainage lines and irrigation channels.

The total area of species' polygon for *Pilularia novae-hollandiae* is 18.56 ha. The breakdown by VZ is provided in Table 5-24. Refer to Figure 5-13 for a map of the species' polygon.

TABLE 5-24 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *PILULARIA NOVAE-HOLLANDIAE* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 44 / VZ03_moderate |
|---|---|
| Austral Pillwort (*Pilularia novae-hollandiae*) | 18.56 |

**Turnip Copperburr (*Sclerolaena napiformis*)**

*Sclerolaena napiformis* was surveyed in September 2023 using parallel field traverses and in September 2024 using the two-phase, grid-based systematic approach. In September 2023, parallel field traverse surveys covered approximately 1.21 ha, and, in September 2024, the two-phase, grid-based systematic surveys covered approximately 13.86 ha. In addition, parallel field traverses were conducted in December 2024 covering approximately 1.06 ha. In total, 16.13 ha have been surveyed within the Subject Land within the associated PCT (44).

Conditions were appropriate for the detection of the species, with flowering and fruiting records confirmed. The species was recorded to the east of the Cobb Highway only. Observations appeared in association grey soils within *Maireana aphylla* shrublands (PCT 164), whereas it is described as normally occurring in remnant grassland habitats with red-brown loam clay or grey cracking clay soils. The species was also recorded in Bladder Saltbush (*Atriplex vesicaria*) shrubland, associated with PCT 157. The species was not recorded on red clays.

Refer to Photograph 21 for an example of an observation of the species.

However, survey effort was not met across the entire Subject Land in all associated PCTs. *Sclerolaena napiformis* has been assumed present in areas not surveyed in PCT 44. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses) or survey point (for grid-based systematic surveys). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Sclerolaena napiformis* has been developed based on:

- Areas in which the species has been assumed to be present in the associated PCT 44; and
- The areas in which observations of individuals occurred. A 30 m buffer was applied to all observations, which was dissolved if the buffered areas overlapped with nearby observations of *Sclerolaena napiformis*. While this buffer is normally applied to flora species assessed by 'count', it was considered that the buffer allowed for seasonal variation and expansion of the species into surrounding suitable microhabitats. Note that the species was observed in a small area of PCT 157 (VZ05) and PCT 164 (VZ08 and VZ10) despite these PCTs not being associated with *Sclerolaena napiformis.*

The total area of species' polygon for *Sclerolaena napiformis* is 58.76 ha. The breakdown by VZ is provided in Table 5-25. Refer to Figure 5-14 for a map of the species' polygon.

TABLE 5-25 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *SCLEROLAENA NAPIFORMIS* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 44 / VZ03_moderate | PCT 157 / VZ05_ good | PCT 164 / VZ08_ good | 164 / VZ10_moderate |
|---|---|---|---|---|
| Turnip Copperburr (*Sclerolaena napiformis*) | 53.54 | 0.10 | 1.57 | 3.55 |

PHOTOGRAPH 21 TURNIP COPPERBURR (*SCLEROLAENA NAPIFORMIS*)

**Slender Darling Pea (*Swainsona murrayana*)**

*Swainsona murrayana* was surveyed in September 2023 using parallel field traverses and in September 2024 using the two-phase, grid-based systematic approach. In September 2023, parallel field traverse surveys covered approximately 32.43 ha, and, in September 2024, the two-phase, grid-based systematic surveys covered approximately 282.37 ha. In total, 314.80 ha have been surveyed within the Subject Land within the associated PCTs (44, 157, 163, 164, 216).

Conditions were appropriate for the detection of the species, with flowering and fruiting records confirmed. The species was recorded both east and west of the Cobb Highway. Observations appeared in association grey soils within *Maireana aphylla* shrublands (PCT 164) and in grassland habitat associated with PCT 44. The species has been described as occurring in a wide range of habitat types, including chenopod shrublands and grasslands on plains, and on clay-based soils (NSW DCCEEW, 2025b).

Refer to Photograph 22 for an example of an observation of the species.

However, survey effort was not met across the entire Subject Land in all associated PCTs. *Swainsona murrayana* has been assumed present in areas not surveyed in PCTs 44, 157, 163, 164 and 216. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses) or survey point (for grid-based systematic surveys). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

Microhabitat requirements for *Swainsona murrayana* could not further delineate where the species is likely to be found within the Subject Land due to the range of habitats which the species can occupy (NSW DCCEEW, 2025b).

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Swainsona murrayana* has been developed based on:

- Areas in which the species has been assumed to be present in associated PCTs; and
- The areas in which observations of individuals occurred. A 30 m buffer was applied to all observations, which was dissolved if the buffered areas overlapped with nearby observations of *Swainsona murrayana*. While this buffer is normally applied to flora species assessed by 'count', it was considered that the buffer allowed for seasonal variation and expansion of the species into surrounding suitable microhabitats.

Note that NSW BioNet (2025b) stipulates that '*the species' polygon is to be drawn to encompass contiguous vegetation zones in which the species has been detected'.* However, surveyed areas in contiguous suitable habitat surrounding observations of the species have not been included as this area has been assessed through targeted survey. The 30 m buffer allows for variation in the localised extent of the species.

The total area of species' polygon for *Swainsona murrayana* is 685.46 ha. The breakdown by VZ is provided in Table 5-26. Refer to Figure 5-15 for a map of the species' polygon.

TABLE 5-26 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *SWAINSONA MURRAYANA* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 44 / VZ03_moderate | PCT 157 / VZ05_good | PCT 160 / VZ06_ good | PCT 163 / VZ07_ moderate | PCT 164 / VZ08_ good | PCT 164 / VZ09_ Malacocera | 164 / VZ10_ moderate | 216 / VZ11_low |
|---|---|---|---|---|---|---|---|---|
| Slender Darling Pea (*Swainsona murrayana*) | 16.85 | 7.91 | 0.09 | 10.02 | 275.09 | 2.33 | 371.99 | 1.18 |

PHOTOGRAPH 22 SLENDER DARLING PEA (*SWAINSONA MURRAYANA*)

**Red Darling Pea (*Swainsona plagiotropis*)**

*Swainsona plagiotropis* was surveyed in September 2023 using parallel field traverses and in September 2024 using the two-phase, grid-based systematic approach. In September 2023, parallel field traverse surveys covered approximately 1.21 ha and, in September 2024, the two-phase, grid-based systematic surveys covered approximately 13.86 ha. In total, 15.07 ha have been surveyed within the Subject Land within the associated PCT (44).

Conditions were appropriate for the detection of the species, with flowering and fruiting records confirmed. The species was recorded to the east of the Cobb Highway only. Observations appeared in association grey soils within *Maireana aphylla* shrublands (PCT 164). The species has been described as occurring on flat grassland and in heavy red soil, often on roadsides and especially in table drains, and is often an indicator species of *Enteropogon* and *Austrostipa* grasslands (NSW DCCEEW, 2025b). Therefore, within the Subject Land, *Swainsona plagiotropis* was not found within its typical habitat.

Refer to Photograph 23 for an example of an observation of the species.

However, survey effort was not met across the entire Subject Land in the associated PCT. *Swainsona plagiotropis* has been assumed present in areas not surveyed in PCT 44. Note that unsurveyed areas were considered those which occurred more than 200 m away from the nearest survey track (for parallel field traverses) or survey point (for grid-based systematic surveys). This is based on the 200 m grid approach applied to determine the required survey effort in September 2024.

Microhabitat requirements for *Swainsona plagiotropis* could not further delineate where the species is likely to be found within the Subject Land due to the lack of fine scale soil mapping differentiating between red clay and other clay soils (NSW DCCEEW, 2025b).

The unit of measurement used to determine the species' polygon is area and thus the species' polygon for *Swainsona plagiotropis* has been developed based on:

- Areas in which the species has been assumed to be present in the associated PCT 44; and
- The areas in which observations of individuals occurred. A 30 m buffer was applied to all observations, which was dissolved if the buffered areas overlapped with nearby observations of *Swainsona plagiotropis*. While this buffer is normally applied to flora species assessed by 'count', it was considered that the buffer allowed for seasonal variation and expansion of the species into surrounding suitable microhabitats. Note that the species was observed in a small area of PCT 164 (VZ08 and VZ10) despite this PCT not being associated with *Swainsona plagiotropis.*

The total area of species' polygon for *Swainsona plagiotropis* is 14.62 ha. The breakdown by VZ is provided in Table 5-27. Refer to Figure 5-16 for a map of the species' polygon.

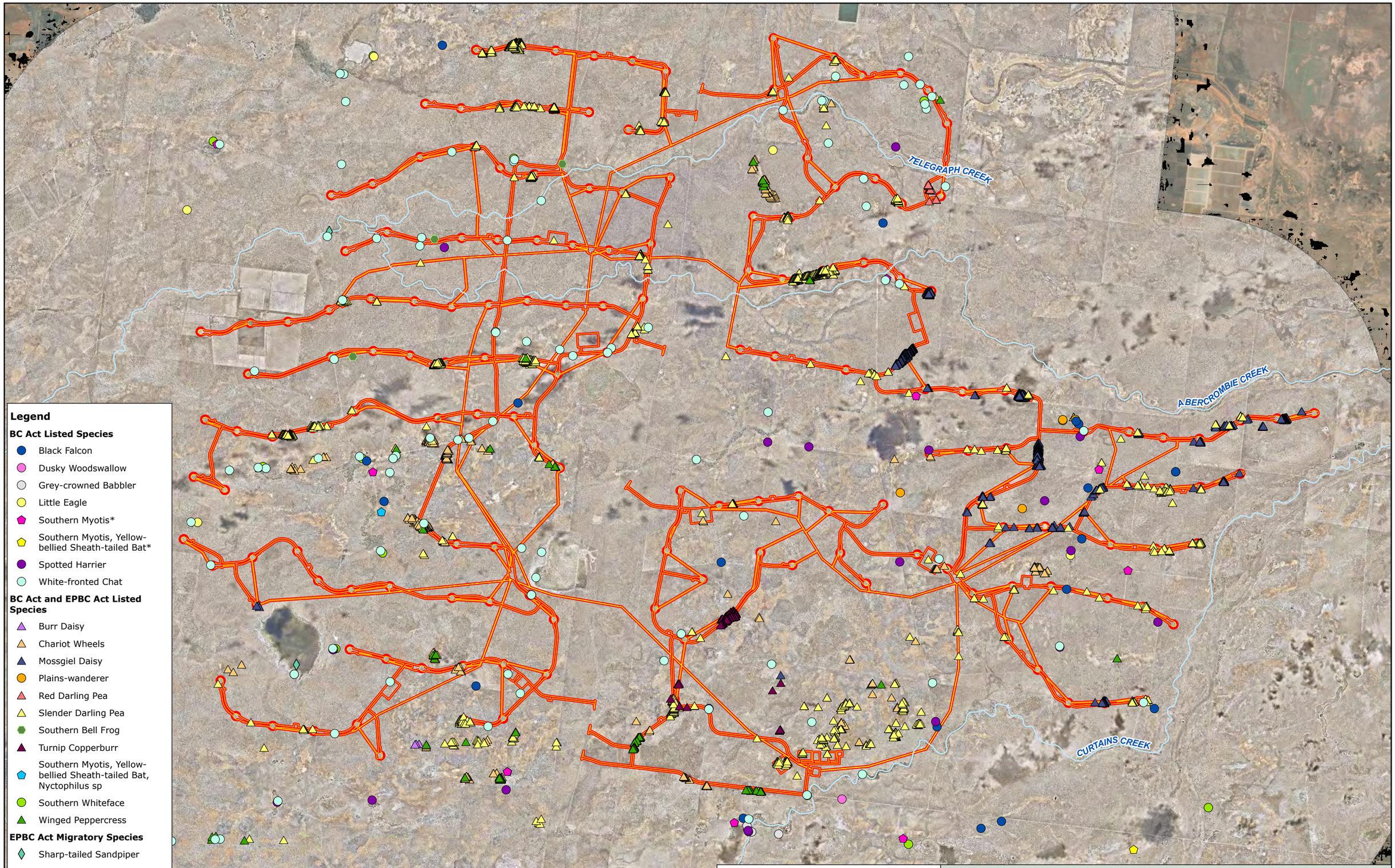
TABLE 5-27 SPECIES' POLYGON AREA BY VEGETATION ZONE FOR *SWAINSONA PLAGIOTROPIS* WITHIN THE SUBJECT LAND

| PCT / VZ Area (ha) | PCT 44 / VZ03_moderate | PCT 164 / VZ08_ good | 164 / VZ10_moderate |
|---|---|---|---|
| Red Darling Pea (*Swainsona plagiotropis*) | 13.82 | 0.23 | 0.57 |

PHOTOGRAPH 23 RED DARLING PEA (*SWAINSONA PLAGIOTROPIS*)

## TABLE 5-28 SUMMARY OF PRESENT AND ASSUMED CANDIDATE THREATENED SPECIES

| Common name | Scientific name | BC Act Status | EPBC Act Status | Biodiversity risk weighting | SAII entity | Notes | Total species' polygon area (ha) |
|---|---|---|---|---|---|---|---|
| A Spear-grass | *Austrostipa wakoolica* | E | E | 2 | No | Assumed present | 1.02 |
| Mossgiel Daisy | *Brachyscome papillosa* | V | V | 2 | No | Detected | 662.26 |
| A burr daisy | *Calotis moorei* | E | E | 3 | Yes | Assumed present | 10.12 |
| Small Scurf-Pea | *Cullen parvum* | E | - | 2 | No | Assumed present | 18.56 |
| Grey Snake | *Hemiaspis damelii* | E | E | 2 | No | Assumed present | 32.40 |
| Winged Peppercress | *Lepidium monoplocoides* | E | E | 2 | No | Detected | 26.95 |
| Lanky Buttons | *Leptorhynchos orientalis* | E | - | 2 | No | Assumed present | 15.28 |
| Southern Bell Frog | *Litoria raniformis* | E | V | 2 | No | Detected | 8.84 (includes 1.86 ha of non-native vegetation) |
| Chariot Wheels | *Maireana cheelii* | V | V | 2 | No | Detected | 643.09 |
| Southern Myotis | *Myotis macropus* | V | - | 2 | No | Detected | 339.18 |
| Plains-wanderer | *Pedionomus torquatus* | E | CE | 3 | Yes | Detected | 0.18 |
| Austral Pillwort | *Pilularia novae-hollandiae* | E | - | 2 | No | Assumed present | 18.56 |
| Turnip Copperburr | *Sclerolaena napiformis* | E | E | 2 | No | Detected | 58.76 |
| Slender Darling Pea | *Swainsona murrayana* | V | V | 2 | No | Detected | 685.46 |
| Red Darling Pea | *Swainsona plagiotropis* | V | V | 2 | No | Detected | 14.62 |




# F5-1 Threatened Species Records within the Subject Land

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

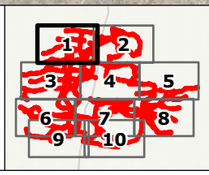
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

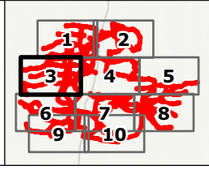
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

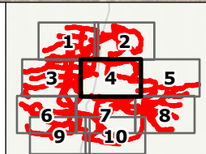
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 4

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

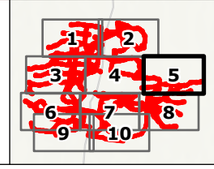
0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 5

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

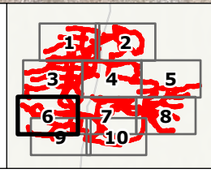
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 6

**The Plains Wind Farm**
**Amended BDAR**

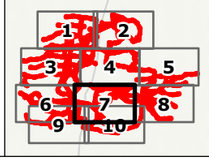
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**PCT ID - PCT Name**

- 0 - Not Native
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- Subject Land

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 7

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

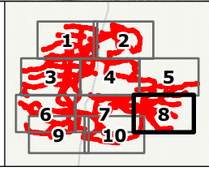
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 8

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

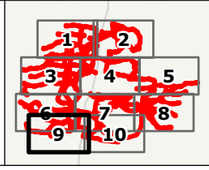
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
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Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 9

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

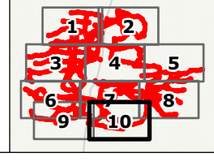
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

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# F5-2 Species Polygon for Grey Snake (Hemiaspis damelii). Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

SIXTEEN MILE GUMS

**Legend**

- Southern Bell Frog Sighting
- Species Polygon
- Subject Land

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-3 Species Polygon for Southern Bell Frog (Litoria raniformis)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**Legend**

- Southern Myotis*
- Southern Myotis, Yellow-bellied Sheath-tailed Bat*
- Southern Myotis, Yellow-bellied Sheath-tailed Bat, Nyctophilus sp*
- Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

* Acoustic Detection Only

Coordinate System:
GDA2020 MGA Zone 55

Date: 04/04/2025
Created By: MB
Drawing Size: A3

0 1.5 3Km

1:90,000

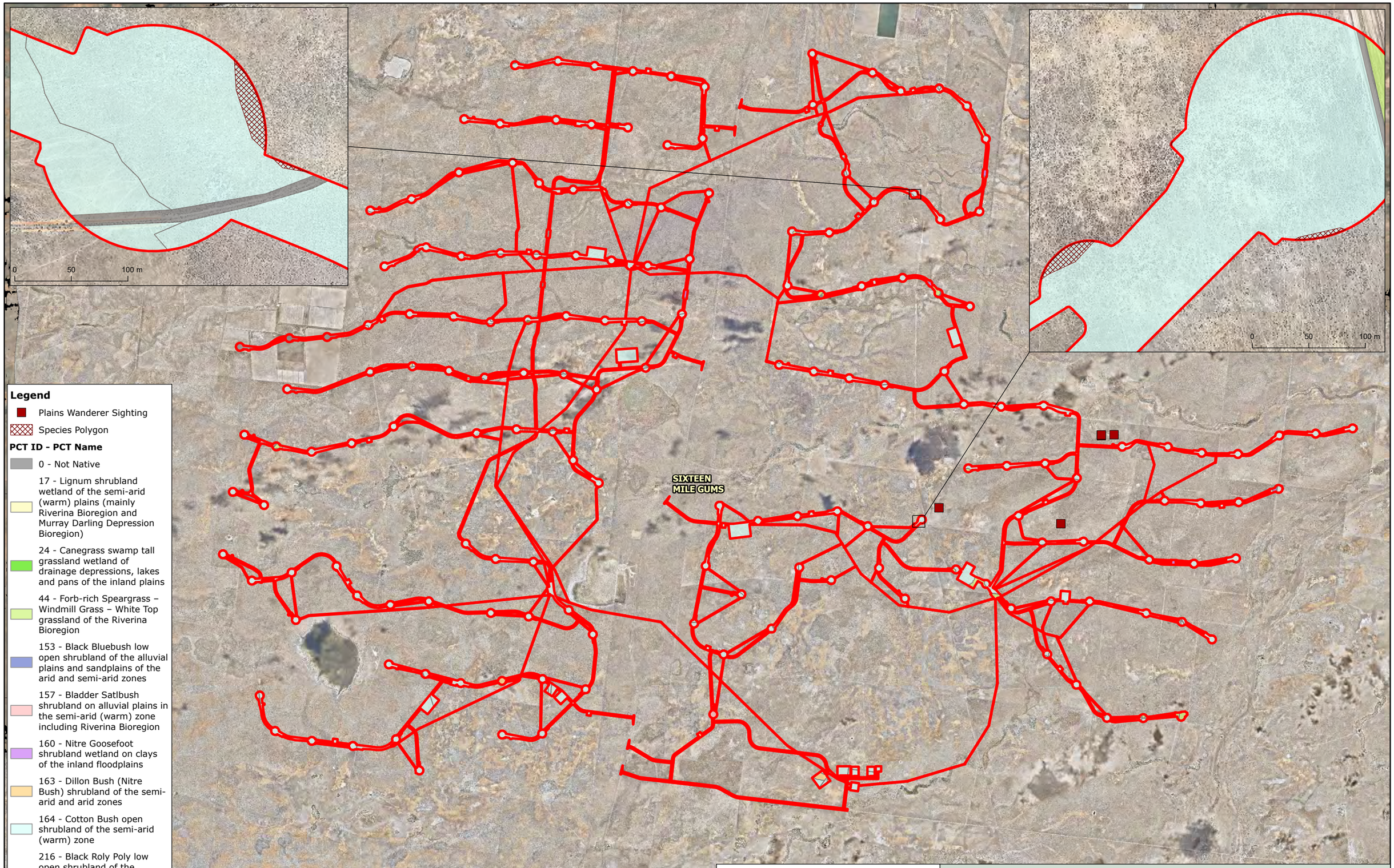
# F5-4 Species Polygon for Southern Myotis (Myotis macropus)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx




**Legend**

- Plains Wanderer Sighting
- Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

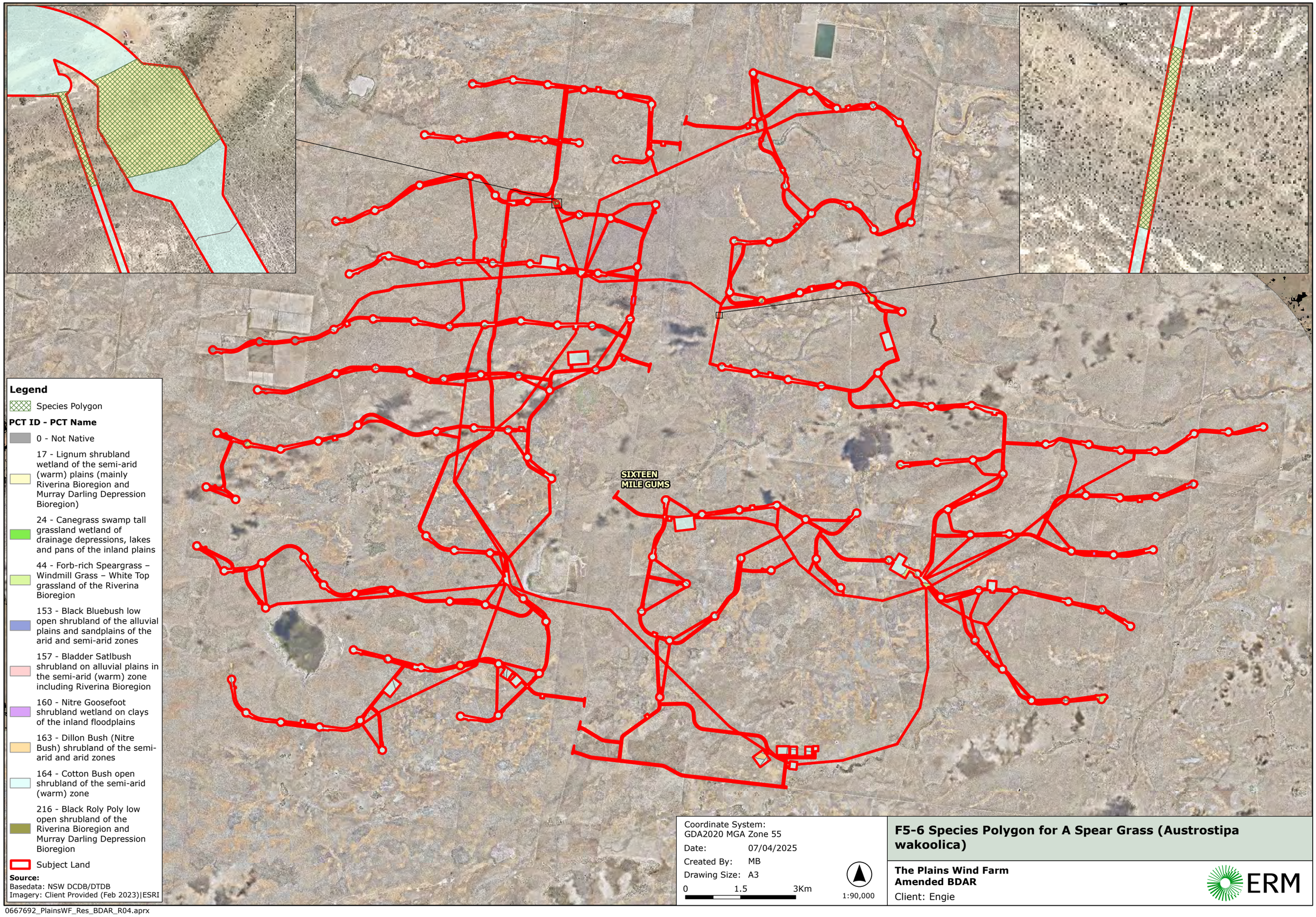
# F5-5 Species Polygon for Plains-wanderer (Pedionomus torquatus)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx




**Legend**

Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-6 Species Polygon for A Spear Grass (Austrostipa wakoolica)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

SIXTEEN MILE GUMS

**Legend**

- Mossgiel Daisy Sighting
- Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025
Created By: MB
Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-7 Species Polygon for Mossgiel Daisy (Brachyscome papillosa)

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F5-8 Species Polygon for a Burr Daisy (Calotis moorei) Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

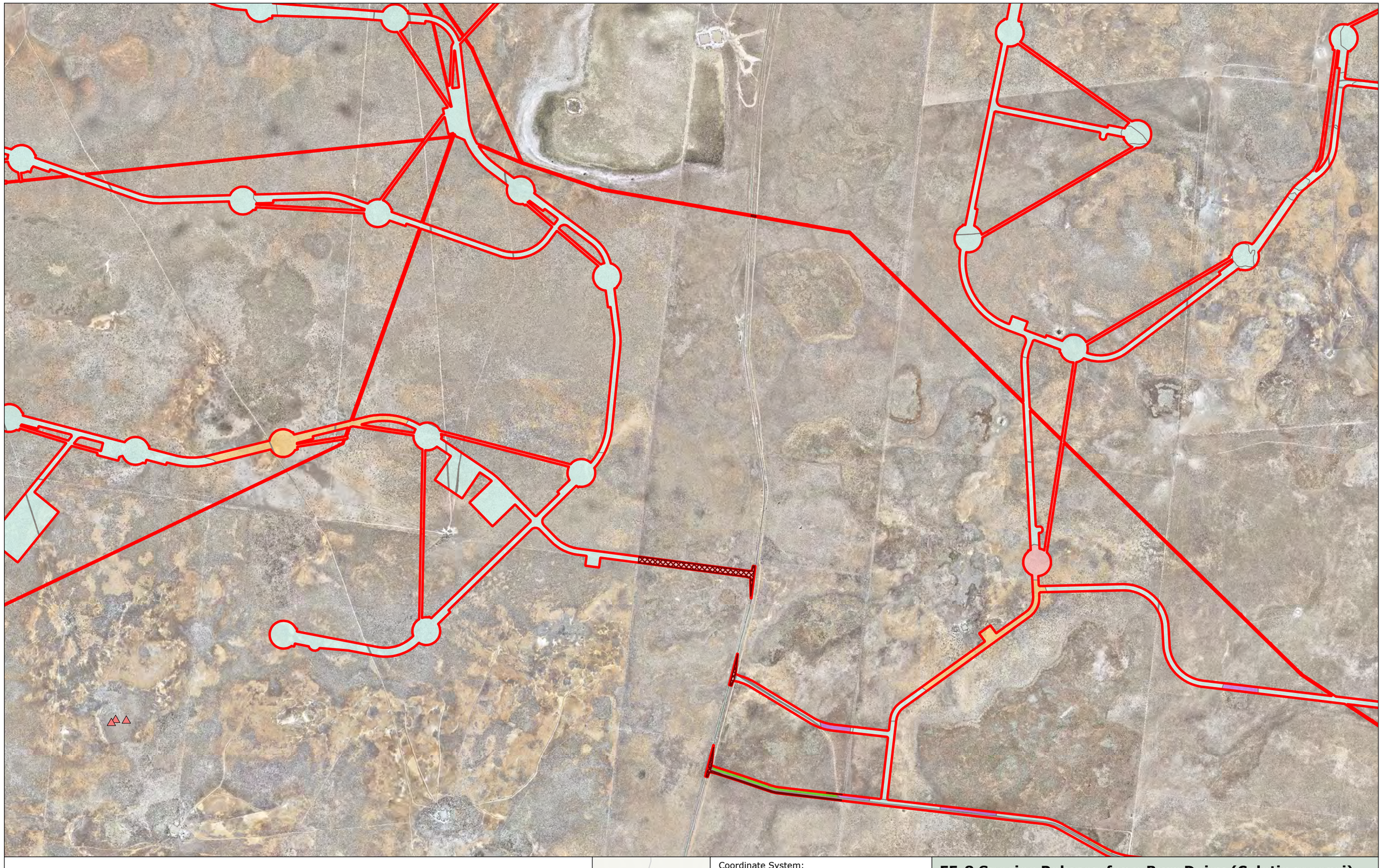
# F5-8 Species Polygon for a Burr Daisy (Calotis moorei) Map 2

**The Plains Wind Farm**
**Amended BDAR**

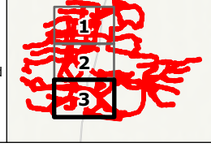
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx



Burr Daisy Sighting
Species Polygon
**PCT ID - PCT Name**
0 - Not Native
24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
GDA2020 MGA Zone 55
Date: 07/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F5-8 Species Polygon for a Burr Daisy (Calotis moorei) Map 3

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

SIXTEEN MILE GUMS

**Legend**

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-9 Species Polygon for Bindweed (Convolvulus tedmoorei)

**The Plains Wind Farm**
**Amended BDAR**

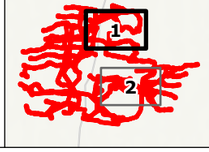
Client: Engie

ERM

Species Polygon
Waterbody area 200m Buffer

**PCT ID - PCT Name**

0 - Not Native
17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
GDA2020 MGA Zone 55
Date: 07/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F5-10 Species Polygon for Small Scurf-pea (Cullen parvum). Map 1

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

Species Polygon
Waterbody area 200m Buffer
**PCT ID - PCT Name**
0 - Not Native
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land

Coordinate System:
GDA2020 MGA Zone 55
Date: 07/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F5-10 Species Polygon for Small Scurf-pea (Cullen parvum). Map 2

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

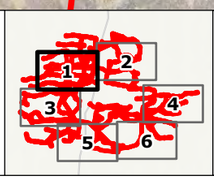
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Winged Pepper-cress Sighting
Species Polygon

**PCT ID - PCT Name**

0 - Not Native
17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Subject Land




Coordinate System:
GDA2020 MGA Zone 55
Date: 07/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F5-11 Species Polygon for Winged Pepper-cress (Lepidium monoplocoides). Map 1

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

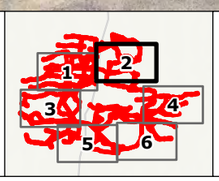
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Winged Pepper-cress Sighting
Species Polygon

**PCT ID - PCT Name**

0 - Not Native
17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
GDA2020 MGA Zone 55
Date: 07/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

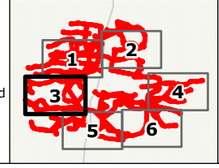
# F5-11 Species Polygon for Winged Pepper-cress (Lepidium monoplocoides). Map 2

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Winged Pepper-cress Sighting
Species Polygon
**PCT ID - PCT Name**
0 - Not Native
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
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Date: 07/04/2025
Created By: MB
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1:25,000

# F5-11 Species Polygon for Winged Pepper-cress (Lepidium monoplocoides). Map 3

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

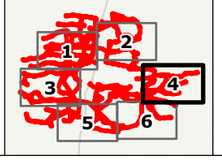
24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

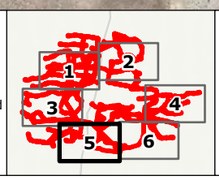
# F5-11 Species Polygon for Winged Pepper-cress (Lepidium monoplocoides). Map 4

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

Winged Pepper-cress Sighting
Species Polygon
**PCT ID - PCT Name**
0 - Not Native
24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
GDA2020 MGA Zone 55
Date: 07/04/2025
Created By: MB
Drawing Size: A3
0 500 1,000m
1:25,000

# F5-11 Species Polygon for Winged Pepper-cress (Lepidium monoplocoides). Map 5

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Winged Pepper-cress Sighting

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

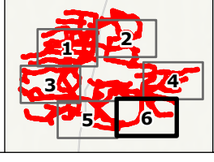
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F5-11 Species Polygon for Winged Pepper-cress (Lepidium monoplocoides). Map 6

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**Legend**

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-12 Species Polygon for Lanky Buttons (Leptorhynchos orientalis)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**Legend**

- Charriot Wheels Sighting
- Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-13 Species Polygon for Chariot Wheels (Maireana cheelii)

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

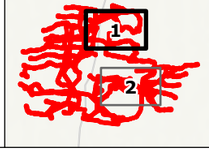
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon
Waterbody area 200m Buffer

**PCT ID - PCT Name**

0 - Not Native
17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025
Created By: MB
Drawing Size: A3

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# F5-14 Species Polygon for Austral Pillwort (Pilularia novae-hollandiae). Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon
Waterbody area 200m Buffer

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Subject Land

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

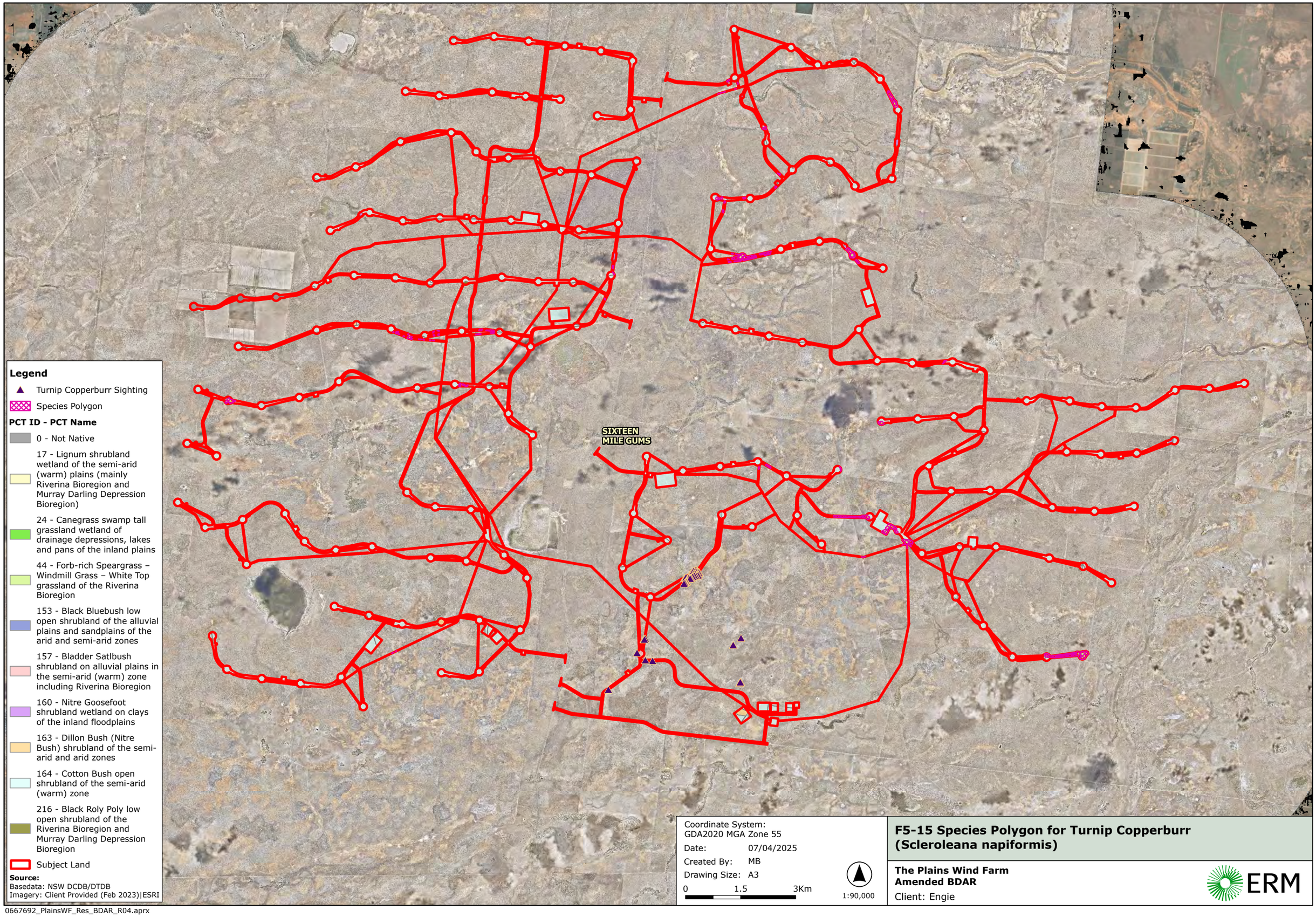
# F5-14 Species Polygon for Austral Pillwort (Pilularia novae-hollandiae). Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx




**Legend**

- Turnip Copperburr Sighting
- Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025
Created By: MB
Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-15 Species Polygon for Turnip Copperburr (Scleroleana napiformis)

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

SIXTEEN MILE GUMS

**Legend**

- Slender Darling Pea Sighting
- Species Polygon

**PCT ID - PCT Name**

- 0 - Not Native
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone
- 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025
Created By: MB
Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-16 Species Polygon for Slender Darling Pea (Swainsona murrayana)

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

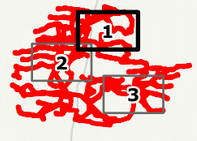
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Red Darling Pea Sighting
Species Polygon

**PCT ID - PCT Name**

0 - Not Native
17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
164 - Cotton Bush open shrubland of the semi-arid (warm) zone
Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025
Created By: MB
Drawing Size: A3

0 500 1,000m

1:25,000

# F5-17 Species Polygon for Red Darling Pea (Swainsona plagiotropis). Map 1

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

SIXTEEN MILE GUMS

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones

157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

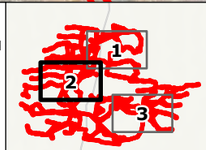
160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F5-17 Species Polygon for Red Darling Pea (Swainsona plagiotropis). Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygon

**PCT ID - PCT Name**

0 - Not Native

24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

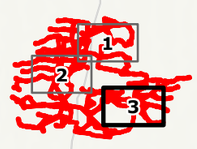
44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains

164 - Cotton Bush open shrubland of the semi-arid (warm) zone

216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F5-17 Species Polygon for Red Darling Pea (Swainsona plagiotropis). Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**Legend**

- ERM Plains-wanderer Habitat Mapping
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025
Created By: MB
Drawing Size: A3

0 1.5 3Km

1:90,000

# F5-18 ERM Habitat Mapping for the Plains-wanderer

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

# 6. IDENTIFYING PRESCRIBED IMPACTS

## 6.1 OVERVIEW

Prescribed impacts are identified in Clause 6.1 of the BC Regulation. Prescribed impacts are those that are additional to the clearing of native vegetation and associated habitat. These include:

- Development which will impact the habitat of threatened species or ecological communities associated with:
  - Karst, caves, crevices, cliffs, rock outcrops and other geological features of significance;
  - Human-made structures; and
  - Non-native vegetation.
- Development which will impact areas connecting threatened species habitat, such as biodiversity corridors;
- Development which will impact water quality, waterbodies and hydrological processes that sustain threatened species and TECs (including from subsidence or upsidence from underground mining);
- Wind turbine strikes on protected animals; and
- Vehicle strikes affecting threatened species or animals that are part of a TEC.

The BAM does not provide an approach to determine the number and class of biodiversity credits that are required for a prescribed impact. However, prescribed impacts on biodiversity may be considered by a consent authority when they determine the biodiversity credits required to be retired (or other conservation measures required to be taken) under a planning approval.

An assessment of the relevance of these prescribed impacts to the Project is provided in Table 6-1 for the Subject Land and Table 6-2 for the Haul Route DF.

TABLE 6-1 ASSESSMENT OF PRESCRIBED IMPACTS WITHIN THE SUBJECT LAND

| Feature | Present (Subject Land) | Description of feature characteristics and location | Threatened entities that use, are likely to use, or are part of the habitat feature. |
|---|---|---|---|
| Karst, caves, crevices, cliffs, rocks or other geological features of significance | No | Not present within Subject Land. | Not applicable.<br><br>Note that ground rocks present in the Haul Route DF are discussed in Table 6-2 and Section 3.1. |
| Human-made structures | Yes | Human-made structures subject to impacts as a result of the Project include fences, gates, windmills and water troughs and other agricultural infrastructure. | Raptors and other avian species are known to frequently use human-made structures for foraging, perching and nesting.<br><br>While current human-made structures may be removed during construction of the Project, it is noted that additional fencing and infrastructure will be installed for and by the Project. Therefore, there is no expected limitation to the availability of these features. |

| Feature | Present (Subject Land) | Description of feature characteristics and location | Threatened entities that use, are likely to use, or are part of the habitat feature. |
|---|---|---|---|
| Non-native vegetation | Yes | 65.88 ha within the Subject Land are mapped as non-native vegetation. This area includes roads, dams, infrastructure and highly modified land used for cropping and / or intensive grazing.<br><br>Vegetation within these areas is dominated by exotic species. | The species' polygon for the Southern Bell Frog (*Litoria raniformis*) incorporates 1.86 ha of non-native vegetation.<br><br>Non-native vegetation is likely to provide supplementary foraging habitat for raptors. Exotic grasses can provide foraging resources for granivorous birds. Invertebrates may use non-native vegetation and provide a food source for insectivorous species.<br><br>The proportion of non-native vegetation in relation to the rest of the Subject Land is minimal. It is possible that areas of non-native vegetation will increase as a result of the Project and thus there is no expected limitation to the availability of this feature. |
| Habitat connectivity | Yes | The Subject Land is predominantly in a modified condition following a long history of clearing and grazing. Treed vegetation is present in low densities across the broader PREP, largely restricted to natural drainage lines, with woodlands scattered on sandy rises. The extent of this woody vegetation cover has been dramatically reduced by land clearing for agriculture.<br>Native shrubland and grasslands are present in high densities, largely lacking canopy and shrub layers >1m. Connectivity across this open landscape is considered substantially low for species dependent on woody vegetation. | Threatened fauna species such as the Plains-wanderer (*Pedionomus torquatus*), White-fronted Chat (*Epthianura albifrons*), Southern Bell Frog (*Litoria raniformis*), Australasian Bittern (*Botaurus poiciloptilus*) and the Blue-billed Duck (*Oxyura australis*) utilise shrublands and grasslands. These areas within the Subject Land likely provide important connectivity between habitat patches, particularly movement between water sources and for shelter. However, fencing, overgrazing and land management practices has reduced the connectivity values of these areas.<br><br>Further assessment of this prescribed impact is provided in Section 8.3. |

| Feature | Present (Subject Land) | Description of feature characteristics and location | Threatened entities that use, are likely to use, or are part of the habitat feature. |
|---|---|---|---|
| Waterbodies, water quality and hydrological processes | Yes | The Subject Land is located south of the Murrumbidgee River and north of the Coleambally Outfall Drain. NSW Hydrography mapping shows that three (3) ephemeral creeks intersect the Subject Land:<br>• Telegraph Creek – first / second order<br>• Abercrombie Creek – first order<br>• Curtains Creek – first order.<br><br>Large ephemeral wetlands largely associated with PCT 13 are present across the PREP area, particularly in the west. These wetlands have been mapped in Figure 2-2 and avoided by the Project.<br><br>Other wetland PCTs are mapped across the Subject Land, including:<br>• PCT 24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains;<br>• PCT 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains; and<br>• PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)<br><br>Farm dams occur throughout the Subject Land (Figure 2-2). These artificial features are of relatively low quality with limited emergent or submerged vegetation. However, they still provide a valuable water resource for fauna. | The Southern Bell Frog (*Litoria raniformis*) was recorded in three farm dams in the north-west of the Subject Land, and one farm dam in the south-east. The farm dams in the north-west and the channels and run-off areas that connect them provide habitat for this species and other water-dependent species.<br><br>All threatened and protected species are expected to utilise waterbodies throughout the Subject Land, including permanent water sources such as farm dams and ephemeral water sources in wetland areas.<br><br>Further assessment of this prescribed impact is provided in Section 8.3. |

| Feature | Present (Subject Land) | Description of feature characteristics and location | Threatened entities that use, are likely to use, or are part of the habitat feature. |
|---|---|---|---|
| Wind turbine strikes | Yes | The Project involves the construction of wind turbines. | Threatened, migratory, nomadic and resident avian species may be impacted by wind turbine strike and / or barotrauma. Mitigation measures will be implemented to reduce these risks.<br><br>A Bird and Bat Management Plan (BBAMP) has been prepared, which identifies and details mitigation measures to be implemented to reduce the risk of turbine strike and / or barotrauma.<br><br>Further assessment of this prescribed impact is provided in Section 8.3 and the BBAMP is provided as Appendix I. Avian habitat is described in Section 6.2. |
| Vehicle strike | Yes | The Project is located on either side of the Cobb Highway and includes the unsealed public road, West Burrabogie Road. There are also many internal farm tracks intersecting the Subject Land.<br><br>In addition, while the Project will endeavour to use existing tracks, it may result in the construction of new internal access tracks to deliver wind farm components and for operational purposes.<br><br>It is possible that fauna will venture onto or fly across these roads and access tracks, resulting in vehicle strike. | Ground-dwelling threatened species have been recorded across the Subject Land and the PREP Area, including the Plains-wanderer (*Pedionomus torquatus*) and Southern Bell Frog (*Litoria raniformis*). These species are at risk of vehicle strike because of Project activities. In addition, avian species may fly low across roads and tracks and be hit by moving vehicles.<br><br>Mitigation measures will be implemented to reduce the risk of vehicle strike. Further assessment of this prescribed impact is provided in Section 8.3. |

### Haul Route

TABLE 6-2 ASSESSMENT OF PRESCRIBED IMPACTS WITHIN THE HAUL ROUTE DF

| Feature | Present (Subject Land) | Description of feature characteristics and location | Threatened entities that use, are likely to use, or are part of the habitat feature. |
|---|---|---|---|
| Karst, caves, crevices, cliffs, rocks or other geological features of significance | Yes | Ground rocks and / or gibber are present within the Haul Route DF. | Threatened reptiles, such as the ecosystem species - Woma (*Aspidites ramsayi*), Wedgesnout Ctenotus (*Ctenotus brooksi*), Ringed Brown Snake (*Pseudonaja modesta*) - may use rocks for shelter and basking.<br><br>Note that the candidate species have been surveyed and found not to occur within the Haul Route DF.<br><br>Further assessment of this prescribed impact is provided in Section 8.3. |
| Human-made structures | Yes | Human-made structures subject to impacts as a result of the transportation of wind farm components include fences, gates and road infrastructure. | Raptors and other avian species are known to frequently use human-made structures for foraging, perching and nesting. While current human-made structures may be removed during upgrades required for the haul route, it is noted that additional infrastructure will be installed. Therefore, there is no expected limitation to the availability of this feature and no further assessment is required. |
| Non-native vegetation | Yes | 1.24 ha within the Haul Route DF are mapped as non-native vegetation. This area includes roads, tracks and infrastructure. There is also non-native vegetation along the proposed haul route which may be impacted by the transportation of wind farm components and the required upgrades.<br><br>Vegetation within these areas is dominated by exotic species. | Non-native vegetation is likely to provide supplementary foraging habitat for raptors. Exotic grasses can provide foraging resources for granivorous birds. Invertebrates may use non-native vegetation and provide a food source for insectivorous species.<br><br>It is possible that areas of non-native vegetation will increase as a result of the proposed haul route and within the Haul Route DF and thus there is no expected limitation to the availability of this feature. |

| Feature | Present (Subject Land) | Description of feature characteristics and location | Threatened entities that use, are likely to use, or are part of the habitat feature. |
|---|---|---|---|
| Habitat connectivity | Yes | The Haul Route DF is largely situated along existing tracks, bounded by acacia and chenopod shrublands. This vegetation is consistent with the surrounding landscape. However, wider tracks may be required within the Haul Route DF. | Habitat connectivity may be reduced in a minor way for small mammalian and avian species, such as the following ecosystem species which prefer shelter for movement:<br><br>Kultarr (*Antechinomys laniger*), the Forrest's Mouse (*Leggadina forresti*), the Dusky Hopping Mouse (*Notomys* fuscus), Bolam's Mouse (*Pseudomys bolami*) and the Sandy Inland Mouse (*Pseudomys hermannsburgensis*), Long-haired Rat (*Rattus villosissimus)* Stripe-faced Dunnart (*Sand minthopsis macroura*), Southern Whiteface (*Aphelocephala leucopsis*), Rufous Fieldwren (*Calamanthus campestris*), Pied Honeyeater (*Certhionyx variegatus*), White-fronted Chat (*Epthianura albifrons*) and Redthroat (*Pyrrholaemus brunneus*).<br><br>Further assessment of this prescribed impact is provided in Section 8.3. |
| Waterbodies, water quality and hydrological processes | No | An unnamed tributary of Stirling Vale Creek runs south to north to the north-east of the Haul Route DF. Otherwise, no rivers, streams, estuaries or wetlands are present. | No further assessment required. |
| Wind turbine strikes (wind farm development only) | No | Not applicable | No further assessment required. |
| Vehicle strikes | Yes | The delivery of wind farm components along the proposed haul route and within the Haul Route DF will be along existing roads which will require upgrades in places.<br><br>It is possible that fauna will venture onto or fly across these roads, resulting in vehicle strike. | Ground-dwelling threatened species and avian species may occur within the Haul Route DF and along the proposed haul route and may cross or fly across existing and new roads and be subject to vehicle strike.<br><br>These include all listed ecosystem species (refer to Table 5-2). Candidate species have been surveyed and not found to occur.<br><br>These species are at risk of vehicle strike as a result of activities along the Haul Route DF. Mitigation measures will be implemented to reduce the risk of vehicle strike. Further assessment of this prescribed impact is provided in Section 8.3 |

## 6.2 AVIAN COMMUNITY COMPOSITION

Avian species within the Subject Land may be impacted by wind turbine strike and / or barotrauma, a prescribed impact. Detailed assessment of impacts to avian species and mitigation measures to reduce these impacts are provided in Sections 7.1.3 and 8.5, and the BBAMP is provided as Appendix I. An overview of avian habitat within the Subject Land is described below.

### 6.2.1 HABITAT

The relatively homogenous landform which characterises the Subject Land (i.e., plain) and the predominantly uniform vegetation structure (i.e., scattered low chenopod shrubs and tussocky groundcover) represent the main factors in defining bird habitat and associated composition. In addition, the seasonal availability of water resources, typical of a semi-arid climate, dictates habitat suitability.

The sparse occurrence of woody vegetation (i.e., trees and/or tall shrub canopy strata) means that many avian species reliant on hollows and/or tree canopies as part of their lifecycle are likely to have a patchy distribution aligned with drainages lined with Black Box (*Eucalyptus largiflorens*) or isolated sandy rises where remnant trees may occur within the PREP area. These features are not available in the Subject Land. Similarly, water dependent species are also rare to absent as the flat plain that characterises the Subject Land is generally dry with inundation being periodic and limited to lands with low relief.

Non-passerine bird species (birds not within the order Passeriformes) are most likely to benefit from the prevailing habitat characteristics of the Subject Land. Species likely to be observed include raptors, quails and allies, pigeons and doves, swifts and the emu (*Dromaius novaehollandiae*). If observed, non-passerine species reliant on microhabitats offered by areas of wetland or a tree canopy would likely be transient, such as grebes, pelicans and allies, herons and allies, ducks and allies, waders and gulls, cuckoos and kingfishers.

Smaller and/or generalist passerine species most likely to be observed in the Subject Land include crows, ravens, magpies, wrens, pipits and small, shrub-dwelling birds. The presence of anthropogenic features such as fence lines, posts and dams would provide localised favourable conditions for some smaller passerine species such as larks, robins, wagtails, thornbills and finches. Granivores, such as parrots and finches, would also benefit from the presence of areas of grassland. All birds, whether resident, migratory or nomadic, and bat species not dependent on woody vegetation, would benefit from water sources such as farm dams.

#### 6.2.1.1 RESIDENT RAPTOR HABITAT

As per Section 6.1.5 of the BAM, the likely habitat for resident raptor species has been assessed for the Subject Land. Broad habitat types suitable for raptors have been grouped based on Keith (2004) vegetation classes as presented in Table 6-3 . Woodland habitat in the surrounding locality and PREP area has been observed to support resident raptor nesting sites, and relatively high levels of raptor activity. Avian activity was observed to reduce in relation to proximity of woodland patches, with a decline in abundance evident at survey sites > 300 m from a woodland patch. The highly mobile raptor species are likely to utilise remaining grassland, shrubland and non-native vegetation habitat across the site to support foraging behaviour.

As all habitat across the Subject Land provides foraging resources for raptors and nesting within some manmade structures, such as windmills and electricity pylons, resident raptors are anticipated to inhabit the entirety of the site.

TABLE 6-3 RAPTOR HABITAT TYPES

| Broad Habitat Type | Vegetation Class (Keith 2004) | Extent within the Subject Land (ha) |
|---|---|---|
| **Subject Land** | | |
| Grasslands | Riverine Plain Grasslands | 54.50 |
| Shrublands | Inland Floodplain Shrublands | 32.40 |
| | Aeolian Chenopod Shrublands | 4.67 |
| | Riverine Chenopod Shrublands | 1,921.73 |
| Non-native Vegetation | Non-native Vegetation | 65.88 |

### 6.2.2 BIRD AND BAT ADAPTIVE MANAGEMENT PLAN

Turbine strike involves individual birds or bats being killed as a result of collision with moving rotors. The project comprises up to 171 wind turbine generators (WTG), which would each have an overall maximum height of 270 m and maximum rotor sweep area (RSA) of 90 - 270 m. Collision risk varies with species, number and behaviour of birds, site specific topography, weather conditions, turbine height / design and turbine layout (Smales, 2006). Certain bird groups, such as raptors and waterbirds, are considered at greater risk of collision because of their flight heights, size and behaviour.

In addition to fatalities caused directly by turbine rotor strike, microchiropteran bats are known to be at risk of 'barotrauma'. Baerwald et al. (2008) describe barotrauma as tissue and lung damage caused by air pressure changes around turbine rotors. Microchiropteran bats may experience barotrauma if they move through the low-pressure zones caused by air flowing over the rotors. Microchiropteran bats most at risk from barotrauma include relatively high-flying species that prefer to forage above canopy height.

A BBAMP has been prepared for the Project (Appendix I). The BBAMP aims to minimise, mitigate and adaptively manage the impacts of the operation of the WTGs associated with the Project on birds and bats that may occur within the Subject Land. Monitoring has also been integrated into the BBAMP, to identify species' utilisation of the Subject Land and the PREP area. Surveys undertaken to inform the BBAMP are discussed in Section 6.2.3, mitigation of impacts from turbine strike and / or barotrauma is discussed in Section 8.5, and the BBAMP is presented in Appendix I.

#### 6.2.2.1 OUTLINE OF BIRD AND BAT ADAPTIVE MANAGEMENT PLAN

The BBAMP was developed in accordance with *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide (working draft)* (NSW DCCEEW, 2024b) and *Onshore Wind Farm Guidance. Best practice approaches when seeking approval under Australia's national environment law* (Cwth DCCEEW, 2024a). The appended BBAMP (Appendix I) addresses the following:

- BBAMP objectives and consent conditions;
- Baseline data;

- Proposed monitoring program;
- Preliminary turbine risk assessment;
- Risk assessment and collision risk modelling for at risk species;
- Proposed trigger action response plan;
- Offsetting and compensatory measures;
- Proposed turbine strike notification process; and
- Proposed BBAMP review and reporting requirements.

### 6.2.3 BIRD AND BAT UTILISATION SURVEYS

Bird and Bat Utilisation Surveys (BBUS) were undertaken in conjunction with this BDAR to assess the diversity and abundance of bird and bat species within and around the Subject Land. The data from the BBUS were used to support the development of the BBAMP (Appendix I) which identifies 'at risk' species, susceptible to turbine collision and / or barotrauma, and aims to minimise and manage the impact of the wind turbines through adaptive mitigation and management measures. The BBAMP is provided in Appendix H. Analysis of bat acoustic data is presented in Appendix C, Appendix D and Appendix E, and the bird utilisation survey data are provided in Appendix J.

#### 6.2.3.1 BIRDS

**Survey Effort**

Survey effort involved nine separate bird utilisation surveys (BUS) in October 2021 (Spring), February 2022 (Summer), May 2022 (Autumn), August 2022 (Winter), November 2023 (Spring), February 2024 (Summer), June 2024 (Autumn/Winter), August 2024 (Winter) and October 2024 (Spring).

The initial four survey events across 2021 and 2022 consisted of monitoring 26 - 29 fixed observation points strategically placed throughout the PREP area. Each observation point was monitored for a period of 20 minutes and during this time any bird observations were recorded, including species and abundance, flight height, distance from the observation point and flight direction.

The November 2023 and February 2024 surveys followed the *Draft BBAMP Framework 2023* (NSW DPE, 2023). Prior to survey effort, a 3 km x 3 km grid was placed over a previous design of the Subject Land and BUS survey points were placed only within quadrants of the grid containing a proposed turbine. This resulted in 15 - 18 fixed observation points. Where possible, these were numbered to align with the previous BUS points used in seasonal surveys conducted in 2021 and 2022.

The June, August and October 2024 surveys followed the *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide (working draft)* (NSW DCCEEW, 2024b). Following Project design revisions, additional BUS locations were chosen based on the same 3 km x 3 km grid applied in previous survey seasons. Where possible, previous BUS locations were resampled to ensure data analysis could be as consistent and robust as possible.

BUS were conducted over 30 minutes (November 2023 and February 2024) or 20 minutes (June, August, and October 2024) and repeated across three time periods at each survey location. These time periods were:

- Morning (sunrise to 10:00 am);
- Midday (10:00 am to 2:00 pm); and
- Afternoon (2:00 pm to sunset).

The species, type of observation (visual or aural), microhabitat of the detected species, number of individuals for each species, the distance and direction of the species from the observation point, the species' estimated height above ground level, its direction of travel and its behaviour were recorded.

BUS survey locations are presented in Figure 6-1 and a summary of the sampling effort and methodology for each survey season is provided in Table 6-4. All BUS data are provided in Appendix J.

TABLE 6-4: SAMPLING EFFORT AND METHODOLOGY FOR BUS ACROSS SURVEY SEASONS

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| Spring 2021 | BUS01, BUS03, BUS06, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS40, BUS42, BUS43, BUS47, BUS48, BUS49, BUS51 | 1 survey (AM) – BUS23, BUS26, BUS27, BUS28, BUS29, BUS30, BUS38<br>1 survey (Midday) - BUS01, BUS06, BUS09, BUS12, BUS14, BUS20, BUS22 (10:30), BUS42, BUS47<br>1 survey (PM) – BUS03, BUS11, BUS17, BUS19, BUS25, BUS34, BUS40, BUS48, BUS49, BUS51 | 20-minute survey |
| Summer 2022 | BUS01, BUS02, BUS03, BUS06, BUS09, BUS11, BUS13, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS38, BUS40, BUS42, BUS43, BUS48, BUS49, BUS51 | 1 survey (AM) – BUS03, BUS11, BUS30, BUS43, BUS48, BUS49, BUS51<br>1 survey (Midday) – BUS02, BUS06, BUS09, BUS13, BUS14, BUS22, BUS23, BUS29<br>1 survey (PM) – BUS01, BUS17, BUS19, BUS25, BUS26, BUS27, BUS28, BUS38, BUS40, BUS42, BUS20 | 20-minute survey.<br><br>Repeats (BUS20) completed on different days. |
| Autumn 2022 | BUS01, BUS02, BUS03, BUS06, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS42, BUS43, BUS47, BUS48, BUS49. | 1 survey (AM) – BUS03, BUS34.<br>1 survey (Midday) – BUS02, BUS06, BUS09, BUS11, BUS12, BUS22, BUS27, BUS29, BUS30, BUS35, BUS47, BUS48, BUS49<br>1 survey (PM) – BUS14, BUS17, BUS19, BUS20, BUS23, BUS25, BUS26, BUS38, BUS42, BUS43<br>2 repeats for BUS28 (Midday and PM) and BUS01 (AM and Midday) | 20-minute survey.<br><br>Repeats (BUS28 and BUS01) completed on different days. |

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| Winter 2022 | BUS01, BUS02, BUS03, BUS06, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS42, BUS43, BUS47, BUS48, BUS49, BUS51. | 1 survey (Midday) – BUS02, BUS06, BUS42, BUS51<br>1 survey (PM) – BUS01, BUS03, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS43, BUS47, BUS48, BUS49 | 20-minute survey |
| Spring 2023 | BUS07, BUS09, BUS17, BUS18, BUS21, BUS23, BUS35, BUS36, BUS37, BUS41, BUS43, BUS47, BUS48, BUS50, BUS51 | 2 repeats (AM) - BUS17 and BUS50<br>3 repeats (AM, Midday, PM) - BUS07, BUS18, BUS35 and BUS47<br>3 repeats (Midday, PM x 2) - BUS41<br>4 repeats (Midday, PM) - BUS21, BUS23 and BUS43<br>4 repeats (AM) - BUS51<br>6 repeats (AM, Midday, PM) - BUS09, BUS36, BUS37 and BUS48. | 30-minute survey.<br><br>Repeats done on the same day. Repeats completed across the same and different days. |
| Summer 2024 | BUS02, BUS04, BUS06, BUS08, BUS11, BUS12, BUS13, BUS14, BUS16, BUS17, BUS18, BUS19, BUS20, BUS22, BUS23, BUS32, BUS43, BUS50, | 2 repeats (AM) - BUS23<br>2 repeats (Midday)- BUS08<br>2 repeats (PM) - BUS16<br>3 repeats (1 AM, 2 Midday) - BUS06, BUS32<br>4 repeats (2 AM, 2 PM) - BUS17<br>4 repeats (2 AM, 2 Midday) – BUS18, BUS32<br>4 repeats (2 Midday, 2 PM) - BUS22, BUS50<br>5 repeats (1 AM, 2 Midday, 2 PM) - BUS14<br>5 repeats (1 AM, 2 Midday, 2 PM) - BUS11, BUS12<br>6 repeats (2 AM, 2 Midday, 2 PM) - BUS02, BUS04, BUS13, BUS19, BUS20, BUS43 | 30-minute surveys.<br><br>Repeats mostly completed across the same day. |
| Autumn / Winter 2024 | BUS05, BUS06, BUS09, BUS10, BUS12, BUS18, BUS19, BUS21, BUS24, BUS33, BUS35, BUS36, BUS37, BUS39, BUS43, BUS44, Bus45, BUS46, BUS50 | 1 survey (Midday) -BUS05<br>1 survey (AM) - BUS06, BUS19<br>1 survey (PM) - BUS12, BUS18, BUS33, BUS50<br>3 repeats (AM, Midday, PM) - BUS09, BUS10, BUS21, BUS24, BUS39, BUS44, BUS45, BUS46<br>2 repeats (Midday, PM)- BUS35<br>2 repeats (AM, Midday)- BUS36, BUS37, BUS43 | 20-minute survey. Repeats completed on different days. |

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| Winter 2024 | BUS02, BUS04, BUS06, BUS09, BUS10, BUS11, BUS12, BUS13, BUS14, BUS15, BUS16, BUS17, BUS18, BUS19, BUS20, BUS21, Bus22, BUS24, BUS26, BUS27, BUS29, BUS30, BUS31, BUS34, BUS35, BUS36, BUS37, BUS43, BUS44, BUS45, BUS46 | 1 survey (AM) - BUS27, BUS36<br>1 survey (Midday) - BUS29, BUS30<br>1 survey (PM)- BUS02, BUS09, BUS11, BUS44, BUS45, BUS46<br>2 repeats (AM, Midday) – BUS06, BUS19, BUS20, BUS22, BUS34<br>2 repeats (Midday, PM) – BUS12, BUS13, BUS31<br>2 repeats (AM, PM) – BUS26<br>3 repeats (Midday, PM) – BUS04<br>3 repeats (Midday, PM) BUS35<br>3 repeats (AM, Midday, PM) – BUS10, BUS17, BUS18, BUS24, BUS37<br>4 repeats (AM, Midday, PM) – BUS14, BUS43<br>5 repeats (AM, Midday, PM) – BUS15, BUS16, BUS21. | 20-minute survey.<br><br>Repeats completed across different days. |
| Spring 2024 | BUS07, BUS09, Bus10, BUS11, BUS15, BUS16, BUS17, BUS18, BUS24, BUS33, BUS36, BUS37, BUS39, BUS41, BUS43, BUS44, BUS45, BUS46, BUS47, BUS48, BUS50, BUS51 | 1 survey (AM) - BUS07, BUS10, BUS15, BUS24, BUS50<br>1 survey (Midday)- BUS18, BUS33<br>1 survey (PM)- BUS11<br>2 repeats (Midday, PM) - BUS09, BUS16<br>3 repeats (AM x 2, Midday) - BUS43<br>3 repeats (AM, Midday, PM) - BUS17, BUS36, BU37, BUS41, BUS44, BUS45, BUS46, BUS47, BUS48<br>6 repeats (AM, Midday, PM) - BUS39<br>4 repeats (AM, Midday, PM) - BUS51 | 20-minute survey<br>Repeats completed on different days |

**Bird Utilisation Survey Results**

A comprehensive assessment of BUS results is provided in the BBAMP in Appendix H. Due to the largely homogenous open habitat found throughout the Project Area, bird diversity and abundance was not found to vary spatially across the Subject Land. The Galah (*Eolophus roseicapilla*), Australian Raven (*Corvus coronoides*), Common Starling (*Sturnus vulgaris*), White-winged Fairy-wren (*Malurus leucopterus*) and Straw-necked Ibis (*Threskiornis spinicollis*) reported the highest total abundances across all survey seasons. Raptor utilisation was consistently high across survey periods with 12 species observed. The Wedge-tailed Eagle (*Aquila audax*), Nankeen Kestrel (*Falco cenchroides*), Black Kite (*Milvus migrans*), Black-shouldered Kite (*Elanus axillaris*) and the Brown Falcon (*Falco berigora*) were the most abundant raptor species across all survey periods. Flight heights within the RSA were considered high with a total of 792 individuals across 24 species observed flying at heights of between 50 m and 500 m. Of these, seven species have returned a sufficient sample size to undergo collision risk modelling (CRM) to establish expected annual collision rates with wind turbines.

Ten listed threatened and / or migratory species have been detected within the PREP Area following seasonal surveys to date, as follows:

- Black Falcon (*Falco subniger*);
- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*);
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*);
- Little Eagle (*Hieraaetus morphnoides*);
- Plains-wanderer (*Pedionomus torquatus*) (dual credit species);
- Sharp-tailed Sandpiper (*Calidris acuminata*)
- Southern Whiteface (*Aphelocephala leucopsis*);
- Spotted Harrier (*Circus assimilis*);
- Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*); and
- White-fronted Chat (*Epthianura albifrons*).

A detailed discussion regarding the risks and impacts of turbine strikes on threatened bird species is presented in the BBAMP (Appendix I).

#### 6.2.3.2 BATS

**Survey effort**

Bat echolocation detection surveys were undertaken across three survey periods (February 2022, February - March 2023, and December 2023 - March 2024). The timing of the surveys was planned to capture peak activity and abundance of microbat species within the Subject Land. Bat echolocation detection was undertaken using Chorus detectors (Titley Electronics) and Anabat Swift detectors (Titley Electronics). Acoustic detectors were pre-programmed to commence recording 30 minutes before dusk and cease recording 30 minutes after sunrise. Survey locations were identified based on the presence of suitable habitat (woody vegetation and/or presence of water) as outlined in the *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide (working draft)* (NSW DCCEEW, 2024b).

In addition, a single bat acoustic detector was placed on a met mast with a single omni-directional microphone placed at a height of 75 m over a period of 51 nights from March to May 2023, and for three months from June to September 2024. Data collected from this 75 m microphone are intended to supplement acoustic survey data undertaken at ground level and to source bat acoustic information as close to the proposed RSA as possible. The location of the met mast is no longer situated within the Subject Land. However, it was situated in areas representative of the dominant vegetation communities likely to be impacted by the Project.

Acoustic recording device details are provided in Table 5-8. The placement of the acoustic recording devices for all survey periods is provided in Figure 6-1.

### Bat Acoustic Detection Results

A summary of all microbat species detected across all acoustic detection survey periods is provided in Table 6-5and a full analysis of bat species utilising the Subject Land is provided in the appended BBAMP. Appendix C, Appendix D and Appendix E provide the full results of the microbat acoustic detection surveys.

TABLE 6-5 SUMMARY OF MICROBAT SPECIES DETECTED ACROSS ALL SURVEY PERIODS

| Scientific Name | Common Name | EPBC Act | BC Act | Identification Confidence |
|---|---|---|---|---|
| *Austronomus australis* | White-striped Free-tailed Bat | - | - | Definite |
| *Chalinolobus gouldii* | Gould's Wattled Bat | - | - | Definite |
| *Chalinolobus morio* | Chocolate Wattled Bat | - | - | Definite |
| *Myotis macropus* | Southern Myotis | - | V | Possible |
| *Nyctophilus sp.* | | V (*N. corbeni and N. bifax)* | V (*N. corbeni and N. bifax)* | Possible |
| *Nyctophilus geoffroyi* | Lesser Long-eared Bat | - | - | Possible |
| *Nyctophilus gouldi* | Gould's Long-eared Bat | - | - | Possible |
| *Ozimops planiceps* | South-Eastern Free-Tailed Bat | - | - | Definite |
| *Ozimops ridei* | Eastern Free-Tailed Bat | - | - | Definite |
| *Saccolaimus flaviventris* | Yellow-bellied sheath-tailed bat | - | V | Definite |
| *Scotorepens balstoni* | Inland Broad-Nosed Bat | - | - | Definite |
| *Scotorepens greyii* | Little Broad-nosed Bat | - | - | Definite |
| *Vespadelus darlingtoni* | Large Forest Bat | - | - | Definite |
| *Vespadelus regulus* | Southern Forest Bat | - | - | Possible |
| *Vespadelus vulturnus* | Little Forest Bat | - | - | Possible |

While data collected at height from the met mast can provide important insights into potential microbat activity at heights at risk of collision, the CRM cannot be applied to microbat species detected as site utilisation data cannot be obtained from call analysis alone. While large numbers of call detections for a given species may imply a high utilisation at corresponding flight heights, there is no way to differentiate calls between individuals or the time spent flying at heights within the RSA. Furthermore, a single survey location does not provide adequate replication to allow for robust and statistically meaningful predictions of bat mortality. Instead, collision risk for microbats has been assessed at a species-specific level using the Collision Risk Assessment (CRA) framework provided in the appended BBAMP (Appendix H).

**Limitations**

Since the inception of the Project, numerous updates have been made to survey guidelines relating to the design and methodology of BBUS. To ensure BBUS met the requirements of these updated guidelines, changes to the locations of BUS locations were required resulting in reduced replication across seasons for some observation points. Additional changes to BUS locations were required following changes to the Project design. While seasonal replicates at individual BUS locations are not consistent, all BUS locations surveyed since the inception of the Project have been retained for analysis in the BBAMP and CRM.

BUS03
BUS02
BUS04
BUS50
BUS51
BUS49
BUS05
BUS01
Anabat 12
BUS06
Chorus 22_1
Chorus 22_2
BUS08
Chorus 18_2
BUS07
BUS48
Chorus 9_1
BUS47
BUS09
BUS10
BUS44
BUS46
BUS41
Chorus 16_1
BUS39
BUS43
BUS45
BUS40
BUS42
BUS38
BUS11
BUS12
BUS13
SIXTEEN MILE GUMS
Site 10
Anabat 11
Chorus 18_1
SD1
BUS37
BUS36
BUS14
Site 17
BUS16
BUS15
BUS34
BUS17
BUS35
Site 14
Chorus 3_2
BUS31
Chorus 16_2
BUS33
Chorus 3_1
BUS32
Chorus 9_2
BUS18
Anabat 10
Chorus 17_1
Chorus 17_2
BUS20
BUS19
BUS30
Anabat 6
BUS26
BUS28
BUS22
Anabat 1
SD2
BUS21
BUS27
BUS24
Met Mast Anabat 2
Anabat 2
Met Mast Anabat 1
BUS23
BUS25
BUS29
Site 27
Site 2 (no calls)
Site 1 (no calls)

**Legend**

- Bird Utilisation Survey
- Bat Acoustic Device
- Subject Land
- Plains Renewable Energy Hub Project Boundary

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55
Date: 02/04/2025
Created By: MB
Drawing Size: A3
0 2 4Km
1:110,000

# F6-1 Location of Bird and Bat Utilisation Surveys

**The Plains Wind Farm**
**Amended BDAR**
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R03.aprx

#### 6.2.3.3 MATHEMATICAL COLLISION RISK MODELLING

The Band CRM (Band, Madders, & Whitfield, 2007) has been used to predict the total number of bird collisions that may result from the development of the wind farm. This method of CRM requires the input of parameters that describe species-specific biometrics, flight speeds and characteristics and the expected amount of flight activity as derived from field surveys in the Subject Land. It also requires the input of WTG specific information such as blade size and pitch, hub height, rotor rotation period and the proportion of time the WTG will be operational (Band, Madders, & Whitfield, 2007).

A CRM model has been developed for the PREP area based on site specific observations and collected across nine seasonal BUS. To ensure statistically sound assessments of collision risk, only those species with sufficient observations ($n \geq 3$) of flight heights within the RSA have been included for assessment using the CRM. A total of seven avifauna species returned sufficient observations. A further two species, the Intermediate Egret (*Ardea intermedia*) and the threatened Black Falcon (*Falco subniger*), were observed flying within the RSA, however, returned insufficient sample size for inclusion within the CRM. While expected annual mortalities could not be calculated for these species in the appended draft BBAMP, mortalities resulting from collisions may still occur.

The results of this CRM are detailed in the appended BBAMP (Appendix I). Outputs of the CRM are provided in terms of the expected annual number of collisions for each species based on an RSA of 90 – 270 m. To address potential variations in the likelihood of species avoidance (the ability of the bird species to learn to avoid wind turbines), annual mortalities have been calculated across three different avoidance scenarios (95%, 98%, and 99%).

#### 6.2.3.4 MONITORING AND MITIGATION MEASURES

The appended BBAMP (Appendix I) has defined environmental objectives for the Project that will enable the implementation of a long-term approach to the mitigation and management of potential impacts on listed threatened and migratory avian species, and other avian species using the Subject Land. Monitoring will also identify any potential changes to avian species' utilisation of the Subject Land and the surrounding landscape. The planned environmental outcomes of the proposed monitoring and mitigation measures in the BBAMP are:

- An improved understanding of the risk of turbine collision and barotrauma impacts on avian species;
- An improved understanding of whether and how Subject Land usage changes as a result of wind farm construction and operation;
- An improved monitoring approach for the timely identification of avian species colliding with turbines and the collection and analysis of data;
- Timely and regular validation of and updates to the CRM using monitoring data; and
- Development of adaptive management and corrective actions to minimise risk of turbine collision and other impacts on avian species, in particular threatened and migratory avian species.

An adaptive management process has been established and is presented in the BBAMP (Appendix I), which includes the following broad elements:

- Baseline monitoring surveys – prior to the commencement of operation of the Project;

- Operational monitoring surveys – to be undertaken at selected WTGs throughout the operation of the Project to estimate mortality of bird and bat species and record species within the Subject Land;
- Reporting – to be undertaken in the first and second year of operation and subsequent timeframes, agreed with the consent authorities. Such reports will include mortality estimates, incident findings, mitigation measure effectiveness or inefficiencies and proposed adaptive management strategies; and
- Development of mitigation measures based on monitoring surveys and reporting results to manage mortality risks.

The management actions outlined in the appended BBAMP have been designed to mitigate the risk of collision for avian species at risk of turbine collision and / or barotrauma, considering site specific topography, utilisation and habitat characteristics. The success of these proposed management measures will be assessed through performance indicators relating to impact triggers, monitoring and assessment outputs, and offsetting and compensatory measures. The BBAMP will be reviewed and updated as required across the operational life of The Project, or as per consent conditions.

# STAGE 2: IMPACT ASSESSMENT (BIODIVERSITY VALUES AND PRESCRIBED IMPACTS)

## 7. AVOID AND MINIMISE IMPACTS

### 7.1 PROJECT LOCATION AND DESIGN

#### 7.1.1 STRATEGIC DEVELOPMENT CONTEXT

The location for the Project has been selected based on the high quantity wind resources determined to be available within the South West Renewable Energy Zone (REZ) implemented by the NSW Government under section 19(1) of the *Electricity Infrastructure Investment Act 2020.*

The *NSW Electricity Strategy* (NSW DPIE, 2019b) and Electricity Infrastructure Roadmap (NSW DPIE, 2020d) establish the framework to deliver the State's first five REZ in strategic areas, including around Hay. The REZ will play a significant role in delivering renewable energy generation and storage to help replace existing fossil fuel power stations as they come to their end of operational life.

The South-West region has been identified as one of five REZs, with others being declared/proposed in the Central-West Orana, Illawarra, New England and Hunter-Central Coast regions of NSW. REZs combine wind, solar, hydroelectric and energy storage and high-voltage transmission lines to generate and deliver clean, renewable energy. By connecting multiple generators and storage facilities in the same area, REZs capitalise on economies of scale to deliver cheap, reliable and clean electricity for homes and businesses in NSW.

The objectives of REZ are to:

- Deliver affordable energy into the future;
- Diversify the NSW energy mix;
- Expand electrical transmission capabilities; and
- Open the National Electricity Market (NEM) to energy generation in locations which benefit from diverse weather patterns, including wind.

The Project aligns with the strategic objectives of the South West REZ. The Project will deliver affordable energy, contribute to the diversification of the NSW energy sector, facilitate the expansion of electrical transmissions capabilities and open new parts of the NEM to energy generation.

##### 7.1.1.1 PROJECT DESIGN AND ITERATION

Since the conception of the Project, the design has evolved through consideration of technical, environmental, social and commercial limitations. A significant aspect of this design refinement comprised engagement with landowners and neighbours to the Project, the broader community, local government, State and Federal agencies, and business and stakeholder groups. This engagement, along with technical studies undertaken, has helped to shape the current Subject Land presented in this report.

Preliminary biodiversity desktop and field verification surveys completed across The Plains Renewable Energy Park (PREP) Area identified high value biodiversity areas. As ecological surveys and vegetation community mapping were completed, areas of constraint were identified, mapped and largely avoided by the Project. The Project has been designed in a manner to avoid impact to remnant woodland vegetation present across the PREP area, wetland habitat, resident raptor and threatened raptor nests, Burr Daisy (*Calotis moorei*) observations, TECs and Important Mapped Areas for the Plains-wanderer.

**Woody Vegetation and TECs**

Remnant woodland habitat was identified as having high biodiversity value for resident fauna within an otherwise open landscape, and in areas constituted TECs. Two BC Act listed TECs were confirmed within the PREP area, being:

- Weeping Myall Woodlands; and
- Sandhill Pine Woodland in the Riverina Murray-Darling Depression and NSW South Western Slopes bioregions.

The mapped extent of these TECs and woodland habitat within the PREP Area is provided in Figure 7-1. This mapping was used to avoid impacts to biodiversity during Project design. Woodland habitat, Weeping Myall Woodlands TEC and Sandhill Pine Woodland in the Riverina Murray-Darling Depression and NSW South Western Slopes bioregions TEC have been avoided completely within the Subject Land.

**Resident Raptors**

During field survey events, it was observed that the PREP area supported several breeding raptors. One of these resident raptors, the Little Eagle (*Hieraaetus morphnoides*), is considered vulnerable under the BC Act. An active Little Eagle nest was observed in 2021. At the time of detection, the active nest was located in the north-west of a previous version of the Subject Land, however following design changes, this record is now beyond the boundary of the current Subject Land and is approximately 1.8 km away from the nearest proposed WTG. Another Little Eagle nest was observed opportunistically in September 2024, in the north-west of the PREP area, approximately 280 m outside the Assessment Area and 850 m away from the nearest proposed WTG.

The 500 m buffer, applied to all raptor nests during the design phase, has meant that loss of breeding habitat of the Little Eagle and other large raptors has been avoided by the Project.

The locations of stick nests and Little Eagle observations are presented in Figure 7-1, Figure 7-2 and Figure 7-3.

**Plains-wanderer Habitat**

A review of Important Mapped Areas and additional mapping of suitable habitat for the Plains-wanderer, a SAII species, has been completed across the Subject Land. The Subject Land has been designed to largely avoid Important Mapped Areas, with now only 0.18 ha impacted.

A previous design was expected to result in impacts to 5.35 ha of Important Mapped Areas, associated with access tracks planned to be developed between transmission line towers and WTGs. Following a redesign of the Subject Land, impacts to Important Mapped Habitat have been reduced by 97% to 0.18 ha. The total Important Mapped Areas for the Plains-wanderer equate to 1,460,563 ha.

The Project has been designed to maximise the use of existing public and internal access tracks across the Subject Land, minimising vegetation clearance and, where possible, limiting an increase in access routes which may be used by predatory species which prey upon the Plains-wanderer. The Project design will also allow for the implementation of plain wire fencing to replace existing barbed wire fencing, hence reducing the risks of entanglement by the Plains-wanderer and other fauna.

The current species' polygon for the Plains-wanderer and the previous species' polygon for the Plains-wanderer are presented in Figure 7-1, Figure 7-2 and Figure 7-3.

**Threatened Flora**

The Burr Daisy (*Calotis moorei*), a SAII species, has been observed in the broader PREP area. The Project has been redesigned to avoid impacts to all known occurrences of the species. Areas of the associated PCTs (PCTs 153 and 157) have been surveyed to exclude the species. However, insufficient survey effort has been undertaken in these PCTs due to revisions to PCT mapping following the September 2024 event. This means that the species has been assumed to be present in 10.12 ha of the Subject Land. However, the species has not been detected in the Subject Land.

The observations of *Calotis moorei* are presented in Figure 7-1, Figure 7-2 and Figure 7-3.

Following the completion of the required targeted survey effort for the Creeping Darling Pea (*Swainsona viridis*) during the response to submission phase, all areas of the associated PCTs (PCTs 123 and 155) within the Haul Route DF have undergone sufficient survey effort to exclude species presence. As such, total avoidance of the species has been achieved.

**Wetland Habitat**

During field survey events, wetlands and wetland communities were observed present across the western portion of the PREP area, as presented in Figure 7-1. During the initial four survey events, these habitats, largely associated with Black Box (*Eucalyptus largiflorens*) communities (PCT 13), were consistently dry despite regular rainfall events. However, during the Summer 2023 survey, all mapped wetlands and wetland communities were inundated as a result of substantial rainfall and flooding across the PREP area in previous months. These habitats were observed to support a variety of water birds, including the Sharp-tailed Sandpiper (*Calidris acuminata*).

The Project design was amended to avoid all wetland habitat and woody, wetland communities as mapped in Figure 7-1, Figure 7-2 and Figure 7-3.

**Fish Habitat**

Three (3) ephemeral creek lines intersect the Subject Land - Telegraph Creek, Abercrombie Creek and Curtains Creek – which are first or second order waterways. Fish passage, for when the creeks are running during and following heavy rainfall events, will be provided through the design of waterway crossings. The design and construction of waterway crossings on the Subject Land will be undertaken in accordance with the Department's Policy and Guidelines for Fish Habitat Conservation and Management (2013) and Why Do fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (2003). Any temporary waterway crossings will be removed following completion of the various stages of construction.

Waterbodies are shown in Figure 7-1, Figure 7-2 and Figure 7-3.

### Project Amendments

The Project design has been revised and refined following the initial EIS (ERM, 2024a) based on detailed assessments and in response to the identification and assessment of environmental limitations, constructability requirements, and consideration of the outcomes of agency, landowner, and community consultations. Details on large scale, project design amendments carried out since the inception of the Project are provided in Table 7-1. Alternative Project designs are shown in Figure 7-1 (Design V.1), Figure 7-2 (Design V.2) and Figure 7-3 (Design V.3).

TABLE 7-1 PROJECT AMENDMENTS SINCE PROJECT INCEPTION

| Project Element | Design V.1 - Initial Layout (ha) | Design V.2 - Scoping Phase Layout (ha) | Design V.3 - Layout presented in EIS (ERM, 2024a) (ha) | Current Layout (ha) |
|---|---|---|---|---|
| PREP Area | 50,143.39 | 58,785.97 | 53,894.45 | 46,432.59 |
| WTGs (number) | 243 | 226 | 188 | 171 |
| Subject Land | 5,769.18 | 8,382.19 | 7,923.88 | 2,079.22 |
| Development Footprint (indicative) | 1,329.18 | 2959.71 | 1996.91 | 1,887.08 |
| Plains-wanderer Important Mapped Areas (within Subject Land) | 106.68 | 23.33 | 5.35 | 0.18 |
| Woodland PCTs (within Subject Land) | 186.49 | 51.45 | 2.70 | 0 |
| Weeping Myall Woodlands TEC (within Subject Land) | 6.69 | 0 | 0 | 0 |
| Sandhill Pine TEC (within Subject Land) | 132.14 | 18.67 | 0.69 | 0 |
| Wetland Habitat (within Subject Land) | 71.74 | 126.92 | 88.26 | 13.21 |
| SAII Entities<br>A Burr Daisy | - | - | 46.29 | 10.12 |
| Bindweed | - | - | excluded | 624.06 |
| Plains-wanderer | - | - | 5.35 | 0.18 |
| Creeping Darling Pea | - | - | 0.53 | 0 |

#### 7.1.1.2 ALTERNATIVE LOCATIONS

The Project is located within the dedicated South West REZ and thus the Applicant was limited to a choice of locations within this area in which to situate a wind farm.

A careful site selection process was undertaken for the proposed wind farm by the Applicant which focused on the key requirements of the Project; this included considerations to avoid or minimise impacts on biodiversity values.

Initial feasibility studies of the land surrounding the currently selected PREP area, included reviews of the following aspects:

- Proximity and access to an existing 220 kV electricity line and EnergyConnect;
- Accessibility to the Project via a major road;
- High wind resource;
- Minimal impact on surrounding privately or publicly owned land;
- Further than 5 km from non-associated dwellings; and
- An area that would avoid or limit the need to remove native vegetation or impact on other biodiversity values;
- A site with topographical features that would require minimal earthworks / soil disturbance;
- A site with minimal flooding or bushfire risk;
- A site in which environmental impacts would be minimal.

The Applicant considered several alternative sites that did not meet these criteria. The PREP area for the Project was selected as it ranked highest in each of these criteria at the time of assessment.

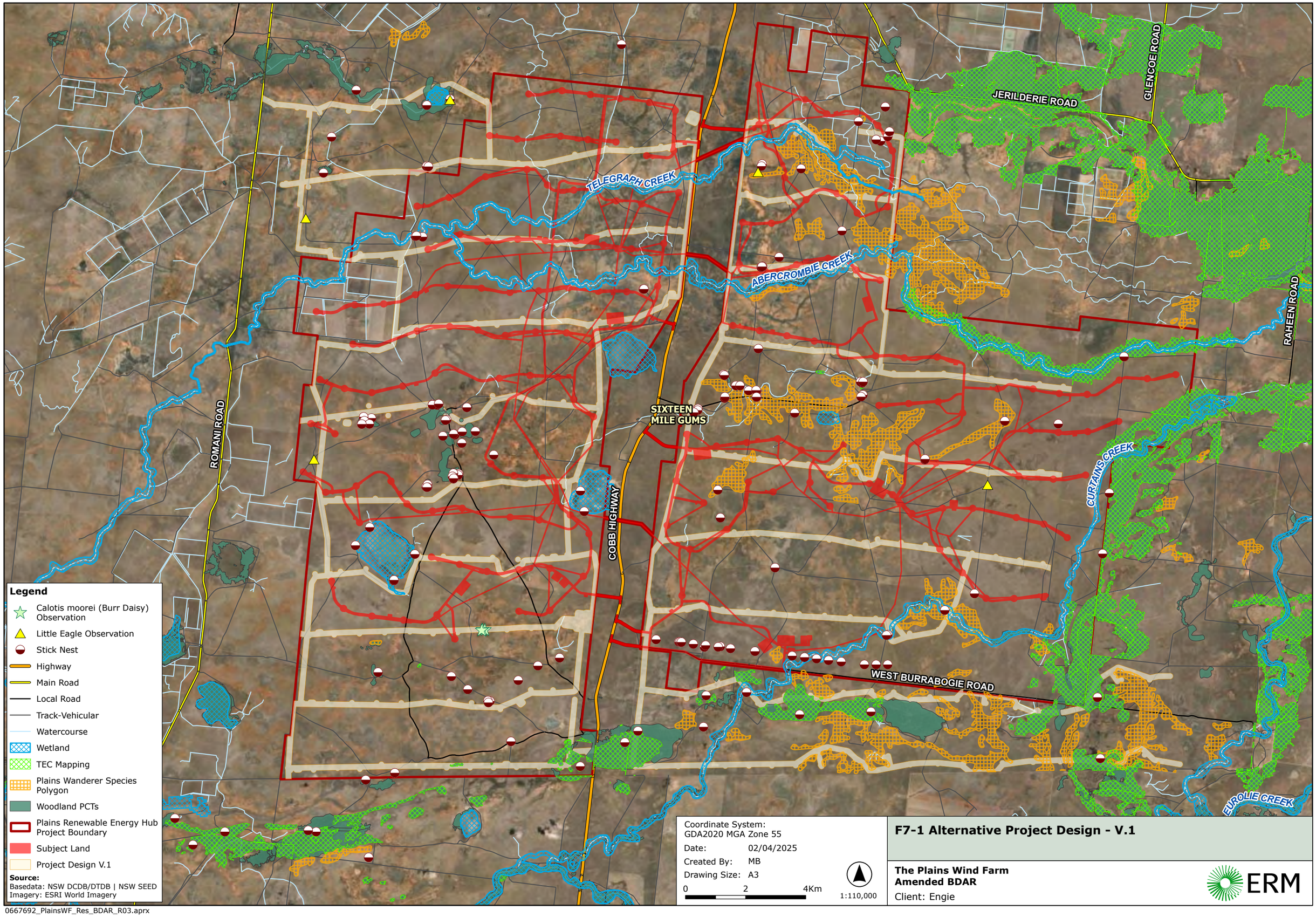
### 7.1.2 ALTERNATIVE HAUL ROUTES

The 'Amended Traffic Impact Assessment' (Amber Organisation Pty Ltd., 2025) as part of The Plains Wind Farm Amendment Report (ERM, 2025) identified the proposed transport route for oversized and overmass (OSOM) vehicles which travels from the Port of Adelaide to Subject Land.

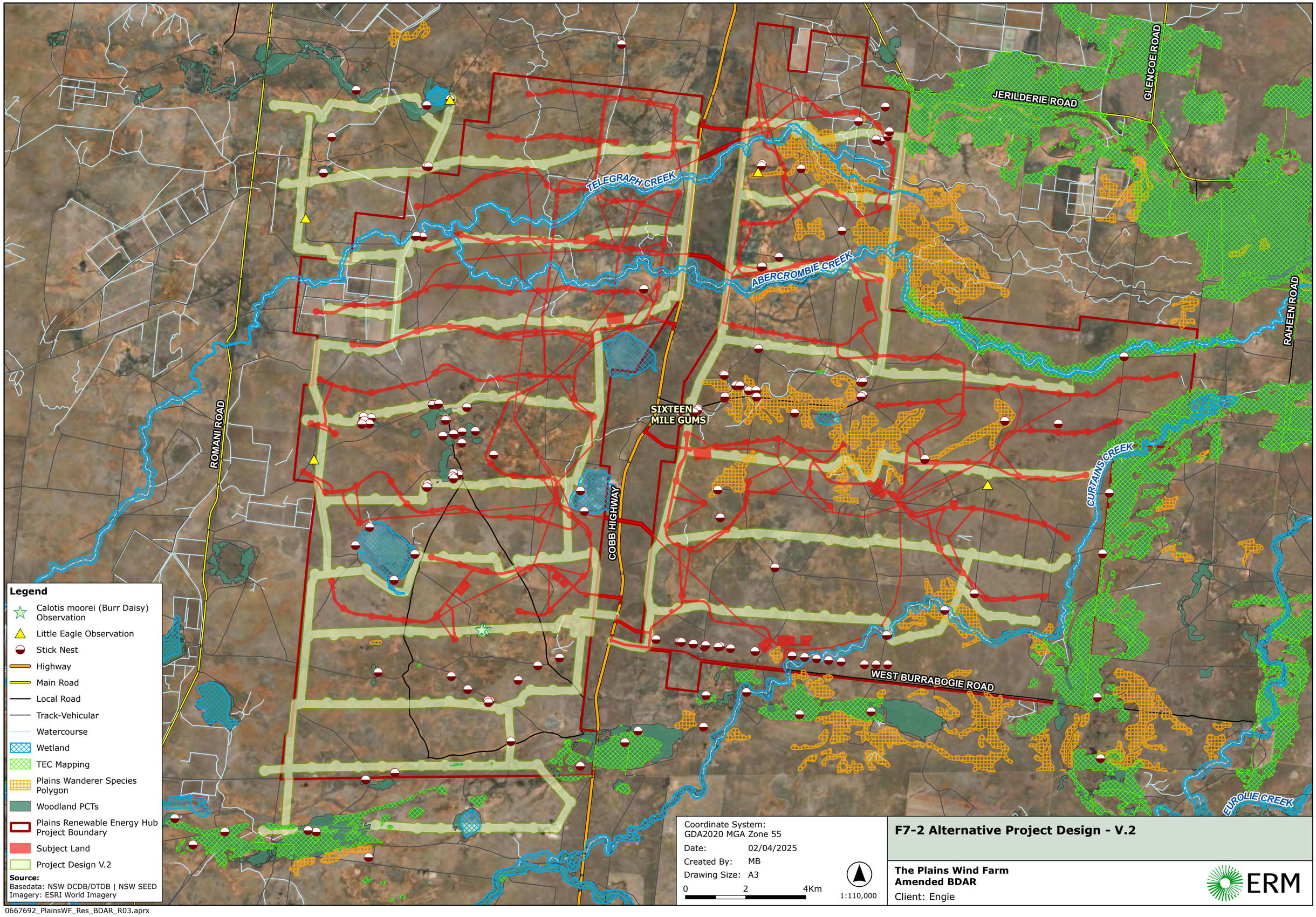
Alternative transport routes were considered by the Applicant; however, they were subject to additional impacts relating to road upgrades, traffic management and financial costs.

### 7.1.3 FURTHER MEASURES TO AVOID AND MINIMISE IMPACTS

Biodiversity impacts will be further avoided and minimised through mitigation measures designed to protect retained and adjacent vegetation and habitat during the construction, operation and decommissioning phases. These measures are summarised in Section 8.5 of this BDAR.




0667692_PlainsWF_Res_BDAR_R03.aprx

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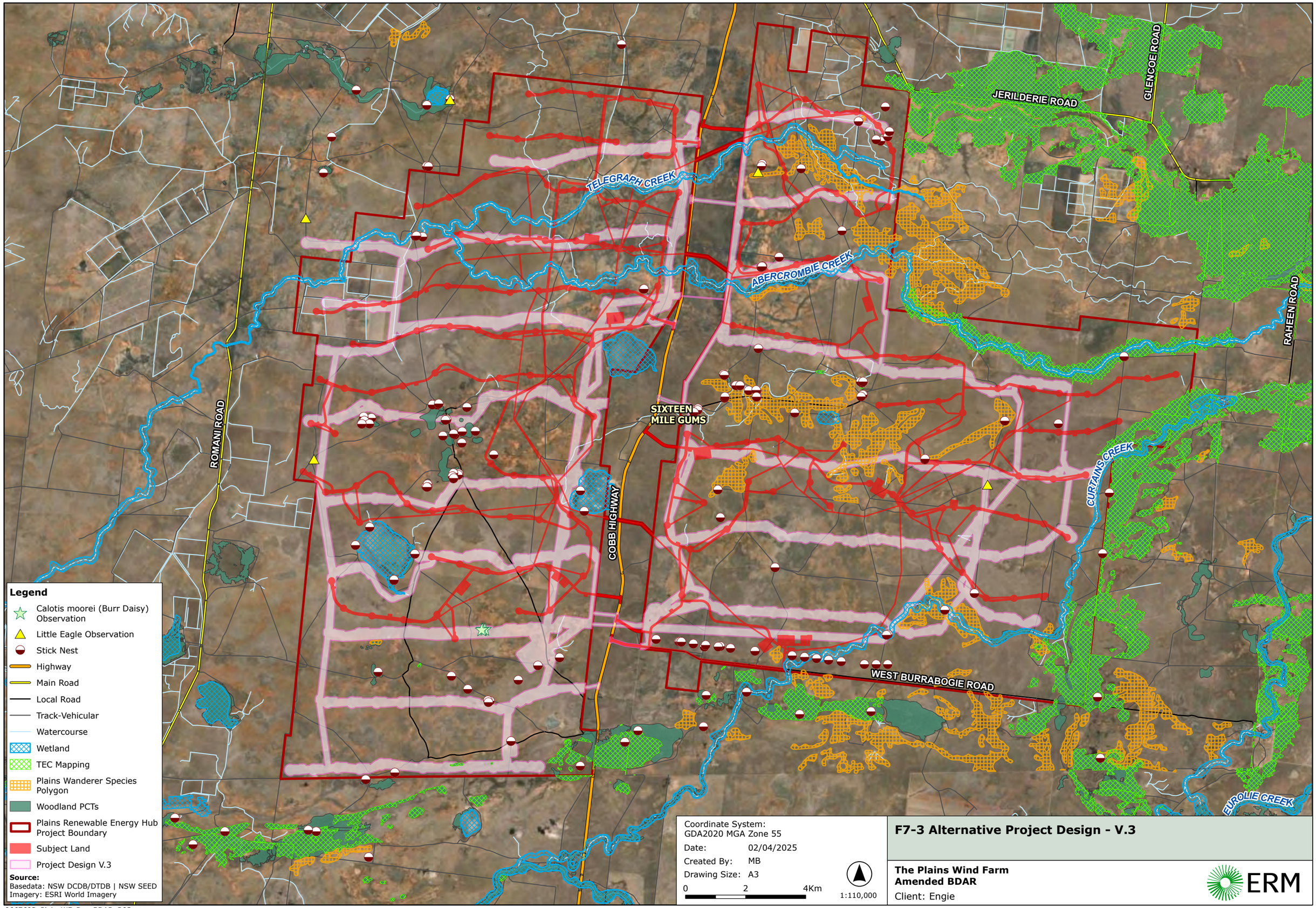


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# 8. IMPACT ASSESSMENT

## 8.1 DIRECT IMPACTS

The construction and operational phase of the development will result in direct impacts to biodiversity values within the Subject Land and Haul Route DF which cannot be avoided. Direct impacts include the clearing of vegetation and threatened species' habitat.

The direct impacts of the development will occur to:

- Native vegetation (outlined in Table 8-1); and
- Threatened species and threatened species' habitat (outlined in Table 8-2).

TABLE 8-1 SUMMARY OF DIRECT IMPACTS ON NATIVE VEGETATION

| Entity directly impacted | BC Act status | EPBC Act status | SAII entity | Project phase/timing of impact | Extent (ha) |
|---|---|---|---|---|---|
| VZ01 – PCT17_Moderate | - | - | No | Construction | 1.02 |
| VZ02 – PCT24_Moderate | - | - | No | Construction | 3.77 |
| VZ03 – PCT44_Moderate | - | - | No | Construction | 54.50 |
| VZ04 – PCT153_Good | - | - | No | Construction | 4.67 |
| VZ05 – PCT157_Good | - | - | No | Construction | 13.65 |
| VZ06 – PCT160_Good | - | - | No | Construction | 27.61 |
| VZ07 – PCT163_Moderate | - | - | No | Construction | 28.82 |
| VZ08 – PCT164_Good | - | - | No | Construction | 841.50 |
| VZ09 – PCT164_Malacocera | - | - | No | Construction | 6.81 |
| VZ10 – PCT164_Moderate | - | - | No | Construction | 1029.77 |
| VZ11 – PCT216_Low | - | - | No | Construction | 1.18 |
| VZ12 – PCT123_Moderate* | - | - | No | Construction | 0.29 |
| VZ13 – PCT155_Low* | - | - | No | Construction | 0.69 |
| VZ14 – PCT158_Moderate* | - | - | No | Construction | 0.22 |

**Zones 12, 13 and 14 relate to the Haul Route DF only*

TABLE 8-2 SUMMARY OF DIRECT IMPACTS TO THREATENED SPECIES AND THREATENED SPECIES' HABITAT

| Candidate Species | | BC Act | EPBC Act | SAII entity | Project phase/ timing of impact | Loss of habitat (ha) |
|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | | | | | |
| A Spear Grass | *Austrostipa wakoolica* | E | E | No | Construction | 1.02 |
| Mossgiel Daisy | *Brachyscome papillosa* | V | V | No | Construction | 662.26 |
| A Burr Daisy | *Calotis moorei* | E | E | Yes | Construction | 10.12 |
| Small Scurf-pea | *Cullen parvum* | E | - | No | Construction | 18.56 |
| Grey Snake | *Hemiaspis damelii* | E | E | No | Construction | 32.40 |
| Winged Peppercress | *Lepidium monoplocoides* | E | E | No | Construction | 26.95 |
| Lanky Buttons | *Leptorhynchos orientalis* | E | - | No | Construction | 15.28 |
| Southern Bell Frog | *Litoria raniformis* | E | V | No | Construction | 8.84^ |
| Chariot Wheels | *Maireana cheelii* | V | V | No | Construction | 643.09 |
| Southern Myotis | *Myotis macropus* | V | - | No | Construction | 339.18 |
| Plains-wanderer | *Pedionomus torquatus* | E | CE | Yes | Construction | 0.18 |
| Austral Pillwort | *Pilularia novae-hollandiae* | E | - | No | Construction | 18.56 |
| Turnip Copperburr | *Sclerolaena napiformis* | E | E | No | Construction | 58.76 |
| Slender Darling Pea | *Swainsona murrayana* | V | V | No | Construction | 685.46 |
| Red Darling Pea | *Swainsona plagiotropis* | V | V | No | Construction | 14.62 |

^ *includes 1.86 ha of non-native vegetation*

### 8.1.1 CHANGE IN VEGETATION INTEGRITY SCORE

Table 8-3 details the change in vegetation integrity score for each vegetation zone. The direct impacts of the Project will result in the total clearing of native vegetation within the Subject Land.

TABLE 8-3 CHANGE IN VEGETATION INTEGRITY SCORE

| Vegetation zone | PCT ID | Area (ha) in Development Footprint | Before development | | | | Change in VI score |
|---|---|---|---|---|---|---|---|
| | | | Composition | Structure | Function | VI score | |
| VZ01 | 17 | 1.02 | 62 | 73.7 | - | 67.6 | -67.6 |
| VZ02 | 24 | 3.77 | 76.8 | 36.7 | - | 53.1 | -53.1 |
| VZ03 | 44 | 54.50 | 85.1 | 37.7 | - | 56.6 | -56.6 |
| VZ04 | 153 | 4.67 | 81.7 | 91.7 | - | 86.5 | -86.5 |
| VZ05 | 157 | 13.65 | 74 | 92 | - | 82.5 | -82.5 |
| VZ06 | 160 | 27.61 | 76.4 | 68.9 | - | 72.6 | -72.6 |
| VZ07 | 163 | 28.82 | 77.1 | 53.1 | - | 64 | -64 |
| VZ08 | 164 | 841.50 | 69.1 | 93.6 | - | 80.4 | -80.4 |
| VZ09 | 164 | 6.81 | 90.2 | 71.8 | - | 80.5 | -80.5 |
| VZ10 | 164 | 1029.77 | 66.3 | 23.9 | - | 39.8 | -39.8 |
| VZ11 | 216 | 1.18 | 71.5 | 16.3 | - | 34.2 | -34.2 |
| Zone 12* | 123 | 0.29 | 83.8 | 43.9 | - | 60.7 | -60.7 |
| Zone 13* | 155 | 0.69 | 95.1 | 14.2 | - | 36.8 | -36.8 |
| Zone 14* | 158 | 0.22 | 48 | 78.9 | - | 61.5 | -61.5 |

**Zones 12, 13 and 14 relate to the Haul Route DF only*

## 8.2 INDIRECT IMPACTS

The BAM (Section 8.2.2) identifies 16 potential indirect impacts that, as a minimum, must be considered as a part of a BDAR. Indirect impacts of the Project, including the Haul Route DF, on native vegetation, threatened entities and their habitat beyond the Subject Land have been considered in accordance with the BAM in

Table 8-4. Note that assessment of indirect impacts as a result of the Project on PCTs and / or threatened species and their habitat have been fully considered, however, there may be some unforeseen indirect impacts that have not been predicted.

Mitigation measures to address the indirect impacts described in Table 8-4 are provided in Section 8.5. Despite the likelihood of occurrence of indirect impacts as a result of the Project, it is considered that the proposed mitigation measures are reliable and capable of limiting the effects of these impacts without causing harm to the adjoining environment.

## TABLE 8-4 SUMMARY OF INDIRECT IMPACTS

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (a) Inadvertent impacts on adjacent habitat or vegetation | Construction activities may result in inadvertent impacts on retained vegetation, such as increased sedimentation, disturbance and compaction by construction vehicles, or accidental removal of vegetation external to the approved development area. | Uncertain, but generally in retained native vegetation adjacent to the approved development area. | PCTs and threatened species habitat | Pre-construction, construction and operational phases. | Reduced condition of retained native vegetation and threatened species habitat adjacent to the approved development area, resulting in loss and dispersal of species. |
| (b) Reduced viability of adjacent habitat due to edge effects | Increase in edge:core habitat ratio, resulting in edge effects such as light and noise pollution, weed invasion and altered moisture, wind and temperature | Uncertain, but generally in retained native vegetation adjacent to the approved development area.<br><br>The risk of impacts to the viability of adjacent habitat due to edge effects is considered moderate due to the level of soil disturbance and vehicle traffic required for construction. | PCTs and threatened species habitat | Construction and operational phases. | Reduced condition of retained native vegetation adjacent to the approved development area. May reduce habitat quality or affect habitat use or movements of some species. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (c) Reduced viability of adjacent habitat due to noise, dust or light spill | Construction and operational activities are likely to increase the noise, dust and light above current levels within and beyond the Subject Land. | Uncertain, but generally in retained native vegetation and habitat adjacent to the approved development area. | Threatened fauna species | Construction and operational phases. | Disruption of fauna habitat usage during construction and operation. |
| (d) Transportation of weeds and pathogens from the Subject Land or Haul Route DF to adjacent vegetation | High threat weeds and other exotic species may be inadvertently spread to other areas within and beyond the Subject Land and Haul Route DF.<br><br>Of particular concern, is the spread of African Boxthorn (*Lycium ferocissimum*) into Plains-wanderer (*Pedionomus torquatus*) habitat and the introduction of the chytrid fungus (*Batrachochytrium dendrobatidis*), particularly near Southern Bell Frog (*Litoria* raniformis) habitat. | Uncertain, but generally in retained native vegetation adjacent to the approved development area. | PCTs and threatened species habitat | Construction, operational and decommissioning phases. | Reduced condition of retained native vegetation adjacent to the approved development area and a change in the composition of foraging resources, which may be detrimental to certain fauna species. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (e) Increased risk of starvation, exposure and loss of shade or shelter | Construction and operational impacts may cause a decline in habitat suitability, particularly for species with specific habitat requirements. For example, construction could result in a degradation of ground-level vegetation resulting in loss of foraging and nesting habitat for small, threatened birds, e.g. Southern Whiteface (*Aphelocephala leucopsis*). | Uncertain, but generally in retained native vegetation and other habitats adjacent to the approved development area. | Threatened fauna species | Construction phase and potentially ongoing during the operational phase. | Clearing of native vegetation for the construction of the Project will result in reduction of resources available for threatened fauna species that may result in starvation, exposure and loss of shade or shelter. The extent of clearing of native vegetation has been minimised where possible.<br><br>Reduced function of retained native vegetation and other habitats adjacent to the approved development area may force species to disperse or be detrimental to their survival. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (f) Loss of breeding habitat due to vegetation clearance | Construction and operational impacts may cause a decline in habitat suitability, particularly for species with specific breeding requirements.<br><br>For example, indirect impacts to vegetation may cause foliage loss which will affect the amount of cover available to small, threatened birds which nest in low shrubs, e.g. White-fronted Chat (*Epthianura albifrons*). | Uncertain, but generally in retained native vegetation and other habitats adjacent to the approved development area. | Threatened fauna species | Construction phase and potentially ongoing during the operational phase. | Reduced function of retained native vegetation and other breeding habitats adjacent to the approved development area which may force species to disperse or be detrimental to their survival. |
| (g) Trampling of threatened flora species | Construction and operational activities may result in inadvertent trampling of threatened flora by humans and construction and / or operational vehicles. | Uncertain, but where threatened flora species occur in retained native vegetation adjacent to the approved development area. | Detected and assumed present threatened flora species.<br>The Mossgiel Daisy (*Brachyscome papillosa*), Winged Peppercress (*Lepidium monoplocoides*), Chariot Wheels (*Maireana cheelii*), Turnip Copperburr (*Sclerolaena napiformis*)<br>Slender Darling Pea (*Swainsona murrayana*) and the<br>Red Darling Pea (*Swainsona plagiotropis*) have been detected within the Subject Land. | Construction, operational and decommissioning phases. | Reduction in the number and extent of threatened flora species. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| | | | A Spear-grass (*Austrostipa wakoolica*), Small Scurf-Pea (*Cullen parvum*), Lanky Buttons (*Leptorhynchos orientalis*) and Austral Pillwort (*Pilularia novae-hollandiae*) have been assumed present within the Subject Land. | | |
| (h) Inhibition of nitrogen fixation, soil microbial function and increased soil salinity | Construction and operational activities may result in disruption to soil microbial activity and processes which occur in the soil due to compaction by heavy vehicles, introduction of chemicals and altered vegetation.<br><br>ASC Soil Type mapping indicates sodosols occur across the Haul Route DF (NSW Government, 2025b). Generally, sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed. | Uncertain, but generally in approved development area and retained native vegetation and other habitats adjacent to the approved development area. | PCTs, threatened species and their habitat | Construction phase and ongoing during the operational phase. | Reduced vegetation function and the subsequent impacts on foraging resources and habitat. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (i) Fertiliser drift | Construction and operational activities will result in a reduction in vegetation extent which means that fertiliser drift from existing agricultural activities will be able to spread further into the landscape affecting other areas of vegetation and habitat. | Uncertain, but generally in retained native vegetation and other habitats adjacent to the approved development area. | PCTs, threatened species and their habitat<br><br>The Southern Myotis (*Myotis macropus*) may be indirectly affected by negative impacts to water quality if this reduces the availability of insects in farm dams. | Construction phase and ongoing during the operational phase. | Reduced native vegetation function and the subsequent impacts on foraging resources and habitat.<br>Potential reduction in water quality in waterbodies, including farm dams. |
| (j) Rubbish dumping due to improper management of waste | Construction and operational activities may result in inadvertent rubbish dumping which can negatively affect vegetation communities and habitat resources. | Uncertain, but generally in retained native vegetation and other habitats adjacent to the approved development area. | Threatened species and their habitats. | Construction phase and ongoing during the operational phase. | Reduced native vegetation function and impacts on suitable habitat.<br><br>Improper waste disposal, particularly food waste, can contribute to an increase in feral animal populations. This poses a significant threat to threatened fauna, including the Plains-wanderer, particularly if the waste attracts predators such as the European fox (*Vulpes vulpes*), rats (*Rattus* spp.) and the feral cat (*Felis catus*). |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (k) Wood collection | Construction and operational activities will result in a reduction in vegetation extent which means that existing wood collection will need to be undertaken in other areas of vegetation and habitat. | Uncertain, but generally in retained native vegetation and other habitats adjacent to the approved development area.<br><br>Note that the lack of trees within the Subject Land will mean that wood collection is limited to small sticks from shrubs but, wood collection (for informal campfires) from woodland areas in the PREP area is possible by construction staff, if temporary accommodation camps are set up during the construction phase. | Threatened fauna species.<br><br>The Grey Snake (*Hemiaspis damelii*) uses logs for shelter.<br><br>Nesting threatened birds may use sticks to build their nests. | Construction phase. | Reduced native vegetation function and impacts on habitat, particularly for species which use fallen logs for foraging or shelter.<br><br>Removal of dead wood and dead trees is a key threatening process in schedule 4 of the BC Act. It can result in the loss of important habitat, such hollow logs and decaying wood, for a wide variety of species. |
| (l) Removal and disturbance of rocks, including bush rocks. | Construction and operational activities may result in disturbance and removal of rocks in areas adjacent to the Haul Route DF. | Uncertain, but generally in retained native vegetation and other habitats adjacent to the approved development area. | Threatened (ecosystem) reptile species, such as the Woma (*Aspidites ramsayi*), the Wedgesnout Ctenotus (*Ctenotus brooksi*) and the Ringed Brown Snake (*Pseudonaja modesta*) utilising the Haul Route DF. | Construction phase. | Reduced habitat function in the Haul Route DF and surrounding area, particularly for species which use bush rocks for basking and shelter.<br><br>Note that the PREP area does not contain any significant rocky areas. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (m) Increase in predators | Construction and operational activities may result in a disturbance to the natural ecological balance of fauna and vegetation communities which may lead to an increase in predators. For example, disruption to existing fauna corridors may mean prey become exposed to predation and thus predator numbers increase as food becomes more readily available. | Uncertain, but generally in approved development area and retained native vegetation and other habitats adjacent to the approved development area. | Threatened fauna species | Construction phase and ongoing during the operational phase. | Reduction in fauna numbers and the gene pool of populations. Reduction in the number of herbivores in vegetation communities, potentially disrupting the ecological balance.<br><br>The Plains-wanderer is at risk of predation from feral cats and the European fox, already known to occur in the locality. More details are provided in Section 8.2.1. |
| (n) Increase in pest animal populations | Construction and operational activities may result in a disturbance to the natural ecological balance of fauna and vegetation communities which may lead to an increase in pest animal populations. | Uncertain, but generally in approved development area and retained native vegetation and other habitats adjacent to the approved development area. | PCTs, threatened species and their habitat | Construction phase and ongoing during the operational phase. | Increase in the number of herbivores, e.g. the European rabbit (*Oryctolagus cuniculus*) in vegetation communities, potentially disrupting the ecological balance.<br>Negative impacts to vegetation communities and habitats by pest animals, such as rooting by the feral pig (*Sus scrofa*), soil erosion and weed incursions.<br>Competition with and predation of native fauna. |

| Indirect impact | Nature | Extent | Impacted entities | Timing and duration of impact | Consequences |
|---|---|---|---|---|---|
| (o) Change in fire regimes | Construction and operational activities may result in vegetation community changes which lead to different fuel consumption patterns, increased intensity and severity of fires, increased or altered fire frequency, larger patch size, and changes to the timing of fires. | Uncertain, but generally in approved development area and retained native vegetation and other habitats adjacent to the approved development area. | PCTs, threatened species and their habitat | Construction phase and ongoing during the operational phase. | This risk is considered low due to the lack of trees and tall shrubs within the Subject Land. However, altered vegetation community composition, structure and function as a result of the Project may lead to fires in shrub and grass communities in very dry conditions, following good growth of vegetation in wet conditions (and hence a fuel source).<br>Loss or changes to habitats and resources. |
| (p) Disturbance to specialist breeding and foraging habitat | Construction and operational activities may result in loss or alteration to specialist breeding and foraging habitat. For example, changes to patches of remnant vegetation preferred by the Plains-wanderer may become smaller and less desirable. | Uncertain, but generally in retained native vegetation adjacent to the approved development area. | Threatened fauna species | Construction phase and ongoing during the operational phase. | Reduction in fauna numbers, fitness and the gene pool of populations.<br>The Plains-wanderer utilises shrublands and grasslands. These areas within the Subject Land are likely to provide important foraging habitat and a small amount of breeding habitat. Disruption to the specialist habitat preferred by the Plains-wanderer may decrease its fitness. |

### 8.2.1 INCREASED RISK OF PREDATORS

The European fox (*Vulpes vulpes*), the feral cat (*Felis catus*) and native birds of prey, such as the Spotted Harrier (*Circus assimilis*) and Black Falcon (*Falco subniger*), are all potential predators of the Plains-wanderer (*Pedionomus torquatus*). Predation by the European Fox is considered a major threat to the species in NSW and is listed as a Key Threatening Process in Schedule 4 of the BC Act. The European Fox has been recorded within the PREP area, and the feral cat is predicted to occur, and these species are considered likely to traverse and forage across the Subject Land. Owing to the conservation significance of the Plains-wanderer (critically endangered under the EPBC Act, endangered under BC Act) and the high dispersal potential of predatory species, pest management actions are required to be undertaken across the entire PREP area to ensure increase the chance of their successful implementation.

The Project involves the construction of internal roads and tracks which will lead to a larger road network across the site. The European fox and feral cat commonly make use of these cleared areas with easy access, with greater hunting successes recorded for foxes along linear habitats, such as roadsides, when compared to remnant vegetation and open paddocks.

Improper waste disposal can contribute to an increase in feral animal populations, which poses a significant threat to threatened fauna, including the Plains-wanderer. The presence of food waste and rubbish attracts predators such as the European fox, rats and the feral cat, leading to greater predation pressure on native species.

The Project has been designed to maximise use of existing access tracks across the Subject Land where possible, reducing the likelihood of an increase in predatory access and activity. Potential risks will be mitigated further via the preparation and implementation of feral pest management programs to be developed in accordance with guidelines and the relevant code of practice, including but not limited to the following:

- NSW Threat Abatement Plan: Predation by the Red Fox (*Vulpes vulpes*) (NSW OEH, 2010);
- Regional Pest Management Strategy 2012-2017: Western Rivers Region (NSW OEH, 2012); and
- NSW Code of Practice and Standard Operating Procedures for the Effective and Humane Management of Feral Cats (Sharp, Cope, & Saunders, 2022).

The Applicant will consider funding control actions for the European Fox and the feral cat in the locality to further support conservation efforts for threatened species. More details are provided in Section 8.5

## 8.3 PRESCRIBED IMPACTS

The following prescribed impacts are relevant to the Subject Land:

- Impacts on the following habitat of threatened entities:
  - Human-made structures;
  - Non-native vegetation;
- Impacts on areas connecting threatened species habitat and which maintain their lifecycle, such as movement corridors;
- Impacts that affect water quality, water bodies and hydrological processes that sustain threatened entities;
- Impacts on threatened and protected animals from turbine strike and / or barotrauma.
- Impacts on threatened species or fauna that are part of a TEC from vehicle strike.

**Haul Route**

The following prescribed impacts are relevant to the Haul Route DF:

- Impacts on the following habitat of threatened entities:
  - Rocks;
  - Human-made structures;
  - Non-native vegetation;
- Impacts on areas connecting threatened species habitat and which maintain their lifecycle, such as movement corridors;
- Impacts on threatened species or fauna that are part of a TEC from vehicle strike.

See Table 8-5 for the nature, extent, frequency, duration, timing and consequences of each impact and for identification of affect threatened entities. It is considered that the most serious of these impacts involve mortality and injury of avian species from turbine strike and / or barotrauma. These are assessed further in Section 8.5 and in the BBAMP in Appendix I.

TABLE 8-5 SUMMARY OF PRESCRIBED IMPACTS

| Impact | Nature | Extent | Frequency, Timing & Duration | Associated Threatened Entities | Consequences |
|---|---|---|---|---|---|
| Removal of rocks | Removal of habitat containing surface rocks. Occasional surface rocks and gibber occur throughout the Haul Route DF. | Haul Route DF only | Once.<br>Construction phase.<br>Permanent. | <u>Ecosystem credits species potentially affected (Haul Route DF):</u><br><br>• Woma (*Aspidites ramsayi*)<br>• Wedgesnout Ctenotus (*Ctenotus brooksi*)<br>• Ringed Brown Snake (*Pseudonaja modesta*). | Loss of potential refuge and basking habitat. |
| Removal of human-made structures | Human-made structures within the Subject Land and Haul Route DF include fences, gates, signs, windmills and water troughs and other agricultural infrastructure.<br><br>Raptors and other avian species are known to frequently use human-made structures for foraging, perching and nesting.<br><br>Troughs and drainage / irrigation channels within the Subject Land may be used by fauna species as a water source.<br><br>Microbats may use human structures, such as culverts for roosting. | Subject Land and Haul Route DF | Once.<br>Construction phase.<br>Permanent. | <u>All Subject Land ecosystem credits species:</u><br><br>• Magpie Goose (*Anseranas semipalmata*)<br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)<br>• Australasian Bittern (*Botaurus poiciloptilus*)<br>• Curlew Sandpiper (Foraging) (*Calidris ferruginea*)<br>• Pied Honeyeater (*Certhionyx variegatus*)<br>• Little Pied Bat (*Chalinolobus picatus*)<br>• Spotted Harrier (*Circus assimilis*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Grey Falcon (*Falco hypoleucos*)<br>• Black Falcon (*Falco subniger*)<br>• Brolga (*Grus rubicunda*)<br>• White-bellied Sea-Eagle (Foraging) (*Haliaeetus leucogaster*)<br>• Little Eagle (Foraging) (*Hieraaetus morphnoides*)<br>• White-throated Needletail (*Hirundapus caudacutus*)<br>• Swift Parrot (Foraging) (*Lathamus discolor*)<br>• Pink Cockatoo (Foraging) (*Lophochroa leadbeateri*)<br>• Square-tailed Kite (Foraging) (*Lophoictinia isura*)<br>• Blue-winged Parrot (*Neophema chrysostoma*)<br>• Blue-billed Duck (*Oxyura australis*)<br>• Gilbert's Whistler (*Pachycephala inornata*)<br>• Plains-wanderer (Foraging) (*Pedionomus torquatus*)<br>• Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br>• Australian Painted Snipe (*Rostratula australis*)<br>• Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)<br>• Diamond Firetail (*Stagonopleura guttata*)<br>• Freckled Duck (*Stictonetta naevosa*)<br>• Western Blue-tongued Lizard (*Tiliqua occipitalis*)<br><br><u>Species credit species potentially affected (Subject Land):</u><br>• Grey snake (*Hemiaspis damelii*)<br>• Southern Bell Frog (*Litoria raniformis*)<br>• Southern Myotis (*Myotis macropus*)<br><br><u>Ecosystem credits species potentially affected (Haul Route DF):</u><br><br>**Birds**<br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)<br>• Rufous Fieldwren (*Calamanthus campestris*)<br>• Pied Honeyeater (*Certhionyx variegatus*) | While current human-made structures may be removed during construction of the Project, it is noted that additional fencing and infrastructure will be installed for and by the Project. Therefore, there is no expected limitation to the availability of these features. |

| Impact | Nature | Extent | Frequency, Timing & Duration | Associated Threatened Entities | Consequences |
|---|---|---|---|---|---|
| | | | | • Spotted Harrier (*Circus assimilis*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Grey Falcon (*Falco hypoleucos*)<br>• Black Falcon (*Falco subniger*)<br>• Brolga (*Grus rubicunda*)<br>• Black-breasted Buzzard (Foraging) (*Hamirostra melanosternon*)<br>• Little Eagle (foraging) (*Hieraaetus morphnoides*)<br>• Pink Cockatoo (foraging) (*Lophochroa leadbeateri*)<br>• Blue-winged Parrot (*Neophema chrysostoma*)<br>• Scarlet-chested Parrot (*Neophema splendida*)<br>• Flock Bronzewing (*Phaps histrionica*)<br>• Hall's Babbler (*Pomatostomus halli*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br><br>**Bats**<br>• Little Pied Bat (*Chalinolobus picatus*)<br>• Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)<br><br><u>EPBC Act threatened / migratory species</u><br>• Sharp-tailed Sandpiper (*Calidris acuminata*). | |
| Removal or disturbance of non-native vegetation | Removal of non-native vegetation which may provide habitat for nature fauna. Non-native vegetation in the Subject Land and Haul Route DF consists of exotic shrubs which can provide habitat for small birds and shelter for mammals and reptiles. Exotic grasses and forbs can provide foraging resources for granivorous birds. Exotic species can also support insects which are consumed by reptiles, amphibians, insectivorous birds and Microchiropteran bats.<br><br>Removal of non-native vegetation may impact the foraging abilities for threatened raptors and reptiles which prey on small animals utilising these areas. | 65.88 ha of non-native vegetation in the Subject Land and 1.24 ha in the Haul Route DF. | Once.<br>Construction phase.<br>Permanent | <u>Ecosystem credits species potentially affected (Subject Land):</u><br><br>• Magpie Goose (*Anseranas semipalmata*)<br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)<br>• Curlew Sandpiper (Foraging) (*Calidris ferruginea*)<br>• Little Pied Bat (*Chalinolobus picatus*)<br>• Spotted Harrier (*Circus assimilis*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Grey Falcon (*Falco hypoleucos*)<br>• Black Falcon (*Falco subniger*)<br>• Brolga (*Grus rubicunda*)<br>• White-bellied Sea-Eagle (Foraging) (*Haliaeetus leucogaster*)<br>• Little Eagle (Foraging) (*Hieraaetus morphnoides*)<br>• White-throated Needletail (*Hirundapus caudacutus*)<br>• Pink Cockatoo (Foraging) (*Lophochroa leadbeateri*)<br>• Square-tailed Kite (Foraging) (*Lophoictinia isura*)<br>• Blue-winged Parrot (*Neophema chrysostoma*)<br>• Plains-wanderer (Foraging) (*Pedionomus torquatus*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br>• Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)<br>• Diamond Firetail (*Stagonopleura guttata*)<br>• Western Blue-tongued Lizard (*Tiliqua occipitalis*)<br><br><u>Candidate species potentially affected (Subject Land):</u><br>• Grey snake (*Hemiaspis damelii*)<br>• Southern Bell Frog (*Litoria raniformis*)<br>• Southern Myotis (*Myotis macropus*)<br>• Plains-wanderer (*Pedionomus torquatus)*<br><br>Note that the species' polygon for the Southern Bell Frog (*Litoria raniformis*) incorporates 1.86 ha of non-native vegetation. | Reduction in potential shelter and foraging resources. |

| Impact | Nature | Extent | Frequency, Timing & Duration | Associated Threatened Entities | Consequences |
|---|---|---|---|---|---|
| | | | | <u>All Haul Route DF ecosystem credits species:</u><br>• Kultarr (*Antechinomys laniger*)<br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)<br>• Woma (*Aspidites ramsayi*)<br>• Rufous Fieldwren (*Calamanthus campestris*)<br>• Pied Honeyeater (*Certhionyx variegatus*)<br>• Little Pied Bat (*Chalinolobus picatus*)<br>• Spotted Harrier (*Circus assimilis*)<br>• Wedgesnout Ctenotus (*Ctenotus brooksi*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Grey Falcon (*Falco hypoleucos*)<br>• Black Falcon (*Falco subniger*)<br>• Brolga (*Grus rubicunda*)<br>• Black-breasted Buzzard (foraging) (*Hamirostra melanosternon*)<br>• Little Eagle (foraging) (*Hieraaetus morphnoides*)<br>• Forrest's Mouse (*Leggadina forresti*)<br>• Pink Cockatoo (foraging) (*Lophochroa leadbeateri*)<br>• Blue-winged Parrot (*Neophema chrysostoma*)<br>• Scarlet-chested Parrot (*Neophema splendida*)<br>• Dusky Hopping-mouse (*Notomys fuscus*)<br>• Flock Bronzewing (*Phaps histrionica*)<br>• Hall’s Babbler (*Pomatostomus halli*)<br>• Bolam's Mouse (*Pseudomys bolami*)<br>• Sandy Inland Mouse (*Pseudomys hermannsburgensis*)<br>• Ringed Brown Snake (*Pseudonaja modesta*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br>• Long-haired Rat (*Rattus villosissimus*)<br>• Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)<br>• Stripe-faced Dunnart (*Sand minthopsis macroura*)<br><br><u>EPBC Act threatened / migratory species</u><br>• Sharp-tailed Sandpiper (*Calidris acuminata*). | |
| Increased habitat fragmentation / impacts on habitat connectivity | Reduction in habitat connectivity value, not only from the loss in vegetation, but also from an increase in edge effects (such as light, and noise pollution).<br><br>The areas of native shrubland and grasslands within the Subject Land may contain some connectivity value, particularly for small and cryptic species. | Loss of 2013.30 ha of native vegetation impacted in Subject Land and loss of 1.20 ha of native vegetation within the Haul Route DF.<br>See Table 8-3 for total areas of each PCT and VZ. | Once.<br>Construction phase.<br>Permanent. | <u>Ecosystem credits species potentially affected (Subject Land):</u><br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Australasian Bittern (*Botaurus poiciloptilus*)<br>• Pied Honeyeater (*Certhionyx variegatus*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Brolga (*Grus rubicunda*)<br>• Gilbert’s Whistler (*Pachycephala inornata*)<br>• Plains-wanderer (Foraging) (*Pedionomus torquatus*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br>• Australian Painted Snipe (*Rostratula australis*)<br>• Diamond Firetail (*Stagonopleura guttata*)<br>• Western Blue-tongued Lizard (*Tiliqua occipitalis*)<br><br><u>Candidate species potentially affected (Subject Land):</u><br>• Grey snake (*Hemiaspis damelii*)<br>• Southern Bell Frog (*Litoria raniformis*)<br>• Plains-wanderer (*Pedionomus torquatus)*<br><br><u>Ecosystem credits species potentially affected (Haul Route DF)</u>: | Some species may avoid edge habitat, increasing competition for resources and disrupting home ranges. Gene flow may be restricted to sub-populations no longer connected by suitable habitat to facilitate dispersal. It is important to note however, that the vegetation removal would not result in complete isolation of any habitat patches due to the narrow, linear nature of the Project.<br><br>Habitat connectivity for woodland dependent fauna is considered poor owing to the highly fragmented woodland habitat available within the broader PREP, and no woodland habitat within the Subject Land. Despite this, habitat connectivity for species |

| Impact | Nature | Extent | Frequency, Timing & Duration | Associated Threatened Entities | Consequences |
|---|---|---|---|---|---|
| | | | | • Kultarr (*Antechinomys laniger*)<br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Woma (*Aspidites ramsayi*)<br>• Rufous Fieldwren (*Calamanthus campestris*)<br>• Pied Honeyeater (*Certhionyx variegatus*)<br>• Wedgesnout Ctenotus (*Ctenotus brooksi*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Brolga (*Grus rubicunda*)<br>• Forrest's Mouse (*Leggadina forresti*)<br>• Dusky Hopping-mouse (*Notomys fuscus*)<br>• Bolam's Mouse (*Pseudomys bolami*)<br>• Sandy Inland Mouse (*Pseudomys hermannsburgensis*)<br>• Ringed Brown Snake (*Pseudonaja modesta*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br>• Long-haired Rat (*Rattus villosissimus*)<br>• Stripe-faced Dunnart (*Sand minthopsis macroura*) | dependant on grassland and open shrubland is considered moderate to high and species reliant on these habitat values may be impacted by reductions in connectivity. However, fencing, overgrazing, and historical land management practices have previously reduced connectivity values. |
| Impacts on water quality, water bodies and hydrological processes | During the construction phase direct impacts can cause erosion and sedimentation resulting in the movement of soil to adjacent habitats, particular during rain events. There will also be indirect impacts throughout the operational phase with increased run-off from non-permeable surfaces.<br><br>The Southern Bell Frog (*Litoria raniformis*) was recorded in several farm dams in the north-west of the Subject Land. The farm dams in this area and the channels and run-off areas the connect them provide habitat for this species. Additionally, all threatened species are expected to utilise waterbodies throughout the Subject Land, including permanent water sources such as farm dams and ephemeral water sources in wetland areas subject to flooding. | Uncertain, although likely to be minor.<br>Standard erosion control methods would be used during construction, and standard stormwater management measures would be implemented during the operational phase. | During rainfall events in the construction phase. Ongoing and permanent during the operational phase. | All Subject Land and Haul Route DF ecosystem species.<br><br><u>Candidate species potentially affected (Subject Land):</u><br>• Grey snake (*Hemiaspis damelii*)<br>• Southern Bell Frog (*Litoria raniformis*)<br>• Southern Myotis (*Myotis macropus*)<br>• Plains-wanderer (*Pedionomus torquatus)*<br><br><u>EPBC Act threatened / migratory species</u><br>• Sharp-tailed Sandpiper (*Calidris acuminata*). | May decrease downstream water quality, which would affect pollution-sensitive species, and may impact the quality of drinking water for all threatened entities. |
| Impacts on threatened and protected animals from turbine strike and / or barotrauma | Turbine strike involves individual birds or bats being killed due to collision with moving rotors. In addition to fatalities caused directly by turbines rotor strikes, Microchiropteran bats are known to be at risk of 'barotrauma'. Barotrauma refers to tissue and lung damage caused by air pressure changes around turbine rotors. | Subject Land and Haul Route DF<br><br>The project comprises up to 171 WTG, which would each have an overall maximum height of 270 m and maximum RSA of 90 - 270 m. | Ongoing and permanent during the operational phase. | <u>All Subject Land ecosystem credits species:</u><br><br>• Magpie Goose (*Anseranas semipalmata*)<br>• Southern Whiteface (*Aphelocephala leucopsis*)<br>• Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)<br>• Australasian Bittern (*Botaurus poiciloptilus*)<br>• Curlew Sandpiper (Foraging) (*Calidris ferruginea*)<br>• Pied Honeyeater (*Certhionyx variegatus*)<br>• Little Pied Bat (*Chalinolobus picatus*)<br>• Spotted Harrier (*Circus assimilis*)<br>• White-fronted Chat (*Epthianura albifrons*)<br>• Grey Falcon (*Falco hypoleucos*)<br>• Black Falcon (*Falco subniger*)<br>• Brolga (*Grus rubicunda*)<br>• White-bellied Sea-Eagle (Foraging) (*Haliaeetus leucogaster*)<br>• Little Eagle (Foraging) (*Hieraaetus morphnoides*)<br>• White-throated Needletail (*Hirundapus caudacutus*)<br>• Swift Parrot (Foraging) (*Lathamus discolor*)<br>• Pink Cockatoo (Foraging) (*Lophochroa leadbeateri*) | Injury to or death of fauna.<br><br>Collision risk varies with species and behaviour, site specific topography, weather conditions, turbine height and design, and turbine layout.<br><br>Certain bird, groups such as raptors and waterbirds, are considered at greater risk of collision because of their flight heights, size and behaviour.<br><br>Microchiropteran bats most at risk from barotrauma include relatively high-flying species that prefer to forage above canopy height. |

| Impact | Nature | Extent | Frequency, Timing & Duration | Associated Threatened Entities | Consequences |
|---|---|---|---|---|---|
| | | | | • Square-tailed Kite (Foraging) (*Lophoictinia isura*)<br>• Blue-winged Parrot (*Neophema chrysostoma*)<br>• Blue-billed Duck (*Oxyura australis*)<br>• Gilbert's Whistler (*Pachycephala inornata*)<br>• Plains-wanderer (Foraging) (*Pedionomus torquatus*)<br>• Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*)<br>• Redthroat (*Pyrrholaemus brunneus*)<br>• Australian Painted Snipe (*Rostratula australis*)<br>• Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)<br>• Diamond Firetail (*Stagonopleura guttata*)<br>• Freckled Duck (*Stictonetta naevosa*)<br><br><u>Species credit species potentially affected (Subject Land):</u><br>• Southern Myotis (*Myotis macropus*) | |
| Mortality and injury of native fauna from vehicle strike | The Project is located on either side of the Cobb Highway and includes the unsealed public road, West Burrabogie Road. There are also many internal farm tracks intersecting the Subject Land.<br><br>While the Project will endeavour to use existing tracks, it may result in the construction of new internal access tracks to deliver wind farm components and for operational purposes.<br><br>Vehicle strike is a risk within the upgraded roads within the Haul Route DF. | Uncertain.<br><br>Likely be minor due to low-speed limits within Subject Land. | Ongoing and permanent during the construction and operational phases. | All Subject Land and Haul Route DF ecosystem species.<br><br><u>Candidate species potentially affected (Subject Land):</u><br>• Grey snake (*Hemiaspis damelii*)<br>• Southern Bell Frog (*Litoria raniformis*)<br>• Southern Myotis (*Myotis macropus*)<br>• Plains-wanderer (*Pedionomus torquatus)*<br><br><u>EPBC Act threatened / migratory species</u><br>• Sharp-tailed Sandpiper (*Calidris acuminata*). | Death or injury to fauna that may cross roads on the ground or low flying avian species. |

## 8.4 CUMULATIVE IMPACTS

The Project will contribute to the overall development of the South West REZ. REZ combine wind, solar, hydroelectric and energy storage, and high-voltage transmission lines, to generate and deliver clean, renewable energy. Relevant SSD projects for clean energy that have been proposed, approved, are under construction or operational, known at the time of finalisation of this BDAR, and within and in the vicinity of the South West REZ have been considered to assess cumulative impacts on biodiversity values in the South West region.

It is acknowledged that the Project will contribute to cumulative impacts during its construction and operation and decommissioning within the environment. Cumulative impacts occur when impacts from a project interact or overlap with impacts from other projects, thus resulting in a larger overall effect on the environment.

Potential cumulative biodiversity impacts for the South West REZ and surrounding area is provided in Table 8-6 . A large portion of these projects are in the planning phase, therefore, the direct impacts to native vegetation, TECs, and threatened and migratory species are unknown. It is considered likely that cumulative impacts will increase the loss of similar native vegetation and threatened species habitat to that found within the Subject Land in the region.

Of the projects detailed, seven (7) have received consent. Of these, the EnergyConnect (NSW – Eastern Section) project and Yanco Delta Wind Farm occur across similar vegetation communities and have direct impacts on similar threatened species as the Project. Yanco Delta Wind Farm is situated within the Riverina IBRA bioregion and Murrumbidgee IBRA subregion, as is the Project. The direct impact on native vegetation for Yanco Delta Wind Farm is calculated at 173.39 ha, with PCTs similar to those mapped within the Subject Land and surrounding PREP area (PCTs 13, 17, 28 and 44). Similarly, EnergyConnect partially occurs in the Murrumbidgee IBRA subregion and direct impacts associated with the removal of native vegetation is calculated at 1,615.20 ha in PCTs 13, 24, 28, 44, 153, 157 and 164.

Cumulative impacts to threatened species across Yanco Delta Wind Farm, EnergyConnect and this Project are presented in Table 8-7.

A proposed framework for the assessment of cumulative impacts to listed birds and bats across the South West REZ has been identified and presented in the appended BBAMP (Appendix I).

TABLE 8-6 POTENTIAL CUMULATIVE IMPACTS

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| Bullawah Wind Farm<br><br>(In Planning – Under Assessment) | • Nominal generating capacity of 1,000 M2.5 GW.<br>• Up to 170 143 WTGs, 359 MW/ 718 MWh BESS and ancillary infrastructure.<br>• Peak construction workforce 35400 full-time equivalents (FTE).<br>• Operational workforce 40 FTE.<br>• Temporary workers accommodation located within the Project Area. | 4 km east<br><br>Hay Shire, Murrumbidgee and Edward River LGAs | • Construction estimated to commence mid to late 2025.<br>• Construction period about 24-months.<br>• Commissioning expected 2029. | The Environmental Impact Assessment (EIA) states there are 10 PCTs identified in the Subject Land, and the project will directly impact up to 637.99 ha of native vegetation.<br>Direct impacts to the following TECs:<br>• Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW Southwestern Slopes bioregions (BC Act)<br>• Weeping Myall Woodlands (EPBC Act)<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW Southwestern Slopes bioregion (BC Act)<br>The project has the potential to directly impact the following threatened flora:<br>• *Austrostipa wakoolica*<br>• *Lepidium monoplocoides*<br>• *Maireana cheelii*<br>• *Swainsona murrayana*<br>• *Swainsona sericea*<br>• *Cullen parvum*<br>The project has the potential to impact the following threatened fauna:<br>• *Petroica phoenicea*<br>• *Epthianura albifrons*<br>• *Austronomus australis*<br>• *Litoria raniformis*<br>• *Aphelocephala leucopsis*<br>• *Circus assimilis*<br>• *Falco subniger*<br>• *Ninox connivens*<br>• *Neophema chrysostoma*<br>• *Pomatostomus temporalis temporalis*<br>• *Circus assimilis*<br>• *Pedionomus torquatus*<br>• *Grantiella picta*<br>• *Hieraaetus morphnoides*<br>• *Stagonopleura guttata* |
| Argoon Wind Farm<br><br>(In Planning - Prepare EIS) | • Installed generating capacity of up to 901 MW.<br>• Up to 106 WTGs, BESS (460 MW/2300 MWh, up to 5-hour battery) and ancillary infrastructure.<br>• Peak construction workforce 340 FTE.<br>• Operational workforce between 6 and 12 FTE.<br>• Temporary workforce accommodation will be included, if required. | 70 km south-east (approximately)<br><br>Murrumbidgee LGA | • Construction estimated to commence within one year of project approval.<br>• Construction period about 24 - 36 months. | Direct impacts to biodiversity values are yet to be confirmed or estimated. The Scoping Report maps 10,888.16 hectares of native vegetation across the project area.<br>The Scoping Report identifies potential impacts to the following entities:<br>TECs with high likelihood of occurrence:<br>• Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act)<br>• Weeping Myall Woodlands (EPBC Act)<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregion (BC Act)<br>• Natural Grasslands of the Murray Valley Plains (EPBC Act)<br>Threatened flora with high likelihood of occurrence:<br>• *Swainsona murrayana*<br>• Swainsona plagiotropis<br>Threatened fauna known or with high likelihood of occurrence:<br>• *Litoria raniformis*<br>• *Artamus cyanopterus*<br>• *Circus assimilis*<br>• *Climacteris picumnus victoriae*<br>• *Epthianura albifrons*<br>• *Falco subniger*<br>• *Grantiella picta*<br>• *Haliaeetus leucogaster*<br>• *Hirundapus caudacutus*<br>• *Melithreptus gularis gularis*<br>• *Pedionomus torquatus*<br>• *Petroica phoenicea*<br>• *Petroica phoenicea* |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| Pottinger Wind Farm<br><br>(Approved July 2025) | • Up to 247 WTGs with a capacity of up to 8MW per turbine, BESS and ancillary infrastructure.<br>• Peak construction workforce 450 FTE.<br>• Operational workforce 40 FTE.<br>• Temporary workers accommodation located within the project area or located offsite. | Adjacent to The Project<br><br>Hay and Edward River LGAs | • Construction estimated to commence in June 2028.<br>• Construction period about 24 months.<br>• Commissioning expected in 2029. | The BDAR outlines the removal of 1004.65 ha of native vegetation comprising 15 PCTs throughout the disturbance footprint.<br>The BDAR estimates direct impacts to the following entities:<br>TECs:<br>• *Acacia melvillei* shrubland (BC Act)<br>• Weeping Myall Woodland (BC Act and EPBC Act)<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregion (BC Act)<br>• Myall Woodland' (EPBC Act and BC Act listed)<br>The Project will result in the removal of the assumed habitat for the following BC Act and EPBC Act listed threatened flora species and habitat:<br>• *Maireana cheelii*<br>• *Brachyscome papillosa*<br>• *Swainsona sericea*<br>• *Swainsona murrayana*<br>Project will result in the removal of the known and potential habitat for the following threatened fauna species:<br>• *Lophochroa leadbeateri*<br>• *Pedionomus torquatus*<br>• *Litoria raniformis*<br>• *Aphelocephala leucopsis*<br>• *Climacteris picumnus*<br>• *Falco subniger*<br>• *Epthianura albifrons*<br>• *Pomatostomus temporalis*<br>• *Nyctophilus corbeni*<br>• *Calidris acuminata*<br>• *Vespadelus baverstocki*<br>• *Chalinolobus picatus*<br>• *Artamus cyanopterus*<br>• *Circus assimilis*<br>• *Saccolaimus flaviventris*<br>Potential threatened species are at risk of prescribed impacts:<br>• *Botaurus poiciloptilus*<br>• *Calidris ferruginea*<br>• *Rostratula australis*<br>• *Neophema chrysostoma*<br>• *Actitis hypoleucos*<br>• *Stagonopleura guttata*<br>• *Galaxias rostratus*<br>• *Plegadis falcinellus*<br>• *Falco hypoleucos*<br>• *Hemiaspis damelii*<br>• *Gallinago hardwickii*<br>• *Grantiella picta*<br>• *Aprasia parapulchella*<br>• *Crinia sloanei*<br>• *Dasyurus maculatus*<br>• *Polytelis swainsonii* |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| Tchelery Wind Farm<br><br>(In Planning - Exhibition) | • Nominal generating capacity of 800 MW.<br>• Up to 120 WTGs, ancillary infrastructure and future BESS.<br>• Peak construction workforce 500 FTE.<br>• Operational workforce - up to 20 FTE.<br>• Temporary workforce accommodation to be investigated. | 25 km west<br><br>Edward River LGA | • Construction expected to commence 2026.<br>• Construction period about 30 months.<br>• Commissioning expected late 2028 to early 2029. | Direct impacts to biodiversity values have been estimated based on a proposed disturbance area. The Scoping Report maps 642.96 hectares of native vegetation across the disturbance area.<br>The Scoping Report estimates impacts to the following entities:<br>TECs:<br>• *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (BC Act) – 23.13 ha<br>• *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions (BC Act and EPBC Act) – 0.16 ha<br>• Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act and EPBC Act) – 1.52 ha<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregion (BC Act) – 14.37 ha.<br>Threatened flora with a moderate or higher likelihood of occurrence:<br>• *Brachyscome papillosa*<br>• *Pilularia novae-hollandiae*<br>• *Calotis moorei*<br>• *Eleocharis Obicis*<br>• *Eucalyptus leucoxylon subsp. Pruinose*<br>• *Lepidium monoplocoides*<br>• *Leptorhynchos orientalis*<br>• *Maireana cheelii*<br>• *Swainsona murrayana*<br>Threatened or migratory fauna with a moderate or higher likelihood of occurrence:<br>• *Litoria raniformis*<br>• *Apus pacificus*<br>• *Artamus cyanopterus*<br>• *Cyanopterus*<br>• *Burhinus grallarius*<br>• *Calidris acuminata*<br>• *Calidris ferruginea*<br>• *Calidris ruficollis*<br>• *Circus assimilis*<br>• *Epthianura albifrons*<br>• *Falco hypoleucos*<br>• *Falco subniger*<br>• *Grus rubicunda*<br>• *Haliaeetus leucogaster*<br>• *Hieraaetus morphnoides*<br>• *Hirundapus caudacutus*<br>• *Lathamus discolor*<br>• *Lophochroa leadbeateri*<br>• *Melanodryas cucullata cucullate*<br>• *Merops ornatus*<br>• *Microcarbo melanoleucos*<br>• *Pedionomus torquatus*<br>• *Pelecanus conspicillatus*<br>• *Pomatostomus temporalis temporalis*<br>• *Polytelis swainsonii*<br>• *Threskiornis spinicollis*<br>• *Saccolaimus flaviventris* |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| Baldon Wind Farm<br><br>(In Planning – Under Assessment) | • Nominal generating capacity 1,400 MW.<br>• Up to 180 WTGs, BESS and ancillary infrastructure.<br>• Peak construction workforce 350 -400 FTE.<br>• Operational workforce 35 FTE.<br>• Temporary workers accommodation will be established within the project area. | 45 km west<br><br>Murray River and Hay Shire LGAs | • Construction expected to commence Q4 2025.<br>• Construction period as one stage, approximately 36 months.<br>• Commissioning expected Q2 2029. | Direct impacts to biodiversity during the construction and operational phases are outlined in the Biodiversity Development Assessment Report (BDAR). The BDAR estimates a total 806.03 ha of native vegetation will be cleared. The BDAR estimates direct impacts to the following entities and their habitat.<br>TECs:<br>• *Natural Grasslands of the Murray Valley Plains* CEEC (1.12 ha to be removed)<br>Threatened flora include:<br>• *Austrostipa metatoris*<br>• *Austrostipa wakoolica*<br>• *Brachyscome papillosa*<br>• *Convolvulus tedmoorei*<br>• *Lepidium monoplocoides*<br>• *Leptorhynchos orientalis*<br>• *Maireana cheelii*<br>• *Pilularia novae-hollandiae*<br>• *Sclerolaena napiformis*<br>• *Solanum karsense*<br>• *Swainsona murrayana*<br>• *Swainsona plagiotropis*<br>• *Swainsona sericea*<br><br>Threatened fauna include:<br>• *Hieraaetus morphnoides*<br>• *Pedionomus torquatus*<br>• *Litoria raniformis*<br>• *Lophochroa leadbeateri*<br>• *Epthianura albifrons*<br>• *Neophema chrysostoma*<br>• *Melanodryas cucullata cucullata*<br>• *Aphelocephala leucopsis*<br>• *Calidris ferruginea*<br><br>Moderate - high risk of impact to the following species during wind farm operation:<br>• *Falco subniger* |
| Dinawan Wind Farm<br><br>(In Planning – Response to submissions) | • Nominal generating capacity of 1.2 GW<br>• Up to 200 WTGs, BESS and ancillary infrastructure.<br>• Peak construction workforce 600 FTE.<br>• Operational workforce up to 50 FTE.<br>• Workforce accommodation is expected to rely on available rental, motel and other accommodation in surrounding townships and regional centres. | 28 km southwest<br><br>Murrumbidgee and Edward River LGAs | • Construction expected to commence in 2025.<br>• Construction period about 36 months for each stage (60 months in total).<br>• Commissioning expected in 2027-2028. | Direct impacts to biodiversity values have been identified and outlined in the BDAR. The Project is expected to impact upon on the following biodiversity values:<br>• 10 PCTs and 29 scattered paddock trees<br>• Two BC Act listed TECs and two EPBC Act Listed TECs<br>  ◦ Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act)<br>  ◦ Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregion (BC Act)<br>  ◦ Weeping Myall Woodlands (EPBC Act)<br>  ◦ Natural Grasslands of the Murray Valley Plains (EPBC Act)<br>• Impacts to habitat for recorded threatened *Swainsona murrayana* and *Swainsona sericea*<br>• Small linear impacts and minor fragmentation of important mapped areas for *Pedionomus torquatus*, in conjunction with impacts to potential future habitat within dynamic grassland communities<br>• Assumed impact to the *Ninox connivens* and *Tyto novaehollandiae*<br>• Known foraging and assumed breeding habitat for two fauna species credit species – *Polytelis swainsonii* and *Litoria raniformis*.<br>• 35 species of bird and bat considered at risk of operational impact mainly associated with turbine strike.<br>• Known and predicted habitat for a range of fauna ecosystem credit species.<br>• Four species met the Serious and Irreversible impact principles that may be impacted by the project:<br>  ◦ *Pedionomus torquatus*<br>  ◦ *Pilularia novae-hollandiae*<br>  ◦ *Brachyscome muelleroides*<br>  ◦ *Convolvulus tedmoorei.* |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| Keri Keri Wind Farm<br><br>(In Planning – Response to submissions) | • Nominal generating capacity of 883.5 MW.<br>• Up to 155 WTGs, BESS and ancillary infrastructure.<br>• Peak construction workforce 650 FTE.<br>• Operational workforce up to 34 FTE.<br>• Temporary workforce accommodation to be investigated. | 55 km west<br><br>Murray River LGA | • Construction expected to commence in 2027.<br>• Construction period about 24 months.<br>• Commissioning expected 2029. | The BDAR identifies direct impacts on 1,130.93 ha of native vegetation. The Project is expected to impact upon on the following biodiversity values:<br>Threatened flora:<br>• *Maireana cheelii*<br>• *Brachyscome papillosa*<br>• *Swainsona murrayana*<br><br>Threatened fauna:<br>• *Pedionomus torquatus*<br>• *Hieraaetus morphnoides*<br>No TECs overlap the disturbance footprint. |
| Yanco Delta Wind Farm<br><br>(Approved – December 2023) | • Nominal generating capacity of 1,500 MW.<br>• Up to 208 WTGs, BESS and ancillary infrastructure<br>• Peak construction workforce 300 FTE.<br>• Operational workforce up to 30 FTE .<br>• Workforce accommodation is expected to rely on available rental, motel and other accommodation in surrounding townships and regional centres. | 42 km south-west<br><br>Edward River LGA | • Construction expected to commence in 2024 - 2025.<br>• Construction period about 36 months.<br>• Commissioning expected in 2028. | The BDAR identifies direct impacts on 173.39 hectares of native vegetation. Impacts to threatened biodiversity entities include:<br>TECs:<br>• Natural Grasslands of the Murray Valley Plains CEEC (EPBC Act) – 88.33 ha<br>• Weeping Myall Woodlands (EPBC Act) – 29.69 ha<br>• Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act) – 31.09 ha<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (BC Act) – 10.28 ha<br>Threatened flora:<br>• *Swainsona murrayana* – 32.12 ha<br>• *Austrostipa wakoolica* – 19.57 ha<br>• *Brachyscome muelleroides* – 23.57 ha<br>• *Brachyscome papillosa* – 23.60 ha<br>• *Caladenia arenaria* – 1.49 ha<br>• *Convolvulus tedmoorei* – 12.27 ha<br>• *Cullen parvum* – 35.29 ha<br>• *Lepidium monoplocoides* – 12.92 ha<br>• *Leptorhynchos orientalis* – 25.75 ha<br>• *Maireana cheelii* – 25.75 ha<br>• *Pilularia novae-hollandiae* – 14.43 ha<br>• *Sclerolaena napiformis* – 25.75 ha<br>• *Swainsona plagiotropis* – 28.94 ha<br>• *Swainsona sericea* – 27.24 ha<br>Threatened fauna:<br>• Plains-wanderer – 1.78 ha<br>• Southern Myotis – 0.90 ha |
| Wilan Wind Farm<br><br>(In Planning - Prepare EIS) | • Nominal generating capacity of up to 800 MW.<br>• Up to 138 WTGs, BESS and ancillary infrastructure.<br>• Peak construction workforce 400 FTE.<br>• Operational workforce 10-15 FTE.<br>• Temporary workers accommodation will be established, location is subject to project design and community consultation. | 57 km west<br><br>Murray River and Hay Shire LGAs | • Construction expected to commence early in 2025.<br>• Construction period about 24 to 30 months.<br>• Commissioning expected in 2027-2028. | Direct impacts to biodiversity values are yet to be confirmed or estimated. The Scoping Report identifies listed biodiversity entities to be considered.<br>TECs with medium or high potential to occur:<br>• Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act)<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (BC Act)<br>• *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (BC Act)<br>• *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions (BC Act and EPBC Act)<br>Threatened flora known or with high or medium likelihood of occurrence:<br>• *Brachyscome papillosa*<br>• *Maireana cheelii*<br>• *Austrostipa metatoris*<br>• *Lepidium monoplocoides*<br>• *Solanum karsense*<br>Threatened fauna known or with high or medium likelihood of occurrence:<br>• *Nyctophilus corbeni*<br>• *Saccolaimus flaviventris*<br>• *Anseranas semipalmata* |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| | | | | • *Artamus cyanopterus cyanopterus*<br>• *Botaurus poiciloptilus*<br>• *Calidris ferruginea*<br>• *Circus assimilis*<br>• *Climacteris picumnus victoriae*<br>• *Daphoenositta chrysoptera*<br>• *Epthianura albifrons*<br>• *Falco subniger*<br>• *Grus rubicunda*<br>• *Haliaeetus leucogaster*<br>• *Hieraaetus morphnoides*<br>• *Limosa limosa*<br>• *Lophochroa leadbeateri*<br>• *Lophoictinia isura*<br>• *Oxyura australis*<br>• *Pomatostomus temporalis temporalis*<br>• *Pyrrholaemus brunneus*<br>• *Rostratula australis*<br>• *Stagonopleura guttata*<br>• *Stictonetta naevosa*<br>• *Litoria raniformis* |
| Junction Rivers Wind Farm<br><br>(In Planning – Under Assessment) | • Nominal generating capacity 750 MW.<br>• Up to 96 WTGs, BESS and ancillary infrastructure.<br>• Peak construction workforce 400 FTE.<br>• Operational workforce 15 direct and 45 indirect FTE. | 86 km west<br><br>Murray River LGA | • No current information regarding construction.<br>• Construction period about 48 months.<br>• Commissioning expected in 2029. | The BDAR estimates direct impacts on 75.68 ha of native vegetation (including 15 PCTs). The Project is expected to impact on the following biodiversity values:<br>TECs<br>• *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (BC Act) (2.03 ha)<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (BC Act) (1.17 ha)<br>Threatened fauna:<br>• Direct impacts to habitat for *Lophochroa leadbeateri*<br>Threatened flora:<br>• Direct impacts to *Solanum karsense* (2.34 ha), *Brachyscome papillosa* (3.91 ha) and *Lepidium monoplocoides* (3.66 ha).<br>• Removal of 77 scattered trees of which 53 are hollow bearing trees. |
| Project EnergyConnect (NSW – Eastern Section)<br><br>(Approved -September 2022) | • 330kV transmission line<br>• 375 km of new transmission lines and associated infrastructure. | 0 km | Under construction | The BDAR identifies direct impacts on 1,615.20 ha of native vegetation. Impacts to threatened biodiversity entities as a result of this project include:<br>TECs within the Murrumbidgee IBRA subregion:<br>• *Acacia melvillei* shrubland in the Riverina and Murray Darling Depression bioregions (BC Act) – 5.61 ha<br>• Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act) – 101.83 ha<br>• Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (BC Act) – 22.25 ha<br>• White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (BC Act and EPBC Act) – 0.25 ha<br>Threatened flora within the Murrumbidgee IBRA subregion:<br>• *Austrostipa wakoolica* – 41.15 ha<br>• *Brachyscome papillosa* – 132.19 ha<br>• *Caladenia arenaria* – 1.07 ha<br>• *Calotis moorei* – 18.43 ha<br>• *Convolvulus tedmoorei* – 62.77 ha<br>• *Cullen parvum* – 23.79 ha<br>• *Lepidium monoplocoides* – 59.86<br>• *Leptorhynchos orientalis* - 44.46 ha<br>• *Maireana cheelii* – 144.71 ha<br>• *Pilularia novae-hollandiae* – 4.45 ha<br>• *Swainsona murrayana* – 241.98 ha<br>• *Swainsona sericea* – 44.80 ha<br>Threatened fauna within the Murrumbidgee IBRA subregion:<br>• *Burhinus grallarius* – 150.86<br>• *Hieraaetus morphnoides* – 5.67 |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| | | | | • *Lophochroa leadbeateri* – 29.91<br>• *Myotis macropus* – 26.55 ha<br>• *Ninox connivens* – 24.01 ha<br>• *Pedionomus torquatus* – 0.37 ha<br>• *Polytelis anthopeplus monarchoides* – 23.26 ha<br>• *Polytelis swainsonii* – 12.45 ha |
| The Plains Solar Farm<br><br>(Response to Submissions) | • Nominal generating capacity of 400 MW.<br>• BESS with a capacity of up to 400 MW / 1.6 GWh.<br>• Peak construction workforce: up to 150 FTE employees<br>• Operational workforce: up to 46 FTE employees<br>• Temporary workers accommodation to be utilised from this project. | 0 km (Project overlaps with the Plains Solar Farm footprint) | • Construction estimated to commence in 2026.<br>• Construction period approximately 18 months.<br>• Commissioning expected 2028. | The development is estimated to have a direct impact on 1010.48 ha of native vegetation. Direct impacts to threatened entities are provided below.<br>Threatened flora:<br>• *Austrostipa wakoolica* – 109.6 ha<br>• *Brachyscome papillosa* – 10.14 ha<br>• *Calotis moorei* – 1.51 ha<br>• *Cullen parvum* – 33.85 ha<br>• *Lepidium monoplocoides* – 9.37 ha<br>• *Leptorhynchos orientalis* – 32.10 ha<br>• *Maireana cheelii* – 871.04 ha<br>• *Swainsona murrayana* – 874.63 ha<br>• *Swainsona sericea* – 29.70 ha<br>• *Sclerolaena napiformis* – 29.70<br>• *Swainsona plagiotropis* – 29.70<br>Threatened fauna:<br>• *Pedionomus torquatus* – 0.19 ha |
| Hay Solar Farm<br><br>(Approved - December 2017) | • Generating capacity 110 MW.<br>• 300,000 panels.<br>• Area across 660 ha.<br>• 700 FTE during peak construction and between 2 and 5 FTE during operation. | 15 km north<br><br>Hay LGA | • Currently under construction.<br>• Construction period approximately 18 months.<br>• Commissioning expected 2028. | • Total removal of 0.95 hectares of native vegetation within the development site for the solar panel arrays, power line construction access track and power pole footprints.<br>• Partial removal of 3.84 hectares of native vegetation (canopy cover only) within the grid connection transmission line easement.<br>• Removal of three isolated hollow bearing trees.<br>No threatened entities are impacted by the development. |
| Pottinger Solar Farm<br><br>(In Planning - Prepare EIS) | • Generating capacity 300 MW.<br>• BESS and ancillary infrastructure.<br>• Peak construction workforce of 220 FTE and operational workforce of at least 4 FTE.<br>• Temporary workforce accommodation to be investigated. | 5 km east<br><br>Hay LGA | • Construction period of about 12-months.<br>• No information available regarding construction commencement. | The direct impacts as a result of the development are yet to be determined. Considered entities are provided below:<br>TECs:<br>• Myall Woodlands (EPBC Act)<br>• Natural Grasslands of the Murray Valley Plains (EPBC Act)<br>• Sandhill Pine Woodland (BC Act)<br>Threatened species known or considered highly likely to occur:<br>• *Brachyscome papillosa*<br>• *Lepidium monoplocoides*<br>• *Maireana cheelii*<br>• *Pilularia novae-hollandiae*<br>• *Swainsona murrayana* |

| Project | Description | Distance from Project (km) / LGA | Construction Period / Timeline | Potential Cumulative Biodiversity Impacts |
|---|---|---|---|---|
| Currawarra Solar Farm<br><br>(Approved - May 2018) | • Generating capacity 195 MW.<br>• Associated infrastructure.<br>• Workforce of approximately 200 FTE during construction and 3-4 FTE during operations. | 67 km south<br><br>Edward River LGA | • Construction expected to commence in 2024 - 2025.<br>• Construction period about 18-24 months, including commissioning. | Direct impacts relate only to the disturbance of 7.06 ha of native vegetation within the development envelope. |
| Tarleigh Park Solar Farm<br><br>(Approved - May 2018) | • Generating capacity 90 MW.<br>• Associated infrastructure.<br>• Workforce of approximately 700 FTE during construction and 3-4 FTE during operations. | 85 km south<br><br>Edward River LGA | • Construction expected to commence in 2022.<br>• Construction period about 15 months. | Direct impacts relating to the clearing of 3.37 ha of native vegetation.<br><br>No threatened entities were assessed as being impacted by the development. |
| Sunraysia Solar Farm<br><br>(Operational) | • Generating capacity 200 MW.<br>• Ancillary infrastructure.<br>• Peak construction workforce of 250 FTE and operational workforce of at least 2 FTE. | 104 km west<br><br>Balranald Shire LGA | • Currently operational. | The direct impacts as a result of the development are provided below:<br>Native vegetation – 12.11 ha<br>TEC:<br>• *Acacia melvillei* shrubland in the Riverina and Murray-Darling Depression bioregions – 1.29 ha<br>Ecosystem credit species:<br>• *Ardeotis australis*<br>• *Ninox connivens*<br>• *Burhinus grallarius*<br>• *Cinclosoma castanotum*<br>• *Nyctophilus corbeni*<br>• *Stagonopleura guttata*<br>• *Pachycephala inornata*<br>• *Pomatostomus temporalis subsp. Temporalis*<br>• *Melanodryas cucullata subsp. Cucullata Hieraaetus morphnoides*<br>• *Anseranas semipalmata*<br>• *Lophochroa leadbeateri*<br>• *Grantiella picta*<br>• *Certhionyx variegatus*<br>• *Polytelis anthopeplus subsp. Monarchoides*<br>• *Circus assimilis*<br>• *Daphoenositta chrysoptera* |
| Limondale Solar Farm<br><br>(Operational) | • Generating capacity 250 MW.<br>• BESS and ancillary infrastructure.<br>• Peak construction workforce of 40 FTE and operational workforce of 20 FTE. | 100 km west<br><br>Balranald Shire LGA | • Currently operational.<br>• Additional construction expected to commence between Q3 2022 and Q4 2024.<br>• Construction period about 15 months. | The development direct impacts include the removal of 5.32 ha of native vegetation within the development site, and removal of 18 hollow bearing trees. |

## TABLE 8-7 CUMULATIVE IMPACTS ACROSS YANCO WIND FARM, ENERGYCONNECT AND THE PROJECT

| Threatened Species | Impact area (ha) | | | |
|---|---|---|---|---|
| | **Yanco Delta Wind Farm** | **Energy Connect (NSW – Eastern Section)** | **The Project** | **Total** |
| A Spear Grass *Austrostipa wakoolica* | 19.57 | 41.15 | 1.02 | 61.74 |
| Mossgiel Daisy *Brachyscome papillosa* | 23.60 | 132.19 | 662.26 | 818.05 |
| A Burr Daisy *Calotis moorei* | - | 18.43 | 10.12 | 28.55 |
| Small Scurf-pea *Cullen parvum* | 35.29 | 23.79 | 18.56 | 77.64 |
| Winged Peppercress *Lepidium monoplocoides* | 12.92 | 59.86 | 26.95 | 99.73 |
| Lanky Buttons *Leptorhynchos orientalis* | 25.75 | 44.46 | 15.28 | 85.49 |
| Chariot Wheels *Maireana cheelii* | 25.75 | 144.71 | 643.09 | 813.55 |
| Southern Myotis *Myotis macropus* | 0.90 | 26.55 | 339.18 | 366.63 |
| Plains-wanderer *Pedionomus torquatus* | 1.78 | 0.37 | 0.18 | 2.33 |
| Austral Pillwort *Pilularia novae-hollandiae* | 14.43 | 4.45 | 18.56 | 37.44 |
| Turnip Copperburr *Sclerolaena napiformis* | 25.75 | - | 58.76 | 84.51 |
| Slender-darling Pea *Swainsona murrayana* | 32.12 | 241.98 | 685.46 | 959.56 |
| Red Darling Pea *Swainsona plagiotropis* | 28.94 | - | 14.62 | 43.56 |

## 8.5 MITIGATING IMPACTS – MANAGEMENT MEASURES AND IMPLEMENTATION

A range of mitigation measures have been developed for the Project to mitigate the impacts to native vegetation and habitat that are unable to be avoided. These include a range of measures to be undertaken before and during construction to limit the impact of the Project. Each mitigation measure is discussed in detail in Table 8-8.

In accordance with Section 8.4 the BAM, adaptive management is to be used to address impacts that are infrequent or difficult to measure, such as indirect or prescribed impacts, or other remaining biodiversity impacts. A key component of the Project's adaptive management to reduce impacts on biodiversity values includes the development and implementation of a BBAMP (Appendix I). The BBAMP aims to address uncertainties around the ongoing impact of collision and barotrauma related mortalities on avian species. The BBAMP outlines monitoring measures, key thresholds for determining permissible impacts and corrective actions that are required to achieve the BBAMP objectives (which are essentially to minimise impacts on birds and bats during the operational phase). Monitoring measures include assessment of monthly mortality rates of avian species and periodic BUS. In addition, appropriate mitigation measures have been identified (such as the regular removal of lamb carcasses during lambing season to decrease the attractiveness of the area to feeding raptors). Refer to the BBAMP in Appendix I for more information.

In addition to the BBAMP, the management plans listed below will be prepared and implemented prior to the construction phase of the Project.

- Construction Environmental Management Plan (CEMP);
- Construction Traffic Management Plan (CTMP);
- Biodiversity Management Plan (BMP);
- Erosion and Sediment Control Plan (ESCP);
- Pest Animal Management Plan (PAMP); and
- Bird and Bat Adaptive Management Plan (BBAMP) (Appendix I).

There is scope to ensure that the principals of adaptive management are included in these management plans, for example, through the monitoring of operational performance and by providing flexibility to adjust management measures where required.

The CEMP will make provisions for clearing protocols, construction timing and include measures to minimise soil disturbance, runoff and sediment transfer, artificial light, noise, dust, and vibrations as a result of the Project. The CTMP will detail mitigation and management measures which aim to minimise the impact of construction traffic by installing suitable signage and driving protocols to reduce the risk of vehicle strike. The BMP will make specific provisions to limit impacts on biodiversity values, such as the use of fauna handlers to rescue and relocate resident fauna during construction. The ESCP will detail mitigation measures to reduce run-off, soil erosion and to protect water resources. The PAMP will be developed and implemented to minimise the impacts of introduced predators on existing native fauna, with a particular focus on the Plains-wanderer.

Table 8-8 outlines the key components of these management plans and their intended outcomes, along with other measures to mitigate and manage impacts.

TABLE 8-8 SUMMARY OF PROPOSED MITIGATION AND MANAGEMENT MEASURES FOR RESIDUAL IMPACTS (DIRECT, INDIRECT AND PRESCRIBED)

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| | **Direct impacts on native vegetation, threatened ecological communities and threatened species habitat** | | | | | | |
| Bio1 | Removal of native vegetation and threatened species habitat | Offset strategy - direct impacts on vegetation and threatened species habitat will be offset through the Biodiversity Offset Scheme. Options include:<br>• retiring biodiversity credits through a biodiversity stewardship site or through purchase on the credit market;<br>• paying into the Biodiversity Conservation Fund and transferring the obligation to the Biodiversity Conservation Trust; or<br>• funding a biodiversity conservation action through the Ancillary Rules if the Applicant can demonstrate that reasonable steps have been taken to find like-for-like biodiversity credits first. | Retirement of credit liability | As per the conditions of consent | Applicant | Like for like credits are not available. Ancillary Rules can help to meet credit obligations | Note that offsets have been calculated for the entire Subject Land. The actual Development Footprint will only constitute part of the Subject Land, but provisions have been made for micrositing flexibility. |
| Bio2 | Vegetation clearing | There is limited treed habitat present within the Subject Land and the Haul Route DF, however, where vegetation is to be removed it will be undertaken in accordance with specifications provided in a vegetation clearing protocol, detailed within the CEMP and BMP. | Reduction of negative impacts due to vegetation clearing, such as soil erosion, sedimentation and run off | Pre-construction and construction phase.<br>Once. | Applicant / Construction contractor | Instructions within the CEMP are unclear or not followed | Construction manager must ensure protocols are followed by construction team and activities are supervised. Any inadvertent vegetation removal or impacts must be repaired through restoration activities. |
| Bio3 | Harm to or displacement of resident fauna during construction activities | Construction works are timed to avoid critical life cycle events of resident fauna, such as breeding, parental care and dispersal of juveniles.<br>The BMP, implemented in conjunction with the CEMP, will include clearing protocols, such as the specification of timing of construction activities to minimise harm to resident fauna, pre-clearing surveys, daily fauna surveys, staged clearing and the provision that any vegetation or habitat clearing must be supervised by a trained ecologist or licensed fauna handler. The BMP will also incorporate ongoing monitoring of biodiversity over the lifespan of the Project. | Reduction in harm and displacement of resident fauna | Pre-construction and construction phase.<br>During construction activities. | Applicant / Construction contractor | Instructions within the BMP / CEMP are unclear, not followed or it is difficult to contract a fauna ecologist or licensed fauna handler. | Construction manager must ensure protocols are followed by construction team and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure a fauna ecologist / licensed fauna handler is present during construction activities. |
| Bio4 | Removal or reduction in quality of habitat features due to construction activities | The BMP must include specifications for the relocation of habitat features, such as hollows, hollow logs, timber and bush rocks to suitable areas in adjacent retained vegetation. | Reduction in harm and displacement of resident fauna | Construction phase.<br>During construction activities. | Applicant / Construction contractor | Instructions within the BMP / CEMP are unclear or not followed. Sites for the relocation of habitat features are not found or are inappropriate. | Construction manager must ensure protocols are followed by construction team and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure habitat features can be relocated appropriately. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| Bio5 | Fencing installation | Plain wire perimeter fences (opposed to barbed wire fencing) will be used where practical, and details agreed with landowners based on the requirements for specific areas of the property. The use of plain wire will reduce the risk of entrapment of fauna on fences. The locations and specifications of fencing options and their potential impacts to resident fauna will be identified and outlined in the BMP. | Reduction in harm of resident fauna and fauna using the Subject Land and Haul Route DF for dispersal. | Construction phase.<br>Ongoing | Applicant / Construction contractor / Operational contractor | Landowners do not wish to install plain wire fencing due to considerations of livestock control. | Negotiations must be undertaken with landowners in the pre-construction phase in a timely manner to ensure all landholders agree to plain wire fencing. |
| Bio6 | Impacts to Plains-wanderer or important Plains-wanderer habitat due to chemical spraying | Protocols for the use of spraying exclusion zones around Plains-wanderers and their habitat to be detailed and implemented in the BMP. | Minimisation of the impacts of chemical spraying on local Plains-wanderer population and areas of important Plains-wanderer habitat. | Pre-construction, construction, and operational phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor | Instructions within the BMP are unclear or not followed.<br><br>Landowners are not able to or do not wish to change current chemical spraying protocols. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Should additional Plains-wanderer observations be made beyond the existing exclusion zones, additional exclusion zones must be established prior to the commencement of additional chemical spraying.<br>Careful pre-construction planning and negotiations with landholders must be undertaken to ensure all parties agree to planned chemical spraying protocols. Regular communication must be undertaken with landholders throughout the construction and operational phases to ensure chemical spraying protocols align with the BMP. |
| | **Indirect impacts on native vegetation, threatened ecological communities and threatened species habitat** | | | | | | |
| Bio7 | Indirect impacts to vegetation adjacent to Subject Land and Haul Route DF / trampling of threatened flora | To avoid unnecessary removal or damage to retained vegetation, the limit of clearing will be clearly demarcated with temporary fencing and signed as 'Environmental Sensitive No-Go Zones' prior to the commencement of clearing. This will be detailed within the CEMP and CTMP, plus the following measures:<br>• Vehicles or machinery will not be permitted to park within or drive through areas of retained vegetation.<br>• Construction materials will not be stockpiled or stored within areas of retained vegetation.<br>• Ancillary facilities, such as site compounds and construction zones, will not be located beyond the limits of clearing.<br>• Temporary fencing and signage will be maintained throughout construction.<br>• Site inductions will be given by the civil contractor to all personnel and visitors to ensure all site workers and visitors are aware of any No-Go Zones.<br>Clear boundaries are to be created using fencing, tape, etc. to ensure that no threatened species habitat is incidentally impacted, including farm dams hosting the Southern Bell Frog, areas of suitable habitat for the Plains-wanderer and grey cracking clay soils for the Grey Snake. | Reduction in negative impacts to adjacent vegetation and habitat. | Pre-construction, construction and operational phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor | Instructions within the CEMP / CTMP are unclear or not followed. | Note that offsets have been calculated for the entire Subject Land, therefore, indirect impacts to native vegetation and threatened species habit have incurred a credit liability.<br>The actual Development Footprint will only constitute part of the Subject Land, but provisions have been made for micrositing flexibility.<br>Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure indirect impacts can be avoided. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| Bio8 | Biodiversity impacts due to light, noise and / or dust | The CEMP will outline measures to minimise the impact of excess noise and light on fauna during the construction phase of the Project. The CEMP will implement the following measures:<br>• Restriction of construction works to occur only within daylight hours;<br>• Ensure all plant and construction equipment is maintained in good working order to minimise noise;<br>• Where external artificial light is required, low-level wildlife sensitive lighting options will be used to ensure impacts to fauna are reduced;<br>• Lighting arrays and noise barriers will be used in order to shield adjoining native vegetation and habitat from stray light and excessive noise levels;<br>• Artificial lighting structures will be removed once no longer required for the completion of construction activities;<br>• Measures must be implemented to monitor the generation of noise, dust and light during construction activities. All construction activities will be undertaken with the objective of preventing visible dust emissions. Preventative measures include soil wetting, erosion controls and weather consideration. These will also be implemented alongside the ESCP.<br>• Where flashing lights are required, ensure that lights are synchronised to minimise disturbance to local fauna.<br>Permanent artificial lighting will be required on WTGs and associated infrastructure throughout the operational life of the project. While wildlife sensitive lighting design will also be employed for these permanent lighting features, proposed management measures to minimise impacts on wildlife will be outlined in the appended BBAMP. | Reduction in negative impacts to adjacent vegetation, habitat and resident fauna. | Pre-construction and construction phase.<br>Ongoing | Applicant / Construction contractor / Operational contractor | Instructions within the BMP / CEMP are unclear or not followed. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure CEMP / ESCP protocols can be implemented. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| Bio9 | Inhibition of soil processes and function | A site-specific ESCP will be developed and implemented in conjunction with the CEMP to minimise erosion and sediment control risks. The ESCP will include arrangements for managing activities during wet weather, high wind and extremely dry conditions, and vegetation clearing protocols.<br>Measures will be implemented, including stop-work protocols during adverse weather conditions, to reduce impacts to soil. Other measures may include soil erosion barriers, the requirement for vehicles to remain on designated surfaces and fencing to avoid encroachment into areas which are not to be impacted by construction and operational activities.<br>Specific controls will be detailed for removing vegetation and protecting the sodosols found within the Haul Route DF. Generally, sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed. | Reduced negative impacts to soil, its ability to function and soil processes. | Pre-construction, construction and operational phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor | Instructions within the ESCP are unclear or not followed.<br>Work proceeds during adverse weather conditions despite ESCP protocols. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure ESCP protocols can be implemented.<br>Protocols must be followed despite any time and financial pressures associated with construction activities. |
| Bio10 | Invasive flora | To minimise the spread of weeds throughout the Subject Land, Haul Route DF and surrounding areas, appropriate weed control activities will be undertaken in accordance with all state and regional weed management plans.<br>The Subject Land is subject to the *Riverina Regional Strategic Weed Management Plan 2023-2027* (LLS, 2022) and management of Weeds of National Significance. The *NSW Biosecurity Act 2015* and regulations provide specific legal requirements for state level priority weeds and high-risk activities. To comply with the objectives of the *Riverina Regional Strategic Weed Management Plan 2023-2027* (LLS, 2022), the following measures will be implemented as part of the CEMP and BMP for the Subject Land and Haul Route DF:<br>• Initial weed treatment - including eliminating woody species and targeting infestations of exotic herbs. In particular, high threat weed species occurring within the Subject Land and Haul Route DF will be managed in order to prevent further spread. Prior to any vegetation clearance, high threat weeds should be demarcated to be disposed of separately from native plant material.<br>• Containment – follow-up monitoring and maintenance should be undertaken in a timely manner in areas of the Subject Land and Haul Route DF that have received past, primary weed treatments to contain any re-emergence of weed species. | Reduction in weed abundance and new incursions | Pre-construction, construction and operation phase.<br>Ongoing | Applicant / Construction contractor / Operational contractor / landholders | Instructions within the BMP and CEMP are unclear or not followed.<br><br>Invasive flora management activities for the Project do not align with landholder weed management. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure weed management protocols can be implemented.<br>Protocols must be followed despite any time and financial pressures associated with construction activities.<br>Regular communication must be undertaken with landholders to ensure weed management activities align. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| | | • Minimisation – minimisation of weed species that cannot be effectively controlled on the site, such as exotic grasses, will be prevented from further spread through site hygiene procedures.<br><br>The CEMP and BMP will include provisions for shrubby, non-native vegetation, for example African Boxthorn (*Lycium ferocissimum*), which provide potential perches for known predators of the Plains-wanderer. This non-native vegetation is to be removed within 300 m of suitable habitat for the species. | | | | | |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| Bio11 | Pathogen management | A pathogen management protocol will be implemented as a component of the CEMP, CTMP and BMP.<br>The following measures will be implemented through the CEMP for the Subject Land:<br>• Education and training provided to all staff and contractors involved during the construction phase of project regarding the risk of spreading pathogens;<br>• All vehicles, construction equipment and plant will adhere to biosecurity requirements before entering the Subject Land and Haul Route DF and ensure vehicles and plant are free of soil and organic matter that may transport pathogens;<br>• In the event that evidence of a pathogen's presence within the Subject Land or Haul Route DF is detected, cleaning of all vehicles will commence and "no-go" zones will be established around the extent of the area where the pathogen is present. These will only be accessed when conditions are dry with all vehicle equipment and personal to adhere to biosecurity protocols as stipulated in the CEMP, CTMP or BMP.<br><br>All pathogen management and mitigation measures will adhere to the relevant legislation. There will be a particular focus on protecting the Southern Bell Frog from the introduction of the chytrid fungus (*Batrachochytrium dendrobatidis*). | Reduction in pathogen incursions within Subject Land, Haul Route DF and adjacent areas. | Pre-construction, construction and operations.<br>Ongoing | Applicant / Construction contractor / Operational contractor / landholders | Instructions within the Pest Control Management Program, incorporated within the BMP, CTMP and CEMP, are unclear or not followed.<br><br>Pathogen management activities for the Project do not align with landholder activities. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure pathogen management protocols can be implemented.<br>Protocols must be followed despite any time and financial pressures associated with construction activities.<br>Regular communication must be undertaken with landholders to ensure pathogen management activities align. |
| Bio12 | Loss of shade / shelter / breeding habitat / specialist breeding habitat | To avoid unnecessary removal or damage to fauna habitat, the limit of construction and operational activities will be clearly demarcated with temporary fencing and signed as 'Environmental Sensitive No-Go Zones'.<br>The BMP will detail the locations of sensitive habitats and will include clearing and operational protocols, such as the specification of timing of construction activities to minimise harm to resident fauna, pre-clearing surveys, daily fauna surveys, staged clearing and the provision that any vegetation or habitat clearing must be supervised by a trained ecologist or licensed fauna handler. The BMP will also incorporate ongoing monitoring of biodiversity over the lifespan of the Project.<br>The use of plain wire fencing instead of barbed wire fencing will be implemented to reduce the risk of entanglement and disturbance to breeding. Additional mitigation measures to reduce disturbance to Plains-wanderer breeding habitat is discussed in Section 9.1.1. | Reduction in harm and displacement of resident fauna | Pre-construction and construction phase.<br>During construction activities. | Applicant / Construction contractor / Operational contractor | Instructions within the BMP / CEMP are unclear, not followed or it is difficult to contract a fauna ecologist or licensed fauna handler. | Construction manager must ensure protocols are followed by construction team and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure a fauna ecologist / licensed fauna handler is present during construction, and if appropriate, operational activities. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| Bio13 | Increase in predators and pest animal species | A PAMP will be developed and implemented for the Project, with a focus on feral pig, feral cat and European fox control. All control methods will be completed in accordance with the relevant legislation / standard operating procedures, including but not limited to the following:<br>• *Regional Pest Management Strategy 2012-2017: Western Rivers Region* (NSW OEH, 2012);<br>• *NSW Code of Practice and Standard Operating Procedures for the Effective and Humane Management of Feral Cats* (Sharp, Cope, & Saunders, 2022); and<br>• *NSW Threat Abatement Plan: Predation by the Red Fox* (*Vulpes vulpes*) (NSW OEH, 2010).<br><br>To avoid an increase in the abundance of feral animal species which may impact native fauna, particularly the Plains-wanderer, the PAMP will implement the following measures:<br><br>• Initial feral animal removal - including the identification and removal of feral cats, feral pigs and fox dens within the Subject Land and Haul Route DF, as well as the removal of all detected individuals;<br>• Monitoring - undertake regular monitoring of access tracks, roads and areas identified as potentially important for the Plains-wanderer to ensure that feral animal activity and densities do not increase as a direct result of the Project;<br>• Ongoing removal – ensure, where feral animal species are detected, that suitable control methods are undertaken quickly to remove individuals from the Subject Land and Haul Route DF.<br><br>The PAMP will outline locally specific and appropriate objectives, targeted management actions for each identified pest species, management action success criteria, and roles and responsibilities. The PAMP will ensure that there are no reductions in local populations of the Plains-wanderer and will limit negative outcomes on other threatened species. | Reduction in feral pest animals | Pre-construction, construction and operation.<br>Ongoing. | Applicant / Construction contractor / Operational contractor / landholders | Instructions within the PAMP are unclear or not followed. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure feral animal management protocols can be implemented.<br>Regular communication must be undertaken with landholders to ensure feral pest management activities align. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| Bio14 | Erosion, sediment and run-off management | A site-specific ESCP will be developed and implemented to minimise erosion and sediment control risks. The ESCP will include arrangements for managing wet weather events, and working with high surface water levels. It will include monitoring requirements for potential high-risk events and specific controls and follow-up measures to be applied in the event of wet weather. The objectives of the ESCP will be to avoid adverse impacts to hydrological processes, wetlands and ephemeral creek lines, such as Curtains Creek, Telegraph Creek and Abercrombie Creek.<br><br>Mitigation measures will be incorporated into the CEMP and the ESCP to manage impacts to soil quality, hydrology regimes and habitat degradation. Clear boundaries are to be created using fencing, tape, etc. to ensure that no retained threatened species habitat is impacted by erosion, sediment or run-off, including farm dams hosting the Southern Bell Frog, areas of suitable habitat for the Plains-wanderer and grey cracking clay soils for the Grey Snake. | Reduction in erosion and sediment run-off. | Pre-construction, construction, and operations phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor | Instructions within the ESCP are unclear or not followed.<br>Work proceeds during adverse weather conditions despite ESCP protocols. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure ESCP protocols can be implemented.<br>Protocols must be followed despite any time and financial pressures associated with construction activities. |
| Bio15 | Human activity (including agricultural impacts, wood collection, rubbish dumping) | Protocols will be outlined in the CEMP and operational guidelines to minimise any rubbish / infrastructure / material dumping during construction and operational activities. Timeframes will be provided in which any waste must be removed from the Subject Land, Haul Route DF and adjacent areas.<br>Negotiations must be undertaken with landholders on agricultural activity management including the application of fertiliser, wood collection, rock removal etc. to reduce impacts on retained vegetation within the Subject Land, Haul Route DF and adjacent areas. | Reduction in inadvertent impacts from human activity | Pre-construction, construction and operational phase.<br>Ongoing | Applicant / Construction contractor / Operational contractor / landholders | Instructions within the CEMP and operational guidelines are unclear or not followed.<br><br>Landowners are unable to or unwilling to change agricultural practices and other activities which impact vegetation and habitat. | Construction and operational managers must ensure protocols are followed by staff and contractors and activities are supervised.<br><br>Incentives may be provided to landholders to encourage best practice agricultural management and awareness of human impacts on vegetation and habitat. |
| Bio16 | Changed fire regimes | Protocols will be outlined in the CEMP and BMP to minimise fire risk and outline any fire management strategies.<br>Communication must be undertaken with landholders, including adjacent landholders, on fire management and associated protocols. | Best practice fire management. | Pre-construction, construction and operational phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor / landholders. | Climate change means that even best practice fire management strategies cannot contain or prevent extreme fire events. | Construction and operational staff and landholders implement best practice land management activities which cumulatively limit fire risk and extreme fire events. |
| | **Prescribed impacts (not incorporated in mitigation measures detailed above)** | | | | | | |
| Bio17 | Removal or disturbance of non-native vegetation / ground rocks / human-made structures. | Vegetation, ground rocks and human-made structures in the Subject Land and Haul Route DF, including areas of non-native vegetation which are providing habitat, which must be removed during construction will be undertaken in accordance with specifications provided in the BMP, implemented in conjunction with the CEMP and ESCP. | Reduction of negative impacts due to vegetation clearing.<br><br>Habitat replacement. | Pre-construction, construction, and operational phase.<br>Ongoing restoration and monitoring activities. | Applicant / Construction contractor / Operational contractor / Landholders. | Instructions within the BMP, CEMP and ESCP are unclear or not followed.<br>Landholders are unwilling to permit restoration or habitat replacement activities on their land. | Construction and operational managers must ensure protocols are followed by staff / contractors and activities are supervised.<br>Restoration, habitat replacement and monitoring activities should be ongoing throughout the lifetime of the Project.<br>Careful pre-construction planning and negotiations with landholders must be undertaken to ensure all parties agree to planned restoration or habitat replacement activities. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| | | Woody, non-native species and human-made perching structures which are removed should be replaced elsewhere in the Subject Land and Haul Route DF, where appropriate, to provide alternative habitat and perching options. For example, African Boxthorn could be replaced with similar, dense native species which will grow in the local environmental conditions and complement existing native vegetation.<br>Non-native groundcover vegetation which needs to be removed for the Project could be replaced with discrete patches of suitable, native groundcover, which provide foraging resources and habitat for resident fauna.<br><br>Removal of ground rocks in the Haul Route DF should be undertaken in the presence of a trained ecologist or licensed fauna handler so resident reptiles can be relocated safely. There may be opportunities to relocate ground rocks to other areas creating alternative habitat. Measures will be outlined in the BMP.<br><br>The species' polygon for the Southern Bell Frog (*Litoria raniformis*) incorporates 1.86 ha of non-native vegetation. This area should be protected through protocols outlined in the CEMP, ESCP and BMP. | | | | | |
| Bio18 | Increased habitat fragmentation/ impacts on habitat connectivity | Habitat connectivity should be enhanced through the installation of habitat structures which facilitate connectivity, where practicable. For example, semi-permeable fencing that that allows for movement of native wildlife could be installed throughout the Subject Land and Haul Route DF (subject to the appropriate approvals and permissions) and corridors of suitable native vegetation could be planted in areas between infrastructure components.<br>Options should be outlined in the BMP. | Improvements to habitat connectivity | Pre-construction, construction and operational phase.<br>Ongoing restoration and monitoring activities. | Applicant / Construction contractor / Operational contractor / landholders | Landholders are unwilling to permit restoration or habitat replacement activities on their land.<br><br>Appropriate approvals cannot be granted to permit suitable habitat restoration activities. | Construction and operational managers must ensure protocols are followed by staff / contractors and activities are supervised.<br>Restoration, habitat replacement and monitoring activities should be ongoing throughout the lifetime of the Project.<br>Careful pre-construction planning and negotiations with landholders must be undertaken to ensure all parties agree to planned restoration or habitat replacement activities. |
| Bio19 | Impacts on water quality, waterbodies and hydrological processes. | A site-specific ESCP will be developed and implemented, in conjunction with the CEMP, to minimise erosion and sediment control risks. The ESCP will include arrangements for managing activities during wet weather, high wind, and extremely dry conditions.<br>The ESCP will include protocols for wet weather events, such as weather monitoring, stop work procedures, and specific controls and follow-up measures to avoid adverse impacts to hydrological processes, wetlands and ephemeral creek lines.<br>Appropriate sediment and erosion controls will be implemented such as preventing excavated material or fill to be placed in flood prone areas and using sediment barriers or sedimentation | Prevention and minimisation of negative impacts to waterbodies and water quality, including those downstream of the Subject Land and Haul Route DF. | Pre-construction, construction and operational phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor | Climate change means that even best practice water management strategies cannot prevent impacts to waterbodies during extreme wet weather events, due to their frequency, severity and unpredictability | Construction and operational staff and landholders implement best practice land management activities which cumulatively limit impacts to waterbodies. |

| ID | Impact | Measure | Outcome | Timing and Frequency | Responsibility | Risk | Adaptive Management Strategy |
|---|---|---|---|---|---|---|---|
| | | ponds to control the quality of water released from the site into the receiving environment.<br>Riparian areas, ephemeral creek lines and other waterbodies, including dams, will be clearly demarcated and signed as 'Environmental Sensitive No-Go Zones' prior to the commencement of clearing. | | | | | |
| Bio20 | Turbine strikes and / or barotrauma from WTGs | A BBAMP has been developed to mitigate the impacts of WTGs on avian species (Appendix I).<br>The BBAMP includes, but is not limited to the following:<br>• The stipulation of monitoring measures and key thresholds for determining permissible impacts and corrective actions that are required to achieve the objectives of the BBAMP.<br>• Assessment of monthly mortalities and periodic BBUS;<br>• Appropriate mitigation measures, such as the regular removal of lamb carcasses during lambing season, to decrease the attractiveness of the area to feeding raptors.<br>Impacts related to WTG collision and barotrauma have the potential to impact all listed bird and bat species flying at heights within the RSA. An assessment of collision risk for each threatened or migratory avian species with the potential to occur within the Subject Land has been completed in the appended BBAMP. | Minimisation of impacts related to WTG collision and barotrauma | Pre-construction, construction and operations phase.<br>Ongoing | Applicant / Construction contractor / Operational contractor | Impacts to birds and bats are uncertain and based on modelling assumptions. | The BBAMP must be adaptive to consider the results of mortality assessment and monitoring activities. |
| Bio21 | Mortality and injury of native fauna from vehicle strike | Speed limit restrictions will be imposed across the Subject Land and potentially the Haul Route DF. The topography also means vehicle speed limits are naturally curtailed. The CEMP, CTMP and operational guidelines for the Project will contain driving protocols and measures to improve the knowledge of staff and contractors about fauna movements. Site inductions and toolbox talks should include briefings on driving restrictions and behaviour, identifying and reporting hazards as they occur during construction and operations, and setting appropriate working hours and vehicle speed limits.<br>The BMP should include provisions for ongoing monitoring of impacts to fauna by vehicle strike. | Reduced mortality of resident fauna from vehicle strike. | Pre-construction / Construction / Operational phase.<br>Ongoing. | Applicant / Construction contractor / Operational contractor | Risk of vehicle strike is considered low within the Subject Land, and any potential impacts can be managed through speed limits, driver education and ongoing monitoring.<br>The risk is higher within the Haul Route DF, particularly if this becomes a public road. | Ongoing monitoring of vehicle strike mortalities should be reported as they occur, as stipulated in the BMP, and more preventative measures introduced if vehicle strike mortalities are occurring. |

# 9. THRESHOLDS FOR ASSESSING AND OFFSETTING IMPACTS

## 9.1 SERIOUS AND IRREVERSIBLE IMPACTS

A SAII entity is listed under the BC Act as an impact that is likely to contribute significantly to the risk of extinction of a threatened entity.

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct through one or more of the following principles:

1. It will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
2. It will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
3. It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution; or
4. The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

In terms of the assessment of entities identified at risk of a SAII, where impacted by a SSD project, the Minister for Planning is required to:

- Take those impacts into consideration, and
- Determine whether there are any additional and appropriate measures that will minimise those impacts if consent or approval is to be granted.

Potential SAII have been addressed in the following sections in accordance with Section 9.1 of the BAM (NSW DPIE, 2020a).

### 9.1.1 ASSESSMENT FOR SERIOUS AND IRREVERSIBLE IMPACTS ON BIODIVERSITY VALUES

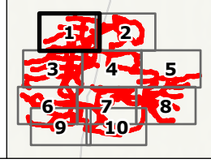
Based on the detected and assumed threatened species and the result of field surveys, the potential SAII for the Subject Land are listed in Table 9-1. Species' polygons for threatened entities retained for assessment for SAII in the Subject Land are presented in Figure 9-1. Note that no SAII entities are present within the Haul Route DF.

## TABLE 9-1 SUBJECT LAND ENTITIES AT RISK OF SERIOUS AND IRREVERSIBLE IMPACTS

| Entity | SAII Principle(s) | Reason for inclusion in assessment | Section |
|---|---|---|---|
| A Burr Daisy (*Calotis moorei*) | Principle 3: Known from <= 3 locations and / or an AOO < 10km$^2$ or EOO < 100 km$^2$. | Species observed in previous Subject Land design. Species assumed present over 10.12 ha in associated PCTs 153 and 157 which have been insufficiently surveyed. | Section 9.1.1.1 |
| Plains-wanderer (*Pedionomus torquatus*) | Principle 1: Population reduction of >=80% in 10 years or three generations. | 0.18 ha of Important Mapped Areas are present within the Subject Land. Species observed within the Subject Land. | Section 9.1.1.2 |

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F9-1 Entities at risk of SAII
# Map 1

**The Plains Wind Farm**
**Amended BDAR**

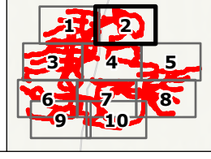
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Legend**

- Species polygon for Convolvulus tedmoorei
- Species Polygon for Plains-wanderer
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 2**

**The Plains Wind Farm**
**Amended BDAR**

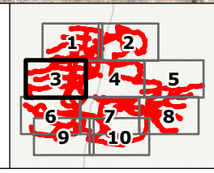
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

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1:25,000

**F9-1 Entities at risk of SAII**
**Map 3**

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

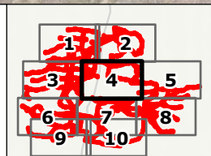
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 4**

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

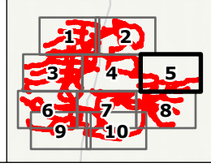
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Legend**

Species polygon for Convolvulus tedmoorei

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 5**

**The Plains Wind Farm**
**Amended BDAR**

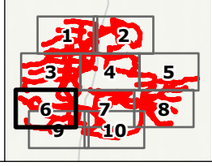
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 6**

**The Plains Wind Farm**
**Amended BDAR**

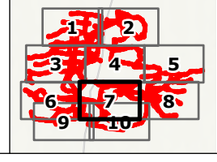
Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Species Polygon for Plains-wanderer
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 7**

**The Plains Wind Farm**
**Amended BDAR**

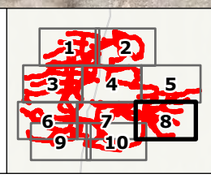
Client: Engie

ERM

**Legend**

Species polygon for Convolvulus tedmoorei

Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 8**

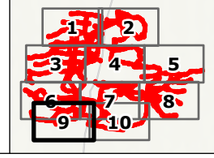
**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

**F9-1 Entities at risk of SAII**
**Map 9**

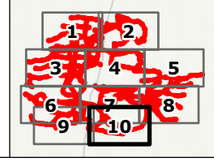
**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

**Legend**

- Species polygon for Calotis moorei
- Species polygon for Convolvulus tedmoorei
- Subject Land




Coordinate System:
GDA2020 MGA Zone 55

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 500 1,000m

1:25,000

# F9-1 Entities at risk of SAII
# Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

#### 9.1.1.1 A BURR DAISY (*CALOTIS MOOREI*) SAII ASSESSMENT

An assessment for SAII as a result of the Project has been undertaken for the Burr Daisy (*Calotis moorei*) in accordance with BAM Section 9.1.2 and presented in Table 9-2.

TABLE 9-2 A BURR DAISY (*CALOTIS MOOREI*) SAII ASSESSMENT

| **Additional Impact Assessment in accordance with BAM Section 9.1.2** |
|---|
| **1. What action and measures taken to avoid the direct and indirect impact on the potential entity for an SAII?** |
| A Burr-daisy (*Calotis moorei*) has been assumed to be present within the Subject Land, with the assumption of presence limited to its associated PCTs (2.95 ha in PCT 153 / VZ04_good and 7.17 ha in PCT 157 / VZ05_good). Assumption of presence has been necessary due to insufficient survey effort. The species was surveyed comprehensively in September 2024 but subsequent changes to PCT mapping have meant that not all areas within associated PCTs were surveyed. A precautionary approach has been applied as the species was previously found in the PREP area and design iterations in 2024 meant that impacts to known observations were avoided. Typically, the assumed presence approach limits the ability to avoid direct impacts. However, as the extent of these PCTs is mainly limited to access tracks within the Subject Land, it is considered that avoidance of any future observations can be achieved through micrositing of infrastructure. The Applicant has committed to micrositing principles following pre-clearance surveys in patches of PCT 153 and 157 to identify and avoid any occurrences of this species. |
| **2. The assessor must consult the TBDC and/or other sources to report on the current population of the species including:**<br>a) evidence of rapid decline presented by an estimate of the:<br>i. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer), or<br>ii. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) as indicated by: an index of abundance appropriate to the species; decline in geographic distribution and/or habitat quality; exploitation; effect of introduced species, hybridisation, pathogens, pollutants, competitors, or parasites |
| During surveys across the broader PREP boundary, *Calotis moorei* individuals were identified in one location, west of the Cobb Highway. *Calotis moorei* is known from two additional distinct geographic areas, with a population at 'Mount Mulyah' north-west of Louth, and three populations near Menindee, NSW. The NSW Department of Environment, Climate Change and Water's (NSW DECCW) '*Calotis moorei* Recovery Plan' suggests there is no evidence that these populations are in decline (NSW DECCW, 2009).<br>There is historical record from 1913 in the Riverina IBRA bioregion, however, several unsuccessful searches suggest that the population at this location is now extinct (NSW DECCW, 2009). |
| b) evidence of small population size (Principle 2, clause 6.7(2)(b) BC Regulation) presented by:<br>iii. an estimate of the species' current population size in NSW, and<br>iv. an estimate of the decline in the species' population size in NSW in three years or one generation (whichever is longer), and |

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

v. where such data is available, an estimate of the number of mature individuals in each subpopulation, or the percentage of mature individuals in each subpopulation, or whether the species is likely to undergo extreme fluctuations

i. *Calotis moorei* is currently known from a further two distinct geographic areas, with a population at 'Mount Mulyah' north-west of Louth, and three populations near Menindee, NSW. Forty-five individuals of the species were recorded in the 'Mount Mulyah' population, however, it is noted that this count was not exhaustive. There is no count information for the populations near Menindee (NSW DECCW, 2009). During surveys across the broader PREP area, approximately 106 individuals of *Calotis moorei* were observed.

ii. There is currently no data available to estimate the total current population size of *Calotis moorei* across NSW.

iii. There is consequently no data available to estimate the number of mature individuals in each subpopulation, or the percentage of mature individuals in each subpopulation. The species is considered to be fecund but has not been observed to undergo extreme fluctuations in population or subpopulation size (NSW DECCW, 2009).

c) Evidence of limited geographic range for the threatened species (Principle 3, clause 6.7(2) BC Regulation) presented by:

i. Extent of occurrence

ii. Area of occupancy

iii. Number of threats defined locations (geographically or ecologically distinct areas in which a single threatening event may rapidly affect all species occurrences), and

iv. Whether the species' populations likely to undergo extreme fluctuations

i. The extent of occupancy (EOO) is less than 100 $km^2$ for *Calotis moorei* (NSW DCCEEW, 2025b).

ii. The area of occupancy (AOO) is less than 10 $km^2$ (NSW DCCEEW, 2025b). The species is known from two, possibly three, distinct geographic areas. However, is considered to be fecund and similar to other *Calotis spp.* and thus may be more widespread (NSW DECCW, 2009).

iii. There are no definite threats to the extant populations, although sheep grazing and competition from shrub species may impact the species. However, a very small, localised population is inherently at risk from chance events and the species may be susceptible to adverse genetic influences, such as inbreeding depression (NSW DECCW, 2009).

iv. The species is considered to be fecund but has not been observed to undergo extreme fluctuations in population or subpopulation. Impacts of heavy grazing and extended drought may be somewhat mitigated by the persistence of seed material within the seedbank (NSW DECCW, 2009).

d) Evidence that the species is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation) because:

i. known reproductive characteristics severely limit the ability to increase the existing population on, or occupy new habitat (e.g. species is clonal) on, a biodiversity stewardship site

ii. the species is reliant on abiotic habitats which cannot be restored or replaced (e.g. karst systems) on a biodiversity stewardship site, or

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

iii. life history traits and/or ecology is known but the ability to control key threatening processes at a biodiversity stewardship site is currently negligible (e.g. frogs severely impacted by chytrid fungus)

The Recovery Plan (NSW DECCW, 2009) highlights that it is unlikely that populations of *Calotis moorei* will decline irrespective of recovery measures. The species appears to be capable of producing an abundance of offspring and may prove to be more widespread.

**3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a species for a criterion listed in Subsection 9.1.2(2.), the assessor must record this in the BDAR or BCAR.**

NSW BioNet (NSW DCCEEW, 2025b) does not indicate data are 'unknown' or 'data deficient' for this species.

**4. In relation to the impacts from the proposal on the species at risk of an SAII, the assessor must include data and information on:**

a) the impact on the species' population (Principles 1 and 2) presented by:

i. an estimate of the number of individuals (mature and immature) present in the subpopulation on the subject land (the site may intersect or encompass the subpopulation) and as a percentage of the total NSW population, and

ii. an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or

iii. if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal.

i. *Calotis moorei* has been recorded within the Subject Land, with approximately 106 individuals present. The area in which the species has been assumed to be present is 10.12 ha. As the AOO has been recorded as less than 10 $km^2$ (NSW DCCEEW, 2025b), the area in which *Calotis moorei* occurs within the Subject Land represents approximately 0.01% of the NSW population. However, the *Calotis moorei Recovery Plan* (NSW DECCW, 2009) is now more than 15 years old and additional records of the species have been recorded since its publication (Council of Heads of Australasian Herbaria, 2025). The true extent of the total NSW population present beyond the Subject Land is unknown.

ii. Following a redesign of the Subject Land in 2024 with the intent to avoid impacts to the known subpopulation identified within the PREP area, no additional individuals have been detected following additional survey effort in September 2024. Where the extent of associated PCTs 153 and 157 have not been adequately surveyed, the species is assumed to be present as a precautionary approach.

iii. The species' unit of measure is area and 10.12 ha of *Calotis moorei* habitat (2.95 ha in PCT 153 / VZ04_good and 7.17 ha in PCT 157 / VZ05_good) has been assumed to be present within the Subject Land. An estimated number of individuals cannot be provided. Note that the Project's design has been changed to avoid impacts to the known 106 individuals of the species.

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

a) Impact on geographic range (Principles 1 and 3) presented by:

i. the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW

ii. the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted

b) to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease, pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR.

i. The full geographic range of the subpopulation present within the Subject Land has been assumed to be 10.12 ha. The total AOO for this species has been recorded in NSW BioNet (2025b) as < 10 $km^2$. However, using a combination of records included in the species' recovery plan (NSW DECCW, 2009) and the Australian Virtual Herbarium (Council of Heads of Australasian Herbaria, 2025), the species possesses an EOO of about 80,000 $km^2$. Therefore, the assumed subpopulation extent present within the Subject Land equates to approximately 0.000001% of the EOO or 0.01% of the AOO in NSW.

ii. Following a Project redesign, no known individuals of the species occur within the Subject Land. In addition, pre-construction micrositing options may be available to avoid clearing of the species, if detected in pre-clearance surveys in PCT 153 and PCT 157. However, it is possible that direct impacts to habitat of the species cannot be avoided.

e) Threats to the species are poorly understood, and dispersal distances, pollination distance and impacts to changing environmental conditions are not known. However, the species is in the Asteraceae family and the fruit is a burr-like achene (Royal Botanic Gardens and Domain Trust, 2025) therefore seed dispersal may be by mammals and birds as the burr may become entangled in fur or feathers. Based on the species' predicted ability to recover across its known subpopulations and possible dispersal over long distances by animals, it is considered unlikely that the species will decline (NSW DECCW, 2009). The risk of the Project altering fire regimes is considered low due to the lack of trees and tall shrubs and the extent of historical modification of the landscape through agriculture, therefore, the species is not considered to be at risk of increased fire frequency within the Subject Land. Moderate impacts to edge effects and changes to hydrology are expected as a result of the Project, however, mitigation measures will be put in place to limit these impacts (refer to Table 8-8). Based on monitoring surveys undertaken at known populations, the species is considered relatively fecund with the potential to persist within soil seedbanks through drought conditions. Mature individuals are also likely to be

| Additional Impact Assessment in accordance with BAM Section 9.1.2 |
|---|
| unpalatable due to the presence and density of sharp, woody awns on fruit although emergent individuals may be grazed. In addition, the species may be subject to competition from shrub growth (NSW DECCW, 2009). Reductions in grazing pressure and stocking rates may result from the construction and operation phases of the Project, and reduction in shrub species may also occur through vegetation clearing. These changes may benefit the species. |

### 9.1.1.2 PLAINS-WANDERER (*PEDIONOMUS TORQUATUS*) SAII ASSESSMENT

An assessment for SAII as a result of the Project has been undertaken for the Plains-wanderer (*Pedionomus torquatus*) in accordance with BAM Section 9.1.2, and is presented in Table 9-3.

TABLE 9-3 PLAINS-WANDERER (*PEDIONOMUS TORQUATUS*) SAII ASSESSMENT

| Additional Impact Assessment in accordance with BAM Section 9.1.2 |
|---|
| **1. What action and measures taken to avoid the direct and indirect impact on the potential entity for an SAII?** |
| **Avoidance:**<br><br>A review of Important Mapped Areas and additional mapping of suitable habitat for the Plains-wanderer has been completed across the Subject Land (refer to Section 5.3.1). The Subject Land has been designed to avoid Important Mapped Areas. A previous Project design was expected to result in impacts to 5.35 ha of Important Mapped Areas, associated with access tracks between transmission line towers and WTGs. Following a redesign in 2024, the Subject Land is calculated to impact 0.18 ha of breeding habitat (Important Mapped Areas) for the species, comparative to 1,460.56 ha mapped within the PREP area.<br><br>The Project has been designed to maximise the use of existing public and internal access tracks within the Subject Land, minimising the vegetation clearance required and therefore reducing the loss of habitat.<br><br>**Mitigation**:<br><br>Several mitigation measures will be implemented to avoid and minimise impacts to the species, with consideration of the *National Recovery Plan for the Plains-wanderer* (*Pedionomus torquatus*) (Cwth DoE, 2016):<br><br>• Additional surveys were conducted to identify areas of suitable foraging habitat for the species, beyond the known 0.81 ha of Important Mapped Areas. The Subject Land was found to contain 708.82 ha of suitable foraging habitat. These areas will be subject to management and mitigation measures to avoid impacts to the species (refer to Section 8.5).<br>• The potential risks of predation will be mitigated via the preparation and implementation of a PAMP, to be developed in accordance with guidelines and relevant codes of practice. Maximising the use of existing public and internal access tracks will prevent an increase in predatory access routes and activity (refer to Section 8.5).<br>• During construction, pre-clearance surveys will be undertaken, flushing ground-dwelling avian species from the clearance path, and searches for Plains-wanderer nests will be undertaken to ensure no individuals are directly impacted by the Project. Clearing of areas identified as Plains Wanderer Important Mapped Areas will be avoided during primary breeding and fledging periods (spring) (NSW Scientific Committee, 2009). Active Plains-wanderer nests will be protected by a suitably-sized exclusion buffer. |

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

- The CEMP and BMP will include retained vegetation and weed management actions, including provisions for elevated non-native vegetation, e.g. African Boxthorn (*Lycium ferocissimum*), which can provide perches for known predators of the species.
- Protocols for chemical spraying exclusion zones around Plains-wanderer habitat will be implemented, including limiting spraying to only occur in low wind conditions.
- The Project design will also allow for the implementation of plain wire fencing to be used as perimeter fencing in place of barbed wire fencing, to reduce the risk of entanglement.

**2. The assessor must consult the TBDC and/or other sources to report on the current population of the species including:**

a) evidence of rapid decline presented by an estimate of the:

i. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer), or

ii. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) as indicated by: an index of abundance appropriate to the species; decline in geographic distribution and/or habitat quality; exploitation; effect of introduced species, hybridisation, pathogens, pollutants, competitors, or parasites

i. The Plains-wanderer occurs in a single widely-dispersed population; however, the evidence for this is not strong (Cwth DoE, 2016). The population has experienced significant declines in number in core locations, with monitoring of the species across the Riverina region reporting an overall decline of 84% between 2010 and 2014. This decline was preceded by significant fluctuations in numbers across the region from 2001 onwards, with an overall decline of 93% over the period from 2001 to 2014 (Wilson, Ingwersen, & Parker, 2014).

ii. The Plains-wanderer has declined to a record low, with 250 to 1,000 birds estimated to be extant as of 2015 (NSW OEH, 2015; Baker-Gabb, 2015). The distribution of the Plains-wanderer was formerly widespread, however, it is now locally-extinct or near extinct in coastal and sub-coastal areas in all four states (NSW, Queensland, Victoria and South Australia) in which it is known to occur, and is mainly confined to small inland areas that are subject to grazing (Cwth DoE, 2016). Historically, the major factor contributing to the decline of the Plains-wanderer was habitat loss due to the widespread conversion of lowland native grasslands to crops and dense, introduced pastures.
Currently recognised threatening processes for the Plains-wanderer include habitat loss, inappropriate grazing, small population size, predation by feral species, pesticide use, planting and natural recruitment of trees in or near native grasslands, lack of appropriate fire regimes, quail hunting and climate change (Cwth DoE, 2016).

b) evidence of small population size (Principle 2, clause 6.7(2)(b) BC Regulation) presented by:

i. an estimate of the species' current population size in NSW, and

ii. an estimate of the decline in the species' population size in NSW in three years or one generation (whichever is longer), and

iii. where such data is available, an estimate of the number of mature individuals in each subpopulation, or the percentage of mature individuals in each subpopulation, or whether the species is likely to undergo extreme fluctuations

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

i. As of 2018-20, the Plains-wanderer population size was estimated at between 250 and 1,000 mature individuals, with NSW populations estimated to contribute to 50% of these numbers (NESP TSRH, 2019; Cwth DAWE, 2021b). Therefore, the NSW population is estimated to be between 125 and 500 mature individuals.

ii. In the four years between 2010 and 2014, the Riverina population of the species was monitored and found to decrease by 84% (Wilson, Ingwersen, & Parker, 2014).

iii. The number of mature individuals in each of the main subpopulations in Victoria and NSW is estimated to be below 250 individuals. Extreme fluctuations in this number have been observed within the NSW subpopulation (Cwth DoE, 2016).

c) Evidence of limited geographic range for the threatened species (Principle 3, clause 6.7(2) BC Regulation) presented by:

i. Extent of occurrence

ii. Area of occupancy

iii. Number of threats defined locations (geographically or ecologically distinct areas in which a single threatening event may rapidly affect all species occurrences), and

iv. Whether the species' populations likely to undergo extreme fluctuations

i. The species' extent of occurrence was estimated at 930,000 $km^2$ in 2011 (Garnett, Szabo, & Duston, 2011).

ii. In 2011, the species' area of occupancy was estimated at 33,000 ha and decreasing, which is described as restricted (Garnett, Szabo, & Duston, 2011).

iii. Two current stronghold locations are recognised for the Plains-wanderer - the western Riverina in NSW and the Patho Plains in Victoria (Cwth DoE, 2016). Important area mapping has been undertaken for the species in NSW covering areas of the Riverina, including parts of the Subject Land.

iv. The Plains-wanderer has been observed to undergo extreme fluctuation in numbers in response to seasonal conditions, stocking rates and time of year. Fluctuation by up to tenfold has been recorded in the Riverina (NSW Scientific Committee, 2009).

d) Evidence that the species is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation) because:

i. known reproductive characteristics severely limit the ability to increase the existing population on, or occupy new habitat (e.g. species is clonal) on, a biodiversity stewardship site

ii. the species is reliant on abiotic habitats which cannot be restored or replaced (e.g. karst systems) on a biodiversity stewardship site, or

iii. life history traits and/or ecology is known but the ability to control key threatening processes at a biodiversity stewardship site is currently negligible (e.g. frogs severely impacted by chytrid fungus)

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

I. There is no evidence that the species is unlikely to respond to management. Reproductive characteristics are well understood; reproductive success may be limited by extreme environmental conditions such as drought and flood (Cwth DoE, 2016). A national captive breeding program has been established, supported by the Biodiversity Conservation Trust, Local Land Services, Taronga Conservation Society and the NSW Saving Our Species program with the aim to replenish wild populations, with releases made during 2022 (Cwth DAWE, 2021b).

II. The species is not reliant on abiotic habitats which cannot be restored or replaced on a biodiversity stewardship site. Active management of grassland vegetation and former cropping land can assist in the recovery of habitat values appropriate for the species (Cwth DoE, 2016).

III. Current threatening processes for the Plains-wanderer include habitat loss, inappropriate grazing, small population size, predation by feral species, pesticide use, planting and natural recruitment of trees in or near native grasslands, lack of appropriate fire regimes, quail hunting and climate change (Cwth DoE, 2016). These processes have the potential to be managed at a biodiversity stewardship site.

**3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a species for a criterion listed in Subsection 9.1.2(2.), the assessor must record this in the BDAR or BCAR.**

NSW BioNet (NSW DCCEEW, 2025b) does not indicate data are 'unknown' or 'data deficient' for this species.

**4. In relation to the impacts from the proposal on the species at risk of an SAII, the assessor must include data and information on:**

a) the impact on the species' population (Principles 1 and 2) presented by:

i. an estimate of the number of individuals (mature and immature) present in the subpopulation on the subject land (the site may intersect or encompass the subpopulation) and as a percentage of the total NSW population, and

ii. an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or

iii. if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal.

i. Targeted survey effort has identified four individuals of the species, including three adults and one chick, across the PREP area, with the nearest record situated approximately 250 m from the Subject Land boundary. The Subject Land intersects 0.18 ha of Important Mapped Areas, and 708.82 ha of suitable foraging habitat has been identified through on-ground habitat assessments. However, only 54.50 ha of the associated PCT (44) is present within the Subject Land. The Plains-wanderer occupies home ranges averaging 12 ha; those of males and females overlap by 50% to give 18 ha per pair, but those of the same sex do not overlap (NSW Scientific Committee, 2009). The size of the present subpopulation is unknown, however based on Important Mapped Areas (0.18 ha), suitable habitat mapping (708.82 ha) across the

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

Subject Land and the species' home range (12 ha), the habitat present has the potential to support approximately 59 individuals; this is likely to be an overestimate.

If a conservative approach is applied and the species range is based on Important Mapped Areas (0.18 ha) and the associated PCT 44 (54.50 ha), then the Subject Land has the potential to support approximately 4.56 individuals. This number seems more realistic based on the number of individuals observed (4) over extensive survey effort conducted within the PREP area between 2021 and 2024.

The most recent population estimates are 125 - 500 mature individuals for NSW. If all potential habitat within the Subject Land was occupied by the Plains-wanderer, then it represents between 8 and 32% of the NSW population. If the Important Mapped Areas (0.18 ha) and the associated PCT 44 (54.50 ha) was occupied by the Plains-wanderer, then the Subject Land represents between 0.009 and 3.64% of the NSW population.

ii. The Subject Land contains 0.18 ha of Important Mapped Areas, and 54.50 ha of the associated PCT 44, constituting 54.68 ha of suitable habitat; some of which will be cleared for the Project. Note that micrositing flexibility means that not all of this area will be cleared for the final Development Footprint, and pre-clearance surveys will limit impacts on individuals of the species and its breeding habitat. The size of the Subject Land subpopulation is unknown, however, based on the total number of individuals (4) observed over three years of survey effort and the area of suitable habitat (54.68 ha), the habitat present has the potential to support 4.56 individuals which might be impacted by the Project. This represents 0.009 and 3.64% of the NSW population.

iii. Refer to Answer 4.a.ii. above.

c) Impact on geographic range (Principles 1 and 3) presented by:

i. the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW

ii. the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted

d) to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease, pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR

**Additional Impact Assessment in accordance with BAM Section 9.1.2**

i. The Subject Land contains 0.18 ha of Important Mapped Areas, and 54.50 ha of the associated PCT 44, constituting 54.68 ha of suitable habitat, which is the maximum extent which will be impacted as a result of the Project. This habitat makes up 0.002 % of the estimated AOO for the species (330 $km^2$) and 0.00000059% of the estimated EOO for the species (930,000 $km^2$).

ii. The Project is unlikely to directly impact Plains-wanderer individuals as pre-clearance surveys, involving flushing ground-dwelling avian species from the clearance path and searching for Plains-wanderer nests, will be undertaken prior to habitat disturbance to protect individuals. However, the Project will have a direct impact on a maximum area of 54.68 ha of suitable foraging (54.50 ha) and breeding habitat (0.18 ha).

iii. The Project may result in a direct impact on a maximum area of 54.68 ha of suitable habitat for the Plains-wanderer. This has potential to impact the habitat of 4.56 individuals (based on a home range of 12 ha). The Important Mapped Areas available in the broader PREP area (1460.56 ha) is likely to continue to provide sufficient resources to maintain the viability of the subpopulation of the Plains-wanderer. These Important Mapped Areas represent habitat for an estimated 81.14 breeding pairs. Therefore, the Project is not considered likely to reduce habitat to a level that would impact the subpopulation's viability.

iv. The Project has potential to result in 0.18 ha of direct impacts to breeding habitat of the Plains-wanderer, 54.50 ha of impacts on foraging habitat of the Plains-wanderer, and indirect and prescribed impacts on the species. These impacts include the potential for increased predator activities, vehicle strike, impacts on the viability of vegetation adjacent to the Subject Land (e.g. from light spill) and introduction of weed species. To minimise impacts to the species, mitigation measures detailed in Question 1 above, and Section 8.5 will be implemented.

## 9.2 IMPACT SUMMARY

### 9.2.1 IMPACTS THAT REQUIRE AN OFFSET

#### 9.2.1.1 ECOSYSTEM CREDITS

Impacts requiring an offset for the Subject Land and Haul Route DF are shown in Figure 9-2 and Figure 9-3 respectively. In accordance with Section 9.2.1 of the BAM (NSW DPIE, 2020a), all impacts of proposals on PCTs that are associated with a vegetation zone that have vegetation integrity scores of:

- ≥15, where the PCT is representative of an EEC or a CEEC;
- ≥17, where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community; or
- ≥20, where the PCT does not represent a TEC and is not associated with threatened species habitat.

Note that the there are no TECs mapped within the Subject Land or Haul Route DF. All PCTs mapped within the Subject Land and Haul Route DF have a VIS of greater than or equal to 20 (refer to Table 8-3) and thus direct impacts to all VZs require an offset.

#### 9.2.1.2 SPECIES CREDIT SPECIES

Section 9.2.2 (2) of the BAM (NSW DPIE, 2020a) stipulates that the assessor must determine an offset for the impacts of proposals on threatened species that require species credits. All species for which species' polygons have been created will require an offset (refer to Table 8-2).

#### 9.2.1.3 PRESCRIBED IMPACTS

Section 8.6 of the BAM (NSW DPIE, 2020a) states that if mitigation and management measures described in adaptive management plans (e.g., the BBAMP in Appendix I) are considered at high risk of failure, measures to secure offsets can be proposed and justified in the BDAR. These measures may include the retirement of credits and / or other conservation measures that benefit a threatened entity. The consent authority will assess the proposed mitigation measures and determine whether additional biodiversity credits will need to be retired, or alternative measures undertaken to offset high risk impacts. Conservation measures to offset indirect and prescribed impacts have been proposed in Section **Error! Reference source not found.**10.2.

**Southern Bell Frog (*Litoria raniformis*)**

The species' polygon for the Southern Bell Frog (*Litoria raniformis*) incorporates 1.86 ha of non-native vegetation. This area will not require an offset for direct impacts but may require an offset as a prescribed impact, if mitigation measures proposed in Section 8.5 are deemed insufficient by the consent authority to protect the Southern Bell Frog's habitat in non-native vegetation. However, on successful implementation of the proposed mitigation measures in the construction and operational phases of the Project (refer to Table 8-8), the risks of impacts to the Southern Bell Frog's habitat in non-native vegetation (1.86 ha) are considered low.

## 9.2.2 IMPACTS THAT DO NOT REQUIRE FURTHER ASSESSMENT

### 9.2.2.1 AREAS OF NON-NATIVE VEGETATION

The Subject Land contains 65.88 ha of non-native vegetation that does not require further assessment for ecosystem credits. This area is dominated by no vegetation or exotic species, in a disturbed state, with the native vegetation having been historically cleared for agriculture or infrastructure.

This land does not constitute habitat for threatened species except for 1.86 ha of non-native vegetation incorporated within the species' polygon for the Southern Bell Frog (refer to Section 9.2.1.2).

Non-native vegetation not requiring offset for the Subject Land is shown in Figure 9-2. Note this area includes the 1.86 ha of non-native vegetation incorporated within the species' polygon for the Southern Bell Frog. Any offset requirements for the Southern Bell Frog within this area are subject to discussions with the consent authority.

**Haul Route**

The Haul Route DF contains 1.24 ha of non-native vegetation that does not require further assessment for ecosystem credits. This area is dominated by bare ground or exotic species, in a disturbed state, with the native vegetation having been historically cleared.

This are of non-native vegetation land does not constitute habitat for threatened species. Non-native vegetation not requiring offset for the Haul Route DF is shown in Figure 9-3.

## 9.2.3 IMPACTS ON MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The Commonwealth Government's Bilateral Assessment Requirements stipulate that an EIS (through the BDAR) must include the identification of any MNES that have not been offset using the BAM and details of how impacts requiring offset correlate to the MNES impacts. These details are provided in Table 9-4. The species detailed in Table 9-4 are those provided in the Supplementary SEARs and other EPBC Act threatened species which may be impacted by the Project as listed ecosystem species, known candidate species or species known to occur within the Subject Land.

TABLE 9-4 MNES ENTITIES IMPACTED BY THE PROJECT

| MNES Matter | EPBC Act Status | Comments | Impacts | Offset and / or Mitigation Measures | Credit Liability |
|---|---|---|---|---|---|
| **Threatened species listed in the Supplementary SEARs** | | | | | |
| Mossgiel Daisy *Brachyscome papillosa* | V | Species detected and assumed present in unsurveyed areas | 662.26 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 18425 species credits |
| Winged Peppercress *Lepidium monoplocoides* | E | Species detected and assumed present in unsurveyed areas | 26.95 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 905 species credits |

| MNES Matter | EPBC Act Status | Comments | Impacts | Offset and / or Mitigation Measures | Credit Liability |
|---|---|---|---|---|---|
| Southern Bell Frog *Litoria raniformis* | V | Species detected | 8.84 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 180 species credits |
| Chariot Wheels *Maireana cheelii* | E | Species detected and assumed present in unsurveyed areas | 643.09 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 17600 species credits |
| Corben's Long-eared Bat *Nyctophilus corbeni* | V | Possible echolocation call recording of the species was made in The PREP area; however, not within the Subject Land. | The Project has the potential to result in mortality and / or barotrauma impacts from operating WTGs, as described in the BBAMP (Appendix I) | Mitigation of prescribed impacts detailed in the BBAMP (Appendix I).<br><br>Compensatory offset measures may be undertaken. | n/a |
| Plains-wanderer *Pedionomus torquatus* | CE | Species detected | 0.18 ha breeding habitat loss.<br><br>54.50 ha foraging habitat loss (associated with PCT 44).<br><br>708.82 ha habitat determined present through on-ground habitat assessments. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 11 species credits<br><br>1544ecosystem credits (associated with PCT 44). |
| Superb Parrot *Polytelis swainsonii* | V | Species not detected. | The Project has the potential to result in mortality impacts from operating WTGs, as described in the BBAMP (Appendix I) | Mitigation of prescribed impacts detailed in the BBAMP (Appendix I).<br><br>Compensatory offset measures may be undertaken. | n/a |

| MNES Matter | EPBC Act Status | Comments | Impacts | Offset and / or Mitigation Measures | Credit Liability |
|---|---|---|---|---|---|
| Turnip Copperburr *Sclerolaena napiformis* | E | Species detected and assumed present in unsurveyed areas | 58.76 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 138 species credits |
| Slender Darling Pea *Swainsona murrayana* | V | Species detected and assumed present in unsurveyed areas | 685.46 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 19231 species credits |
| **Threatened ecological communities listed in the Supplementary SEARs** | | | | | |
| Natural Grasslands of the Murray Valley Plains | CE | The TEC was determined to be absent from the Subject Land, as described in Section 4.1.4.1. | n/a | n/a | n/a |
| Weeping Myall Woodlands | E | Not present within the Subject Land | n/a | n/a | n/a |
| **EPBC Act listed ecosystem species (not listed in the Supplementary SEARs)** | | | | | |
| Southern Whiteface *Aphelocephala leucopsis* | V | Species associated with:<br>(Subject Land)<br>PCTs 17, 24, 44, 153, 157, 160, 163, 164, 216<br>(Haul Route DF)<br>PCTs 123, 155, 158 | (Subject Land)<br>2013.30 ha habitat loss.<br><br>(Haul Route DF)<br>1.20 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 44736 ecosystem credits |
| Australasian Bittern *Botaurus poiciloptilus* | E | Species associated with:<br>(Subject Land)<br>PCTs 17, 24, 160 | (Subject Land)<br>32.40 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 856ecosystem credits |
| Curlew Sandpiper *Calidris ferruginea* | CE | Species associated with:<br>(Subject Land)<br>PCT 24 | (Subject Land)<br>3.77 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 75 ecosystem credits |

| MNES Matter | EPBC Act Status | Comments | Impacts | Offset and / or Mitigation Measures | Credit Liability |
|---|---|---|---|---|---|
| Grey Falcon *Falco hypoleucos* | V | Species associated with: (Subject Land) PCTs 17, 24, 44, 153, 157, 160, 163, 164, 216 (Haul Route DF) PCTs 123, 155, 158 | (Subject Land) 2013.30 ha habitat loss.<br><br>(Haul Route DF) 1.20 ha habitat loss. ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 44736 ecosystem credits |
| White-throated Needletail *Hirundapus caudacutus* | V | Species associated with: (Subject Land) PCTs 17, 24, 44, 157, 160, 216 | (Subject Land) 101.73 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 2908ecosystem credits |
| Swift Parrot *Lathamus discolor* | CE | Species associated with: (Subject Land) PCT 24 | (Subject Land) 3.77 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 75ecosystem credits |
| Pink Cockatoo *Lophochroa leadbeateri* | E | Species associated with: (Subject Land) PCTs 153, 163 (Haul Route DF) PCTs 123, 155, 158 | (Subject Land) 33.49 ha habitat loss.<br><br>(Haul Route DF) 1.20 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 869 ecosystem credits |
| Blue-winged Parrot *Neophema chrysostoma* | V | Species associated with: (Subject Land) PCTs 17, 24, 44, 153, 157, 160, 163, 164, 216 (Haul Route DF) PCT 123 | (Subject Land) 2013.30 ha habitat loss.<br><br>(Haul Route DF) 0.29 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 44718 ecosystem credits |
| Dusky Hopping-mouse *Notomys fuscus* | V | Species associated with: (Haul Route DF) PCT 155 | (Haul Route DF) 0.69 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 11ecosystem credits |

| MNES Matter | EPBC Act Status | Comments | Impacts | Offset and / or Mitigation Measures | Credit Liability |
|---|---|---|---|---|---|
| Australian Painted Snipe *Rostratula australis* | E | Species associated with: (Subject Land) PCTs 17, 24, 160 | (Subject Land) 32.40 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 856 ecosystem credits |
| Diamond Firetail *Stagonopleura guttata* | V | Species associated with: (Subject Land) PCT 44 | (Subject Land) 54.50 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 1544 ecosystem credits |
| **EPBC Act listed candidate species (not listed in the Supplementary SEARs)** | | | | | |
| A Spear-grass *Austrostipa wakoolica* | E | Species assumed present in unsurveyed areas | 1.02 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 34 species credits |
| A burr daisy *Calotis moorei* | E | Species assumed present in unsurveyed areas | 10.12 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect impacts detailed in Table 8-8. | 635 species credits |
| Grey Snake *Hemiaspis damelii* | E | Species assumed present in unsurveyed areas | 32.40 ha habitat loss. | Retirement of credits<br><br>Mitigation of indirect and prescribed impacts detailed in Table 8-8. | 1136 species credits |
| **EPBC Act listed species (not listed in the Supplementary SEARs nor under the BC Act)** | | | | | |
| Sharp-tailed Sandpiper (*Calidris acuminata*) | V, Mi | Species detected in The PREP area; however, not within the Subject Land. | The Project has the potential to result in mortality impacts from operating WTGs, as described in the BBAMP (Appendix I) | Mitigation of prescribed impacts detailed in the BBAMP (Appendix I).<br><br>Compensatory offset measures may be undertaken. | n/a |

Species Polygons (Impacts requiring offset)

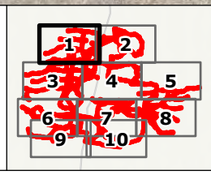
Species Polygons (Impacts not requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Species Polygons (Impacts requiring offset)

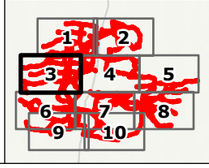
Species Polygons (Impacts not requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

SIXTEEN MILE GUMS

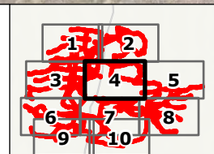
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 4

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

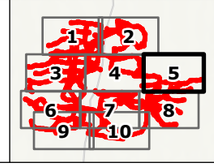
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 5

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

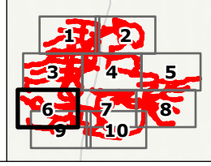
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 6

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

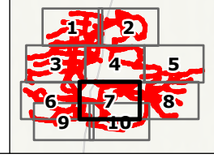
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 7

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

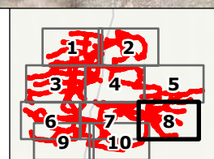
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 8

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

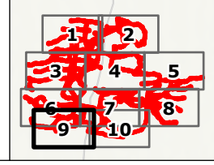
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 9

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

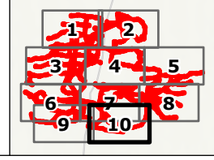
Species Polygons (Impacts requiring offset)

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Subject Land

Temporary Disturbance Footprint

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# F9-2 Impacts Requiring Offset and Impacts Not Requiring Offset (Subject Land). Map 10

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

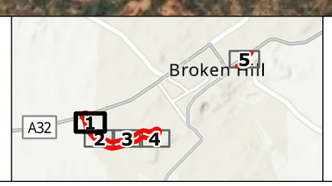
Barrier Highway

Barrier Highway

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F9-3 Impacts Requiring Offset and Impacts Not Requiring Offset (Haul Route DF). Map 1

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

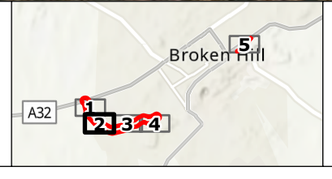
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Haul Route Disturbance Footprint




Coordinate System:
GDA2020 MGA Zone 54

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F9-3 Impacts Requiring Offset and Impacts Not Requiring Offset (Haul Route DF). Map 2

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

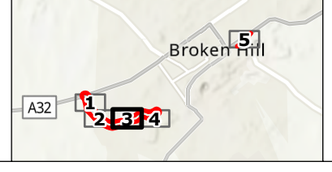
ERM

0667692_PlainsWF_Res_BDAR_R04.aprx

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Haul Route Disturbance Footprint




Coordinate System: GDA2020 MGA Zone 54

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

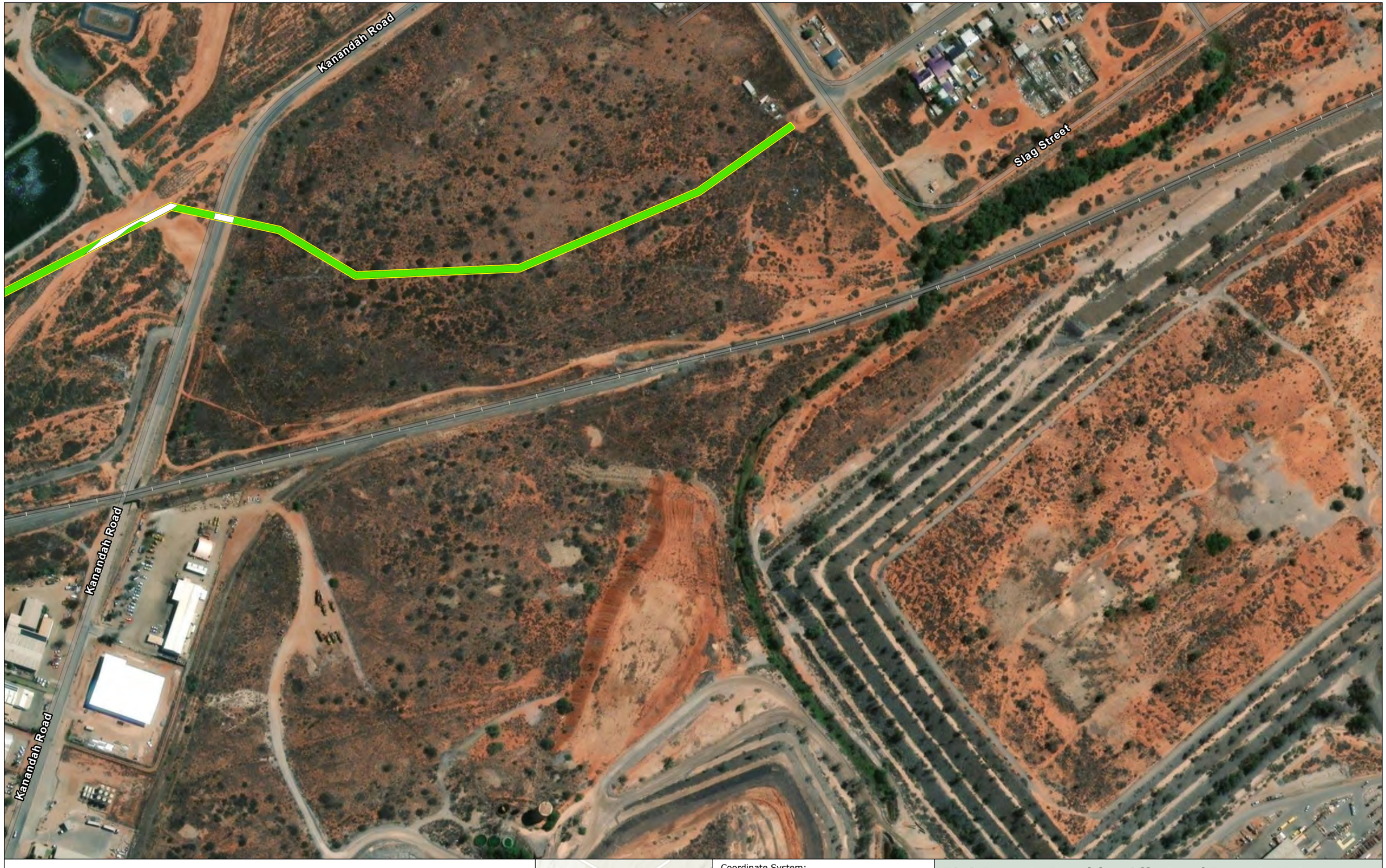
# F9-3 Impacts Requiring Offset and Impacts Not Requiring Offset (Haul Route DF). Map 3

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

0667692_PlainsWF_Res_BDAR_R04.aprx




Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

Haul Route Disturbance Footprint

Coordinate System:
GDA2020 MGA Zone 54

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

# F9-3 Impacts Requiring Offset and Impacts Not Requiring Offset (Haul Route DF). Map 4

**The Plains Wind Farm**
**Amended BDAR**

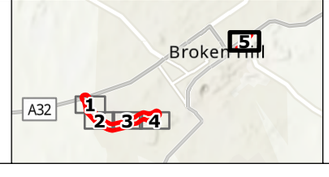
Client: Engie

ERM

Native Vegetation (Impacts requiring offset)

Non-native Vegetation (Impacts not requiring offset)

All_Hardstands_SweptPaths_Merg




Coordinate System:
GDA2020 MGA Zone 54

Date: 07/04/2025

Created By: MB

Drawing Size: A3

0 50 100m

1:3,000

**F9-3 Impacts Requiring Offset and Impacts Not Requiring Offset (Haul Route DF). Map 5**

**The Plains Wind Farm**
**Amended BDAR**

Client: Engie

ERM

# 10. APPLYING THE NO NET LOSS STANDARD

The offset liability for the Project is calculated in the following sections. The Credit Summary Report for the Subject Land is provided in Appendix G and provided in Appendix H for the Haul Route DF.

## 10.1 OFFSET REQUIREMENTS FOR DIRECT IMPACTS

### 10.1.1 ECOSYSTEM CREDITS

Table 10-1 identifies the ecosystem credits required to offset the Project as per BAM Subsection 9.2.1(1.). There are no vegetation zones that are assessed as not requiring offsets as per BAM Subsection 9.2.1(3.).

Like-for-like trading options apply to the ecosystem credit classes as outlined in the Biodiversity Credit Reports in Appendix G and Appendix H for the Subject Land and Haul Route DF respectively. Note that amendments to the BC Act mean that from 7 March 2025, approval can no longer be granted for proponents to use the variation rules.

TABLE 10-1 IMPACTS THAT REQUIRE AN OFFSET – ECOSYSTEM CREDITS

| Vegetation zone | PCT ID / Condition | Impact area (ha) | Change in VI score | Number of ecosystem credits required |
|---|---|---|---|---|
| VZ01 | PCT17_ Moderate | 1.02 | -67.6 | 30 |
| VZ02 | PCT24_Moderate | 3.77 | -53.1 | 75 |
| VZ03 | PCT44_Moderate | 54.50 | -56.6 | 1544 |
| VZ04 | PCT153_Good | 4.67 | -86.5 | 152 |
| VZ05 | PCT157_Good | 13.65 | -82.5 | 493 |
| VZ06 | PCT160_Good | 27.61 | -72.6 | 751 |
| VZ07 | PCT163_Moderate | 28.82 | -64 | 692 |
| VZ08 | PCT164_Good | 841.50 | -80.4 | 25382 |
| VZ09 | PCT164_Malacocera | 6.81 | -80.5 | 205 |
| VZ10 | PCT164_Moderate | 1029.77 | -39.8 | 15372 |
| VZ11 | PCT216_Low | 1.18 | -34.2 | 15 |
| VZ12* | PCT123_Moderate | 0.29 | -60.7 | 7 |
| VZ13* | PCT155_Low | 0.69 | -36.8 | 11 |
| VZ14* | PCT158_Moderate | 0.22 | -61.5 | 7 |

**Vegetation Zones 12, 13 and 14 relate to the Haul Route DF only.*

### 10.1.2 SPECIES CREDITS

Candidate species requiring an offset for impacts within the Subject Land are presented in Table 10-2. The Credit Summary Report is provided in Appendix G.

TABLE 10-2 IMPACTS THAT REQUIRE AN OFFSET – SPECIES CREDITS

| Common name | Scientific name | BC Act status | EPBC Act status | Biodiversity risk weighting | Loss of habitat (ha) | Number of species credits required |
|---|---|---|---|---|---|---|
| A Spear-grass | *Austrostipa wakoolica* | E | E | 2 | 1.02 | 34 |
| Mossgiel Daisy | *Brachyscome papillosa* | V | V | 2 | 662.26 | 18425 |
| A burr daisy | *Calotis moorei* | E | E | 3 | 10.12 | 635 |
| Small Scurf-Pea | *Cullen parvum* | E | - | 2 | 18.56 | 526 |
| Grey Snake | *Hemiaspis damelii* | E | E | 2 | 32.40 | 1136 |
| Winged Peppercress | *Lepidium monoplocoides* | E | E | 2 | 26.95 | 905 |
| Lanky Buttons | *Leptorhynchos orientalis* | E | - | 2 | 15.28 | 39 |
| Southern Bell Frog | *Litoria raniformis* | E | V | 2 | 8.84^ | 180 |
| Chariot Wheels | *Maireana cheelii* | V | V | 2 | 643.09 | 17600 |
| Southern Myotis | *Myotis macropus* | V | - | 2 | 339.18 | 8858 |
| Plains-wanderer | *Pedionomus torquatus* | E | CE | 3 | 0.18 | 11 |
| Austral Pillwort | *Pilularia novae-hollandiae* | E | - | 2 | 18.56 | 526 |
| Turnip Copperburr | *Sclerolaena napiformis* | E | E | 2 | 58.76 | 138 |
| Slender Darling Pea | *Swainsona murrayana* | V | V | 2 | 685.46 | 19231 |
| Red Darling Pea | *Swainsona plagiotropis* | V | V | 2 | 14.62 | 20 |

^ *includes 1.86 ha of non-native vegetation*

## 10.2 OFFSET STRATEGY

The No Net Loss standard involves the retirement of ecosystem and species credits for Project related direct impacts in accordance with the BOS. The BOS requires all biodiversity impacts to be calculated using the BAM-C, which provides an output determining the final ecosystem and species credit obligations for the Project. Typically, the final credit obligations are to be 'retired' prior to construction or in accordance with an approved staged approach.

The Applicant has developed a biodiversity offset strategy. This strategy details the offset approach to be undertaken to retire credit obligations and will be achieved by:

- Retiring 'like for like' credits, as specified in Sections 10.1.1 and 10.1.2, to the amount and from the regions indicated (refer to the Biodiversity Credit Report in Appendix G for the Subject Land and Appendix H for the Haul Route DF);
- Entering into a Strategic Offset Delivery Agreement (SODA) with the NSW Government, if eligible, where the Applicant pays NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) to undertake actions to meet their biodiversity offset obligations through the retirement of like-for-like biodiversity credits or the funding of a suitable biodiversity conservation action; and / or
- Payment into the Biodiversity Conservation Fund in lieu of satisfying the offset liability specified in Sections 10.1.1 and 10.1.2.

The fee associated with the latter option is determined through formal consultation with the Biodiversity Conservation Trust.

**Other scenarios**

The Applicant has engaged with Local Land Services in the Riverina region to explore opportunities to collaborate on conservation programs. The focus is on protecting the Black Falcon (*Falco* subniger) and Plains-wanderer (*Pedionomus torquatus*), through actions such as the establishment of new artificial nesting sites to encourage breeding for the Black Falcon and control measures to reduce the predation risk posed by the European Fox (*Vulpes vulpes*) on the Plains-wanderer.

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# APPENDIX A BAM PLOT DATA

**BAM Plot Import – Subject Land**

**Species Composition, Cover and Abundance – Subject Land**

**BAM Plot Import – Haul Route DF**

**Species Composition, Cover and Abundance – Haul Route DF**

| vegzone | plot | pct | area | patchsize | conditionclass | zone | easting | northing | bearing | compTree | compShrub | compGrass | compForbs | compFerns | compOther | strucTree | strucShrub | strucGrass | strucForbs | strucFerns | strucOther | funLargeTrees | funHollowtrees | funLitterCover | funLenFallenLogs | funTreeStemSto9 | funTreeStem10to19 | funTreeStem20to29 | funTreeStem30to49 | funTreeStem50to79 | funTreeRegen | funHighThreatExotic |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ01 | WF16 | 17 | 1.02 | 101 | Moderate | 55 | 300470 | 6157956 | 121 | 0 | 5 | 3 | 4 | 0 | 0 | 0 | 16.3 | 25.1 | 0.4 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ01 | WF29 | 17 | 1.02 | 101 | Moderate | 55 | 296023 | 6161009 | 134 | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 10.3 | 2.2 | 0.3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ02 | SF24 | 24 | 3.77 | 101 | Moderate | 55 | 301377 | 6145163 | 86 | 0 | 4 | 4 | 2 | 1 | 0 | 0 | 1.5 | 31.5 | 0.2 | 0.1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ02 | WF10 | 24 | 3.77 | 101 | Moderate | 55 | 310449 | 6151400 | 75 | 0 | 4 | 4 | 7 | 1 | 0 | 0 | 11.6 | 13.7 | 0.7 | 0.1 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | SF25 | 44 | 54.5 | 101 | Moderate | 55 | 301726 | 6145124 | 90 | 0 | 8 | 5 | 6 | 1 | 0 | 0 | 2.5 | 55.3 | 0.6 | 0.2 | 0 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | SF26 | 44 | 54.5 | 101 | Moderate | 55 | 301870 | 6145100 | 88 | 0 | 7 | 5 | 5 | 0 | 0 | 0 | 1.6 | 15.7 | 0.5 | 0 | 0 | 0 | 0 | 2.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | SF27 | 44 | 54.5 | 101 | Moderate | 55 | 302159 | 6145064 | 268 | 0 | 8 | 5 | 6 | 0 | 0 | 0 | 1.3 | 41.2 | 0.6 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | WF07 | 44 | 54.5 | 101 | Moderate | 55 | 310873 | 6147511 | 50 | 0 | 5 | 5 | 9 | 0 | 0 | 0 | 2.9 | 16.1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | WF12 | 44 | 54.5 | 101 | Moderate | 55 | 304955 | 6151255 | 75 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.2 | 3.5 | 0.2 | 0.1 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | WF20 | 44 | 54.5 | 101 | Moderate | 55 | 302314 | 6152636 | 300 | 0 | 4 | 2 | 7 | 0 | 0 | 0 | 0.4 | 4.2 | 5.6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ03 | WF48 | 44 | 54.5 | 101 | Moderate | 55 | 287625 | 6154397 | 57 | 0 | 6 | 3 | 6 | 0 | 0 | 0 | 1 | 0.7 | 10.5 | 0 | 0 | 0 | 0 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ04 | WF49 | 153 | 4.67 | 101 | Good | 55 | 292763 | 6153223 | 195 | 0 | 3 | 4 | 8 | 0 | 1 | 0 | 27.1 | 11 | 1.3 | 0 | 0.1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 |
| VZ04 | WF50 | 153 | 4.67 | 101 | Good | 55 | 292790 | 6153338 | 16 | 0 | 4 | 5 | 6 | 0 | 1 | 0 | 22.3 | 10.8 | 0.7 | 0 | 0.1 | 0 | 0 | 4.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| VZ04 | WF51 | 153 | 4.67 | 101 | Good | 55 | 293487 | 6153092 | 313 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 45.3 | 6.3 | 0 | 0 | 0 | 0 | 0 | 4.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ05 | WF22 | 157 | 13.65 | 101 | Good | 55 | 298819 | 6147482 | 90 | 0 | 2 | 3 | 4 | 0 | 0 | 0 | 55.2 | 1.6 | 0.9 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ05 | WF28 | 157 | 13.65 | 101 | Good | 55 | 297236 | 6156452 | 171 | 0 | 5 | 2 | 3 | 0 | 0 | 0 | 9.6 | 35 | 6.2 | 0 | 0 | 0 | 0 | 2.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ05 | WF38 | 157 | 13.65 | 101 | Good | 55 | 294085 | 6162786 | 255 | 0 | 3 | 4 | 6 | 0 | 0 | 0 | 6 | 7.1 | 5.6 | 0 | 0 | 0 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ05 | WF41 | 157 | 13.65 | 101 | Good | 55 | 298752 | 6147558 | 100 | 0 | 5 | 4 | 5 | 0 | 0 | 0 | 6.2 | 2.3 | 1.8 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ05 | WF42 | 157 | 13.65 | 101 | Good | 55 | 297308 | 6145826 | 270 | 0 | 8 | 4 | 4 | 0 | 0 | 0 | 10 | 3.2 | 0.7 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| VZ05 | WF52 | 157 | 13.65 | 101 | Good | 55 | 297180 | 6156513 | 284 | 0 | 8 | 4 | 4 | 0 | 0 | 0 | 46 | 0.8 | 0.4 | 0 | 0 | 0 | 0 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ05 | WF53 | 157 | 13.65 | 101 | Good | 55 | 298408 | 6156576 | 270 | 0 | 4 | 3 | 2 | 0 | 0 | 0 | 15.2 | 1.2 | 0.6 | 0 | 0 | 0 | 0 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ06 | WF06 | 160 | 27.61 | 101 | Good | 55 | 313309 | 6153339 | 290 | 0 | 4 | 3 | 7 | 0 | 0 | 0 | 4.3 | 17.2 | 1.6 | 0 | 0 | 0 | 0 | 3.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ06 | WF11 | 160 | 27.61 | 101 | Good | 55 | 307833 | 6153587 | 260 | 0 | 5 | 5 | 8 | 1 | 0 | 0 | 2.8 | 69.1 | 0.8 | 0.1 | 0 | 0 | 0 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ06 | WF15 | 160 | 27.61 | 101 | Good | 55 | 304464 | 6158570 | 233 | 0 | 5 | 2 | 2 | 1 | 0 | 0 | 15.5 | 2 | 8.2 | 0.1 | 0 | 0 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ06 | WF17 | 160 | 27.61 | 101 | Good | 55 | 305892 | 6160176 | 173 | 0 | 4 | 3 | 4 | 0 | 0 | 0 | 25.5 | 40 | 0.8 | 0 | 0 | 0 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ06 | WF34 | 160 | 27.61 | 101 | Good | 55 | 292633 | 6151786 | 310 | 0 | 2 | 5 | 2 | 1 | 0 | 0 | 4.5 | 13.4 | 0.2 | 0.1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | SF28 | 157 | 13.65 | 101 | Moderate | 55 | 301577 | 6145972 | 89 | 0 | 5 | 2 | 3 | 0 | 0 | 0 | 9.6 | 35 | 6.2 | 0 | 0 | 0 | 0 | 4.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | SF29 | 163 | 28.82 | 101 | Moderate | 55 | 301680 | 6145923 | 19 | 0 | 4 | 2 | 9 | 0 | 0 | 0 | 6.1 | 60.1 | 0.9 | 0 | 0 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | WF24 | 163 | 28.82 | 101 | Moderate | 55 | 291057 | 6156456 | 37 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 24 | 20.3 | 0.2 | 0 | 0 | 0 | 0 | 5.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | WF39 | 163 | 28.82 | 101 | Moderate | 55 | 298151 | 6146697 | 40 | 0 | 6 | 2 | 8 | 0 | 0 | 0 | 6.1 | 10 | 1.7 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | WF40 | 163 | 28.82 | 101 | Moderate | 55 | 298506 | 6147001 | 340 | 0 | 4 | 2 | 4 | 0 | 0 | 0 | 5.7 | 0.2 | 7.3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | WF43 | 163 | 28.82 | 101 | Moderate | 55 | 293478 | 6148443 | 220 | 0 | 4 | 4 | 6 | 0 | 0 | 0 | 5.7 | 1.3 | 0.6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ07 | WF54 | 163 | 28.82 | 101 | Moderate | 55 | 293454 | 6148427 | 154 | 0 | 3 | 5 | 5 | 0 | 0 | 0 | 7.1 | 11.8 | 0.5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF03 | 164 | 841.5 | 101 | Good | 55 | 310407 | 6153034 | 65 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 20 | 65.1 | 1 | 0 | 0 | 0 | 0 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF08 | 164 | 841.5 | 101 | Good | 55 | 308964 | 6147483 | 185 | 0 | 3 | 3 | 7 | 0 | 0 | 0 | 10.6 | 2.1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF18 | 164 | 841.5 | 101 | Good | 55 | 304984 | 6160176 | 238 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 20 | 43 | 0.4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF19 | 164 | 841.5 | 101 | Good | 55 | 303098 | 6151281 | 1 | 0 | 2 | 2 | 8 | 0 | 0 | 0 | 20.1 | 55.1 | 1.2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF23 | 164 | 841.5 | 101 | Good | 55 | 291432 | 6157782 | 60 | 0 | 7 | 4 | 5 | 0 | 0 | 0 | 62.7 | 40 | 0.7 | 0 | 0 | 0 | 0 | 5.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF30 | 164 | 841.5 | 101 | Good | 55 | 287218 | 6148008 | 170 | 0 | 4 | 2 | 6 | 0 | 0 | 0 | 11.2 | 42 | 4.5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF32 | 164 | 841.5 | 101 | Good | 55 | 286958 | 6150952 | 70 | 0 | 3 | 2 | 4 | 0 | 0 | 0 | 14.1 | 2 | 3.3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF33 | 164 | 841.5 | 101 | Good | 55 | 286554 | 6153250 | 220 | 0 | 7 | 2 | 5 | 0 | 0 | 0 | 10 | 5 | 10 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ08 | WF45 | 164 | 841.5 | 101 | Good | 55 | 294476 | 6149937 | 226 | 0 | 5 | 1 | 4 | 0 | 0 | 0 | 28.7 | 30 | 1.3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ09 | WF35 | 164 | 6.81 | 101 | Malacocera | 55 | 286810 | 6154688 | 325 | 0 | 6 | 1 | 6 | 0 | 0 | 0 | 42.1 | 0.1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ09 | WF36 | 164 | 6.81 | 101 | Malacocera | 55 | 287211 | 6154537 | 90 | 0 | 8 | 2 | 7 | 0 | 0 | 0 | 39.1 | 0.2 | 0.7 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |
| VZ09 | WF47 | 164 | 6.81 | 101 | Malacocera | 55 | 286943 | 6154669 | 289 | 0 | 9 | 1 | 7 | 0 | 0 | 0 | 54.2 | 0.1 | 0.7 | 0 | 0 | 0 | 0 | 7.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |
| VZ10 | WF01 | 164 | 1029.8 | 101 | Moderate | 55 | 310741 | 6149850 | 96 | 0 | 3 | 3 | 5 | 0 | 0 | 0 | 5.8 | 70 | 0.6 | 0 | 0 | 0 | 0 | 5.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF04 | 164 | 1029.8 | 101 | Moderate | 55 | 311279 | 6152966 | 100 | 0 | 2 | 2 | 7 | 0 | 0 | 0 | 5.1 | 45.1 | 1.1 | 0 | 0 | 0 | 0 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF05 | 164 | 1029.8 | 101 | Moderate | 55 | 312354 | 6153024 | 117 | 0 | 1 | 3 | 3 | 0 | 0 | 0 | 5 | 45.5 | 0.3 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF09 | 164 | 1029.8 | 101 | Moderate | 55 | 306518 | 6150276 | 245 | 0 | 6 | 2 | 4 | 0 | 0 | 0 | 5.9 | 50.1 | 0.4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF13 | 164 | 1029.8 | 101 | Moderate | 55 | 312126 | 6154227 | 275 | 0 | 2 | 3 | 7 | 0 | 0 | 0 | 7.1 | 45.1 | 0.9 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF14 | 164 | 1029.8 | 101 | Moderate | 55 | 307448 | 6154042 | 213 | 0 | 1 | 2 | 4 | 0 | 0 | 0 | 5 | 50 | 0.6 | 0 | 0 | 0 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF21 | 164 | 1029.8 | 101 | moderate | 55 | 298367 | 6149847 | 240 | 0 | 3 | 1 | 5 | 0 | 0 | 0 | 1.7 | 60 | 0.9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |
| VZ10 | WF26 | 164 | 1029.8 | 101 | Moderate | 55 | 294235 | 6157417 | 286 | 0 | 4 | 0 | 6 | 0 | 0 | 0 | 8.2 | 0 | 0.8 | 0 | 0 | 0 | 0 | 4.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF31 | 164 | 1029.8 | 101 | Moderate | 55 | 288972 | 6146818 | 90 | 0 | 2 | 5 | 6 | 1 | 0 | 0 | 8 | 48.3 | 0.6 | 0.1 | 0 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF37 | 164 | 1029.8 | 101 | Moderate | 55 | 292432 | 6154693 | 50 | 0 | 4 | 5 | 5 | 0 | 0 | 0 | 3 | 30.7 | 2.4 | 0 | 0 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ10 | WF44 | 164 | 1029.8 | 101 | Moderate | 55 | 294747 | 6154823 | 152 | 0 | 5 | 2 | 8 | 1 | 0 | 0 | 4.4 | 80.5 | 1.6 | 0.1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VZ11 | WF25 | 216 | 1.18 | 101 | Low | 55 | 294043 | 6157588 | 20 | 0 | 4 | 2 | 5 | 0 | 0 | 0 | 3.2 | 33 | 0.7 | 0 | 0 | 0 | 0 | 3.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ01 | WF16 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 10 |
| VZ01 | WF16 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 5 |
| VZ01 | WF16 | *Duma florulenta* | Shrub | Lignum | 10 | 25 |
| VZ01 | WF16 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 1 |
| VZ01 | WF16 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 5 | 50 |
| VZ01 | WF16 | *Lolium perenne* | Exotic | Perennial Rye | 55 | 1000 |
| VZ01 | WF16 | *Maireana aphylla* | Shrub | Cotton Bush | 6 | 30 |
| VZ01 | WF16 | *Maireana appressa* | Shrub | | 0.1 | 1 |
| VZ01 | WF16 | *Plantago spp.* | Forb | Plantain | 0.1 | 3 |
| VZ01 | WF16 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 5 |
| VZ01 | WF16 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ01 | WF16 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 20 | 100 |
| VZ01 | WF16 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.1 | 3 |
| VZ01 | WF16 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 1 |
| VZ01 | WF16 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 2 |
| VZ01 | WF16 | *Solanum esuriale* | Forb | Quena | 0.1 | 15 |
| VZ01 | WF16 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 5 |
| VZ01 | WF29 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.3 | 40 |
| VZ01 | WF29 | *Calotis scabiosifolia* | Forb | Rough Burr-daisy | 0.1 | 6 |
| VZ01 | WF29 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 15 |
| VZ01 | WF29 | *Duma florulenta* | Shrub | Lignum | 5 | 10 |
| VZ01 | WF29 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 2 | |
| VZ01 | WF29 | *Eragrostis australasica* | Grass | Cane Grass | 0.1 | 1 |
| VZ01 | WF29 | *Juncus spp.* | Grass | | 0.1 | 6 |
| VZ01 | WF29 | *Lolium perenne* | Exotic | Perennial Rye | 80 | 3000 |
| VZ01 | WF29 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ01 | WF29 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 5 |
| VZ01 | WF29 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 5 | 40 |
| VZ01 | WF29 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 10 |
| VZ02 | SF24 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 50 |
| VZ02 | SF24 | *Eleocharis plana* | Grass | Flat Spike-sedge | 20 | 5000 |
| VZ02 | SF24 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 6 | 50 |
| VZ02 | SF24 | *Eragrostis australasica* | Grass | Cane Grass | 5 | 15 |
| VZ02 | SF24 | *Goodenia heteromera* | Forb | | 0.1 | 2 |
| VZ02 | SF24 | *Lolium perenne* | Exotic | Perennial Rye | 55 | 5000 |
| VZ02 | SF24 | *Maireana appressa* | Shrub | | 0.1 | 3 |
| VZ02 | SF24 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 100 |
| VZ02 | SF24 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 1 | 3 |
| VZ02 | SF24 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.5 | 15 |
| VZ02 | SF24 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.3 | 8 |
| VZ02 | SF24 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 2 |
| VZ02 | SF24 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ02 | WF10 | *Aira caryophyllea* | Exotic | Silvery Hair | 0.1 | 3 |
| VZ02 | WF10 | *Avena spp.* | Exotic | Oats | 0.1 | 5 |
| VZ02 | WF10 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 5 | 20 |
| VZ02 | WF10 | *Duma florulenta* | Shrub | Lignum | 4 | 8 |
| VZ02 | WF10 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 10 |
| VZ02 | WF10 | *Eragrostis australasica* | Grass | Cane Grass | 10 | 30 |
| VZ02 | WF10 | *Juncus spp.* | Grass | | 0.1 | 5 |
| VZ02 | WF10 | *Lolium perenne* | Exotic | Perennial Rye | 30 | 1500 |
| VZ02 | WF10 | *Maireana aphylla* | Shrub | Cotton Bush | 2.5 | 6 |
| VZ02 | WF10 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 50 |
| VZ02 | WF10 | *Oxalis perennans* | Forb | | 0.1 | 5 |
| VZ02 | WF10 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ02 | WF10 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 10 |
| VZ02 | WF10 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 1 |
| VZ02 | WF10 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |
| VZ02 | WF10 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ02 | WF10 | *Sporobolus caroli* | Grass | Fairy Grass | 3.5 | 30 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ02 | WF10 | *Teucrium racemosum* | Forb | Grey Germander | 0.1 | 20 |
| VZ02 | WF10 | *Vittadinia cuneata* | Forb | | 0.1 | 3 |
| VZ02 | WF10 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.2 | 40 |
| VZ03 | SF25 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.5 | 3 |
| VZ03 | SF25 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 1 | 2 |
| VZ03 | SF25 | *Chamaesyce drummondii* | Forb | Caustic Weed | 0.1 | 3 |
| VZ03 | SF25 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 10 |
| VZ03 | SF25 | *Eleocharis plana* | Grass | Flat Spike-sedge | 15 | 1000 |
| VZ03 | SF25 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 40 | 200 |
| VZ03 | SF25 | *Juncus flavidus* | Grass | | 0.1 | 5 |
| VZ03 | SF25 | *Maireana aphylla* | Shrub | Cotton Bush | 0.5 | 2 |
| VZ03 | SF25 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 5 |
| VZ03 | SF25 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ03 | SF25 | *Marsilea drummondii* | Fern | Common Nardoo | 0.2 | 1000 |
| VZ03 | SF25 | *Minuria leptophylla* | Forb | | 0.1 | 3 |
| VZ03 | SF25 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.1 | 2 |
| VZ03 | SF25 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 20 |
| VZ03 | SF25 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.1 | 3 |
| VZ03 | SF25 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 2 |
| VZ03 | SF25 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 5 |
| VZ03 | SF25 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 2 |
| VZ03 | SF25 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |
| VZ03 | SF25 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 5 |
| VZ03 | SF26 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.5 | 10 |
| VZ03 | SF26 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 1 |
| VZ03 | SF26 | *Austrostipa scabra* | Grass | Speargrass | 0.5 | 50 |
| VZ03 | SF26 | *Chamaesyce drummondii* | Forb | Caustic Weed | 0.1 | 3 |
| VZ03 | SF26 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 20 |
| VZ03 | SF26 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 10 | 250 |
| VZ03 | SF26 | *Lolium perenne* | Exotic | Perennial Rye | 15 | 1000 |
| VZ03 | SF26 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 10 |
| VZ03 | SF26 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ03 | SF26 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.5 | 1 |
| VZ03 | SF26 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 5 | 1000 |
| VZ03 | SF26 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 15 |
| VZ03 | SF26 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.1 | 1 |
| VZ03 | SF26 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.2 | 3 |
| VZ03 | SF26 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 1 |
| VZ03 | SF26 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ03 | SF26 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ03 | SF26 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ03 | SF26 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 20 |
| VZ03 | SF27 | *Abutilon halophilum* | Shrub | | 0.2 | 10 |
| VZ03 | SF27 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 15 |
| VZ03 | SF27 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 10 |
| VZ03 | SF27 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 0.5 | 3 |
| VZ03 | SF27 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.5 | 25 |
| VZ03 | SF27 | *Lolium perenne* | Exotic | Perennial Rye | 25 | 2000 |
| VZ03 | SF27 | *Maireana aphylla* | Shrub | Cotton Bush | 0.1 | 2 |
| VZ03 | SF27 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 10 |
| VZ03 | SF27 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ03 | SF27 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.1 | 1 |
| VZ03 | SF27 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 40 | 1000 |
| VZ03 | SF27 | *Salsola australis* | Shrub | | 0.1 | 2 |
| VZ03 | SF27 | *Sclerolaena bicornis* | Shrub | Goathead Burr | 0.1 | 2 |
| VZ03 | SF27 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 30 |
| VZ03 | SF27 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 1 |
| VZ03 | SF27 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ03 | SF27 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 2 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ03 | SF27 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ03 | SF27 | *Sporobolus caroli* | Grass | Fairy Grass | 0.5 | 50 |
| VZ03 | SF27 | *Vittadinia cuneata* | Forb | | 0.1 | 5 |
| VZ03 | WF07 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 2 |
| VZ03 | WF07 | *Austrostipa nodosa* | Grass | | 0.1 | 15 |
| VZ03 | WF07 | *Austrostipa scabra* | Grass | Speargrass | 1 | 80 |
| VZ03 | WF07 | *Avena spp.* | Exotic | Oats | 0.1 | 5 |
| VZ03 | WF07 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 10 |
| VZ03 | WF07 | *Duma florulenta* | Shrub | Lignum | 1 | 2 |
| VZ03 | WF07 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 2 |
| VZ03 | WF07 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 0.2 | 5 |
| VZ03 | WF07 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 1 | 10 |
| VZ03 | WF07 | *Euphorbia drummondii* | Forb | | 0.1 | 3 |
| VZ03 | WF07 | *Leiocarpa websteri* | Forb | | 0.1 | 15 |
| VZ03 | WF07 | *Lolium perenne* | Exotic | Perennial Rye | 10 | 1000 |
| VZ03 | WF07 | *Maireana aphylla* | Shrub | Cotton Bush | 1.5 | 4 |
| VZ03 | WF07 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.2 | 500 |
| VZ03 | WF07 | *Oxalis perennans* | Forb | | 0.1 | 10 |
| VZ03 | WF07 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 10 | 1500 |
| VZ03 | WF07 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 2 |
| VZ03 | WF07 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |
| VZ03 | WF07 | *Solanum esuriale* | Forb | Quena | 0.1 | 15 |
| VZ03 | WF07 | *Sporobolus caroli* | Grass | Fairy Grass | 4 | 30 |
| VZ03 | WF07 | *Vittadinia cuneata* | Forb | | 0.1 | 5 |
| VZ03 | WF12 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 50 |
| VZ03 | WF12 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 0.1 | 1 |
| VZ03 | WF12 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 0.1 | 3 |
| VZ03 | WF12 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.5 | 5 |
| VZ03 | WF12 | *Lolium perenne* | Exotic | Perennial Rye | 90 | 5000 |
| VZ03 | WF12 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 20 |
| VZ03 | WF12 | *Sporobolus caroli* | Grass | Fairy Grass | 3 | 12 |
| VZ03 | WF12 | *Vittadinia cuneata* | Forb | | 0.1 | 2 |
| VZ03 | WF20 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 1 |
| VZ03 | WF20 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 10 |
| VZ03 | WF20 | *Austrostipa scabra* | Grass | Speargrass | 4 | 150 |
| VZ03 | WF20 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 10 |
| VZ03 | WF20 | *Chamaesyce drummondii* | Forb | Caustic Weed | 0.1 | 2 |
| VZ03 | WF20 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 5 | 200 |
| VZ03 | WF20 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ03 | WF20 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ03 | WF20 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.2 | 20 |
| VZ03 | WF20 | *Salsola australis* | Shrub | | 0.1 | 3 |
| VZ03 | WF20 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 2 |
| VZ03 | WF20 | *Sida trichopoda* | Forb | High Sida | 0.1 | 10 |
| VZ03 | WF20 | *Vittadinia cuneata* | Forb | | 0.1 | 2 |
| VZ03 | WF48 | *Abutilon halophilum* | Shrub | | 0.1 | 3 |
| VZ03 | WF48 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 2 |
| VZ03 | WF48 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 5 |
| VZ03 | WF48 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 10 |
| VZ03 | WF48 | *Maireana aphylla* | Shrub | Cotton Bush | 0.1 | 5 |
| VZ03 | WF48 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 10 | 1000 |
| VZ03 | WF48 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ03 | WF48 | *Malacocera tricornis* | Shrub | Soft Horns | 0.1 | 4 |
| VZ03 | WF48 | *Minuria leptophylla* | Forb | | 0.1 | 5 |
| VZ03 | WF48 | *Nitraria billardierei* | Shrub | Dillon Bush | 0.5 | 2 |
| VZ03 | WF48 | *Plantago spp.* | Forb | Plantain | 0.1 | 15 |
| VZ03 | WF48 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ03 | WF48 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.5 | 200 |
| VZ03 | WF48 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ03 | WF48 | *Sida trichopoda* | Forb | High Sida | 0.1 | 4 |
| VZ03 | WF48 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 15 |
| VZ04 | WF49 | *Acetosella vulgaris* | HTW | Sorrel, Sheep Sorrel | 0.1 | 1 |
| VZ04 | WF49 | *Austrostipa scabra* | Grass | Speargrass | 3.5 | 1000 |
| VZ04 | WF49 | *Convolvulus erubescens* | Other | Pink Bindweed | 0.1 | 3 |
| VZ04 | WF49 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 10 |
| VZ04 | WF49 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ04 | WF49 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 0.1 | 5 |
| VZ04 | WF49 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 2 | 50 |
| VZ04 | WF49 | *Goodenia spp.* | Forb | | 0.1 | 1 |
| VZ04 | WF49 | *Juncus flavidus* | Grass | | 2.5 | 35 |
| VZ04 | WF49 | *Lycium ferocissimum* | ManHTW | African Boxthorn | 1.5 | 3 |
| VZ04 | WF49 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ04 | WF49 | *Maireana pyramidata* | Shrub | Black Bluebush | 25 | 30 |
| VZ04 | WF49 | *Oxalis perennans* | Forb | | 0.1 | 5 |
| VZ04 | WF49 | *Polygonum aviculare* | Exotic | Wireweed | 0.1 | 3 |
| VZ04 | WF49 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 2 | 5 |
| VZ04 | WF49 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 3 | 300 |
| VZ04 | WF49 | *Sida corrugata* | Forb | Corrugated Sida | 0.5 | 15 |
| VZ04 | WF49 | *Solanum esuriale* | Forb | Quena | 0.1 | 5 |
| VZ04 | WF49 | *Teucrium racemosum* | Forb | Grey Germander | 0.2 | 50 |
| VZ04 | WF49 | *Vittadinia cuneata* | Forb | | 0.1 | 5 |
| VZ04 | WF50 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 3 |
| VZ04 | WF50 | *Austrostipa scabra* | Grass | Speargrass | 10 | 2000 |
| VZ04 | WF50 | *Chamaesyce drummondii* | Forb | Caustic Weed | 0.1 | 2 |
| VZ04 | WF50 | *Convolvulus erubescens* | Other | Pink Bindweed | 0.1 | 2 |
| VZ04 | WF50 | *Echium plantagineum* | Exotic | Patterson's Curse | 0.1 | 2 |
| VZ04 | WF50 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.5 | 15 |
| VZ04 | WF50 | *Juncus flavidus* | Grass | | 0.1 | 5 |
| VZ04 | WF50 | *Juncus spp.* | Grass | | 0.1 | 5 |
| VZ04 | WF50 | *Lycium ferocissimum* | ManHTW | African Boxthorn | 1 | 1 |
| VZ04 | WF50 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ04 | WF50 | *Maireana pyramidata* | Shrub | Black Bluebush | 20 | 25 |
| VZ04 | WF50 | *Oxalis perennans* | Forb | | 0.1 | 5 |
| VZ04 | WF50 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 2 | 6 |
| VZ04 | WF50 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 10 |
| VZ04 | WF50 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.2 | 5 |
| VZ04 | WF50 | *Sida corrugata* | Forb | Corrugated Sida | 0.2 | 10 |
| VZ04 | WF50 | *Teucrium racemosum* | Forb | Grey Germander | 0.1 | 10 |
| VZ04 | WF50 | *Wahlenbergia gracilis* | Forb | Sprawling Bluebell | 0.1 | 10 |
| VZ04 | WF51 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 1 |
| VZ04 | WF51 | *Austrostipa scabra* | Grass | Speargrass | 5 | 500 |
| VZ04 | WF51 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 10 |
| VZ04 | WF51 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 10 |
| VZ04 | WF51 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 1 | 10 |
| VZ04 | WF51 | *Maireana pyramidata* | Shrub | Black Bluebush | 45 | 100 |
| VZ04 | WF51 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 10 |
| VZ04 | WF51 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.1 | 5 |
| VZ04 | WF51 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 1 |
| VZ04 | WF51 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 20 |
| VZ04 | WF51 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 100 |
| VZ05 | WF22 | *Aira caryophyllea* | Exotic | Silvery Hair | 0.1 | 10 |
| VZ05 | WF22 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 55 | 150 |
| VZ05 | WF22 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 5 |
| VZ05 | WF22 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.2 | 40 |
| VZ05 | WF22 | *Eragrostis australasica* | Grass | Cane Grass | 0.5 | 2 |
| VZ05 | WF22 | *Lolium perenne* | Exotic | Perennial Rye | 0.1 | 15 |
| VZ05 | WF22 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ05 | WF22 | *Minuria leptophylla* | Forb | | 0.6 | 10 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ05 | WF22 | *Nitraria billardierei* | Shrub | Dillon Bush | 0.2 | 1 |
| VZ05 | WF22 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ05 | WF22 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 1 | 40 |
| VZ05 | WF22 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ05 | WF22 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 20 |
| VZ05 | WF28 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 5 | 50 |
| VZ05 | WF28 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 30 |
| VZ05 | WF28 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 5 | 75 |
| VZ05 | WF28 | *Lolium perenne* | Exotic | Perennial Rye | 20 | 500 |
| VZ05 | WF28 | *Maireana aphylla* | Shrub | Cotton Bush | 0.5 | 8 |
| VZ05 | WF28 | *Maireana cheelii* | Shrub | Chariot Wheels | 0.1 | 20 |
| VZ05 | WF28 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 5 | 150 |
| VZ05 | WF28 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 1 | 40 |
| VZ05 | WF28 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 30 | 400 |
| VZ05 | WF28 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 2 | 100 |
| VZ05 | WF28 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 2 | 25 |
| VZ05 | WF28 | *Sida corrugata* | Forb | Corrugated Sida | 0.2 | 50 |
| VZ05 | WF38 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 3 | 30 |
| VZ05 | WF38 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 15 |
| VZ05 | WF38 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 1 | 25 |
| VZ05 | WF38 | *Lolium perenne* | Exotic | Perennial Rye | 5 | 300 |
| VZ05 | WF38 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 5 | 200 |
| VZ05 | WF38 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ05 | WF38 | *Nitraria billardierei* | Shrub | Dillon Bush | 2 | 10 |
| VZ05 | WF38 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ05 | WF38 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 5 |
| VZ05 | WF38 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ05 | WF38 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 5 | 100 |
| VZ05 | WF38 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 1 | 50 |
| VZ05 | WF38 | *Sida corrugata* | Forb | Corrugated Sida | 0.2 | 50 |
| VZ05 | WF38 | *Walwhalleya proluta* | Grass | | 1 | 25 |
| VZ05 | WF41 | *Abutilon halophilum* | Shrub | | 0.1 | 2 |
| VZ05 | WF41 | *Atriplex leptocarpa* | Shrub | Slender-fruit Saltbush | 2 | 10 |
| VZ05 | WF41 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 4 | 15 |
| VZ05 | WF41 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 5 |
| VZ05 | WF41 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 3 |
| VZ05 | WF41 | *Maireana aphylla* | Shrub | Cotton Bush | 0.5 | 4 |
| VZ05 | WF41 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.5 | 200 |
| VZ05 | WF41 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 3 |
| VZ05 | WF41 | *Minuria leptophylla* | Forb | | 1 | 15 |
| VZ05 | WF41 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ05 | WF41 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 10 |
| VZ05 | WF41 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 1 |
| VZ05 | WF41 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |
| VZ05 | WF41 | *Sporobolus caroli* | Grass | Fairy Grass | 2 | 100 |
| VZ05 | WF42 | *Atriplex leptocarpa* | Shrub | Slender-fruit Saltbush | 4 | 15 |
| VZ05 | WF42 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 4 | 15 |
| VZ05 | WF42 | *Avena spp.* | Exotic | Oats | 0.1 | 3 |
| VZ05 | WF42 | *Einadia nutans* | Forb | Climbing Saltbush | 0.2 | 3 |
| VZ05 | WF42 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.1 | 5 |
| VZ05 | WF42 | *Eragrostis australasica* | Grass | Cane Grass | 1 | 2 |
| VZ05 | WF42 | *Lolium perenne* | Exotic | Perennial Rye | 15 | 5000 |
| VZ05 | WF42 | *Maireana appressa* | Shrub | | 0.1 | 3 |
| VZ05 | WF42 | *Malacocera tricornis* | Shrub | Soft Horns | 0.2 | 3 |
| VZ05 | WF42 | *Nitraria billardierei* | Shrub | Dillon Bush | 1 | 2 |
| VZ05 | WF42 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.5 | 1 |
| VZ05 | WF42 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 2 | 200 |
| VZ05 | WF42 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 1 |
| VZ05 | WF42 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 2 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ05 | WF42 | *Sida corrugata* | Forb | Corrugated Sida | 0.3 | 50 |
| VZ05 | WF42 | *Solanum esuriale* | Forb | Quena | 0.1 | 5 |
| VZ05 | WF42 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ05 | WF42 | *Vittadinia cuneata* | Forb | | 0.1 | 2 |
| VZ05 | WF42 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 50 |
| VZ05 | WF52 | *Atriplex leptocarpa* | Shrub | Slender-fruit Saltbush | 20 | 50 |
| VZ05 | WF52 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 25 | 50 |
| VZ05 | WF52 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 20 |
| VZ05 | WF52 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 5 |
| VZ05 | WF52 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.2 | 200 |
| VZ05 | WF52 | *Maireana aphylla* | Shrub | Cotton Bush | 0.1 | 1 |
| VZ05 | WF52 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 10 |
| VZ05 | WF52 | *Malacocera tricornis* | Shrub | Soft Horns | 0.1 | 3 |
| VZ05 | WF52 | *Minuria leptophylla* | Forb | | 0.1 | 2 |
| VZ05 | WF52 | *Nitraria billardierei* | Shrub | Dillon Bush | 0.5 | 1 |
| VZ05 | WF52 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ05 | WF52 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.1 | 1 |
| VZ05 | WF52 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ05 | WF52 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.5 | 50 |
| VZ05 | WF52 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |
| VZ05 | WF52 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 2 |
| VZ05 | WF52 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ05 | WF52 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 10 |
| VZ05 | WF53 | *Abutilon halophilum* | Shrub | | 0.1 | 3 |
| VZ05 | WF53 | *Atriplex leptocarpa* | Shrub | Slender-fruit Saltbush | 5 | 20 |
| VZ05 | WF53 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 10 | 35 |
| VZ05 | WF53 | *Avena spp.* | Exotic | Oats | 0.1 | 5 |
| VZ05 | WF53 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 10 |
| VZ05 | WF53 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 10 |
| VZ05 | WF53 | *Lolium perenne* | Exotic | Perennial Rye | 75 | 10000 |
| VZ05 | WF53 | *Maireana decalvans* | Shrub | Black Cotton Bush | 0.1 | 2 |
| VZ05 | WF53 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 1 | 250 |
| VZ05 | WF53 | *Sida corrugata* | Forb | Corrugated Sida | 0.5 | 30 |
| VZ05 | WF53 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ05 | WF53 | *Vittadinia cuneata* | Forb | | 0.1 | 5 |
| VZ06 | WF06 | *Austrostipa scabra* | Grass | Speargrass | 0.2 | 20 |
| VZ06 | WF06 | *Avena spp.* | Exotic | Oats | 2 | 150 |
| VZ06 | WF06 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 1 |
| VZ06 | WF06 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 3 | 15 |
| VZ06 | WF06 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 15 |
| VZ06 | WF06 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 2 |
| VZ06 | WF06 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 2 | 50 |
| VZ06 | WF06 | *Lolium perenne* | Exotic | Perennial Rye | 20 | 400 |
| VZ06 | WF06 | *Maireana aphylla* | Shrub | Cotton Bush | 1 | 10 |
| VZ06 | WF06 | *Maireana appressa* | Shrub | | 0.1 | 1 |
| VZ06 | WF06 | *Minuria leptophylla* | Forb | | 0.1 | 15 |
| VZ06 | WF06 | *Plantago spp.* | Forb | Plantain | 0.1 | 3 |
| VZ06 | WF06 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 10 |
| VZ06 | WF06 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.2 | 20 |
| VZ06 | WF06 | *Sida corrugata* | Forb | Corrugated Sida | 1 | 50 |
| VZ06 | WF06 | *Solanum esuriale* | Forb | Quena | 0.1 | 3 |
| VZ06 | WF06 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 10 |
| VZ06 | WF06 | *Walwhalleya proluta* | Grass | | 15 | 250 |
| VZ06 | WF11 | *Austrostipa nodosa* | Grass | | 1.5 | 25 |
| VZ06 | WF11 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 1 | 2 |
| VZ06 | WF11 | *Duma florulenta* | Shrub | Lignum | 1.5 | 5 |
| VZ06 | WF11 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 5 |
| VZ06 | WF11 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 0.1 | 3 |
| VZ06 | WF11 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.5 | 10 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ06 | WF11 | *Goodenia heteromera* | Forb | | 0.1 | 2 |
| VZ06 | WF11 | *Juncus amabilis* | Grass | | 0.1 | 2 |
| VZ06 | WF11 | *Leiocarpa websteri* | Forb | | 0.1 | 3 |
| VZ06 | WF11 | *Lolium perenne* | Exotic | Perennial Rye | 5 | 200 |
| VZ06 | WF11 | *Maireana aphylla* | Shrub | Cotton Bush | 0.1 | 1 |
| VZ06 | WF11 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 10 |
| VZ06 | WF11 | *Oxalis perennans* | Forb | | 0.1 | 5 |
| VZ06 | WF11 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 55 | 1500 |
| VZ06 | WF11 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 1 |
| VZ06 | WF11 | *Sida trichopoda* | Forb | High Sida | 0.1 | 10 |
| VZ06 | WF11 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ06 | WF11 | *Sporobolus caroli* | Grass | Fairy Grass | 12 | 100 |
| VZ06 | WF11 | *Velleia paradoxa* | Forb | | 0.1 | 10 |
| VZ06 | WF11 | *Vittadinia cuneata* | Forb | | 0.1 | 3 |
| VZ06 | WF15 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 3 | 12 |
| VZ06 | WF15 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 10 | 50 |
| VZ06 | WF15 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 15 |
| VZ06 | WF15 | *Duma florulenta* | Shrub | Lignum | 1 | 4 |
| VZ06 | WF15 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 1 | 25 |
| VZ06 | WF15 | *Lolium perenne* | Exotic | Perennial Rye | 5 | 200 |
| VZ06 | WF15 | *Maireana decalvans* | Shrub | Black Cotton Bush | 1 | 15 |
| VZ06 | WF15 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 10 |
| VZ06 | WF15 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.5 | 15 |
| VZ06 | WF15 | *Sida corrugata* | Forb | Corrugated Sida | 0.2 | 80 |
| VZ06 | WF15 | *Solanum esuriale* | Forb | Quena | 8 | 150 |
| VZ06 | WF15 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 5 |
| VZ06 | WF15 | *Walwhalleya proluta* | Grass | | 1 | 15 |
| VZ06 | WF17 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.2 | 10 |
| VZ06 | WF17 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 25 | 90 |
| VZ06 | WF17 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 5 |
| VZ06 | WF17 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 5 | 100 |
| VZ06 | WF17 | *Eragrostis australasica* | Grass | Cane Grass | 5 | 35 |
| VZ06 | WF17 | *Lolium perenne* | Exotic | Perennial Rye | 25 | 500 |
| VZ06 | WF17 | *Maireana decalvans* | Shrub | Black Cotton Bush | 0.2 | 15 |
| VZ06 | WF17 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 20 |
| VZ06 | WF17 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 30 | 200 |
| VZ06 | WF17 | *Salsola australis* | Shrub | | 0.1 | 5 |
| VZ06 | WF17 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 15 |
| VZ06 | WF17 | *Solanum esuriale* | Forb | Quena | 0.5 | 50 |
| VZ06 | WF17 | *Swainsona procumbens* | Forb | Broughton Pea | 0.1 | 1 |
| VZ06 | WF34 | *Chenopodium nitrariaceum* | Shrub | Nitre Goosefoot | 3 | 4 |
| VZ06 | WF34 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 10 |
| VZ06 | WF34 | *Cullen tenax* | Forb | Emu-foot | 0.1 | 5 |
| VZ06 | WF34 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 5 |
| VZ06 | WF34 | *Eleocharis pallens* | Grass | Pale Spike Sedge | 90 | 10000 |
| VZ06 | WF34 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.2 | 10 |
| VZ06 | WF34 | *Juncus flavidus* | Grass | | 0.1 | 2 |
| VZ06 | WF34 | *Lolium perenne* | Exotic | Perennial Rye | 0.1 | 10 |
| VZ06 | WF34 | *Maireana aphylla* | Shrub | Cotton Bush | 1.5 | 7 |
| VZ06 | WF34 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 10 |
| VZ06 | WF34 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 4 | 300 |
| VZ06 | WF34 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ07 | SF28 | *Abutilon halophilum* | Shrub | | 0.1 | 3 |
| VZ07 | SF28 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 5 |
| VZ07 | SF28 | *Leiocarpa websteri* | Forb | | 0.1 | 5 |
| VZ07 | SF28 | *Minuria leptophylla* | Forb | | 0.2 | 3 |
| VZ07 | SF28 | *Nitraria billardierei* | Shrub | Dillon Bush | 5 | 7 |
| VZ07 | SF28 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 55 | 1000 |
| VZ07 | SF28 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ07 | SF28 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.5 | 10 |
| VZ07 | SF28 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ07 | SF28 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ07 | SF29 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ07 | SF29 | *Goodenia heteromera* | Forb | | 0.1 | 1 |
| VZ07 | SF29 | *Leiocarpa websteri* | Forb | | 0.1 | 3 |
| VZ07 | SF29 | *Lolium perenne* | Exotic | Perennial Rye | 1 | 250 |
| VZ07 | SF29 | *Maireana aphylla* | Shrub | Cotton Bush | 0.5 | 1 |
| VZ07 | SF29 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 10 |
| VZ07 | SF29 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ07 | SF29 | *Minuria leptophylla* | Forb | | 0.1 | 5 |
| VZ07 | SF29 | *Nitraria billardierei* | Shrub | Dillon Bush | 5 | 6 |
| VZ07 | SF29 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ07 | SF29 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 60 | 1000 |
| VZ07 | SF29 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |
| VZ07 | SF29 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.5 | 3 |
| VZ07 | SF29 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |
| VZ07 | SF29 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ07 | SF29 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ07 | WF24 | *Juncus spp.* | Grass | | 0.3 | 15 |
| VZ07 | WF24 | *Lolium perenne* | Exotic | Perennial Rye | 30 | 700 |
| VZ07 | WF24 | *Maireana aphylla* | Shrub | Cotton Bush | 4 | 20 |
| VZ07 | WF24 | *Nitraria billardierei* | Shrub | Dillon Bush | 10 | 25 |
| VZ07 | WF24 | *Plantago spp.* | Forb | Plantain | 0.1 | 30 |
| VZ07 | WF24 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 15 | 150 |
| VZ07 | WF24 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 10 | 30 |
| VZ07 | WF24 | *Sida trichopoda* | Forb | High Sida | 0.1 | 30 |
| VZ07 | WF24 | *Walwhalleya proluta* | Grass | | 5 | 35 |
| VZ07 | WF39 | *Abutilon halophilum* | Shrub | | 0.1 | 3 |
| VZ07 | WF39 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.5 | 2 |
| VZ07 | WF39 | *Avena spp.* | Exotic | Oats | 0.1 | 1 |
| VZ07 | WF39 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 5 |
| VZ07 | WF39 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ07 | WF39 | *Leiocarpa websteri* | Forb | | 0.1 | 10 |
| VZ07 | WF39 | *Lolium perenne* | Exotic | Perennial Rye | 1 | 150 |
| VZ07 | WF39 | *Maireana aphylla* | Shrub | Cotton Bush | 0.1 | 2 |
| VZ07 | WF39 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 30 |
| VZ07 | WF39 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ07 | WF39 | *Minuria leptophylla* | Forb | | 1 | 15 |
| VZ07 | WF39 | *Nitraria billardierei* | Shrub | Dillon Bush | 5 | 10 |
| VZ07 | WF39 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ07 | WF39 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.2 | 2 |
| VZ07 | WF39 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ07 | WF39 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 5 | 300 |
| VZ07 | WF39 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.2 | 6 |
| VZ07 | WF39 | *Sida trichopoda* | Forb | High Sida | 0.1 | 3 |
| VZ07 | WF39 | *Sporobolus caroli* | Grass | Fairy Grass | 5 | 250 |
| VZ07 | WF39 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 15 |
| VZ07 | WF40 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 1 |
| VZ07 | WF40 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.2 | 200 |
| VZ07 | WF40 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ07 | WF40 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 7 | 200 |
| VZ07 | WF40 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ07 | WF40 | *Nitraria billardierei* | Shrub | Dillon Bush | 5 | 7 |
| VZ07 | WF40 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 10 |
| VZ07 | WF40 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |
| VZ07 | WF40 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.5 | 6 |
| VZ07 | WF40 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |
| VZ07 | WF40 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ07 | WF43 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 1 |
| VZ07 | WF43 | *Chloris truncata* | Grass | Windmill Grass | 0.5 | 100 |
| VZ07 | WF43 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 10 |
| VZ07 | WF43 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ07 | WF43 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.1 | 5 |
| VZ07 | WF43 | *Goodenia spp.* | Forb | | 0.1 | 2 |
| VZ07 | WF43 | *Lolium perenne* | Exotic | Perennial Rye | 0.5 | 200 |
| VZ07 | WF43 | *Maireana aphylla* | Shrub | Cotton Bush | 0.5 | 4 |
| VZ07 | WF43 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 100 |
| VZ07 | WF43 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 5 |
| VZ07 | WF43 | *Nitraria billardierei* | Shrub | Dillon Bush | 5 | 12 |
| VZ07 | WF43 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.5 | 25 |
| VZ07 | WF43 | *Sclerolaena birchii* | Shrub | Galvinized Burr | 0.1 | 1 |
| VZ07 | WF43 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ07 | WF43 | *Solanum esuriale* | Forb | Quena | 0.1 | 5 |
| VZ07 | WF43 | *Sporobolus caroli* | Grass | Fairy Grass | 0.2 | 20 |
| VZ07 | WF43 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 20 |
| VZ07 | WF54 | *Atriplex leptocarpa* | Shrub | Slender-fruit Saltbush | 0.1 | 2 |
| VZ07 | WF54 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 5 |
| VZ07 | WF54 | *Chloris truncata* | Grass | Windmill Grass | 0.2 | 100 |
| VZ07 | WF54 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 2 |
| VZ07 | WF54 | *Eragrostis australasica* | Grass | Cane Grass | 0.5 | 2 |
| VZ07 | WF54 | *Lolium perenne* | Exotic | Perennial Rye | 0.2 | 250 |
| VZ07 | WF54 | *Maireana aphylla* | Shrub | Cotton Bush | 2 | 12 |
| VZ07 | WF54 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 10 |
| VZ07 | WF54 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ07 | WF54 | *Minuria leptophylla* | Forb | | 0.1 | 5 |
| VZ07 | WF54 | *Nitraria billardierei* | Shrub | Dillon Bush | 5 | 8 |
| VZ07 | WF54 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 1 | 200 |
| VZ07 | WF54 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ07 | WF54 | *Sporobolus caroli* | Grass | Fairy Grass | 1 | 100 |
| VZ08 | WF03 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 15 |
| VZ08 | WF03 | *Avena spp.* | Exotic | Oats | 1 | 100 |
| VZ08 | WF03 | *Calotis scabiosifolia* | Forb | Rough Burr-daisy | 0.1 | 7 |
| VZ08 | WF03 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 20 |
| VZ08 | WF03 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 2 |
| VZ08 | WF03 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 2 | 30 |
| VZ08 | WF03 | *Lolium perenne* | Exotic | Perennial Rye | 30 | 1000 |
| VZ08 | WF03 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 40 |
| VZ08 | WF03 | *Minuria leptophylla* | Forb | | 0.2 | 5 |
| VZ08 | WF03 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 35 | 400 |
| VZ08 | WF03 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 15 | 0.2 |
| VZ08 | WF03 | *Sida corrugata* | Forb | Corrugated Sida | 0.5 | 50 |
| VZ08 | WF03 | *Solanum esuriale* | Forb | Quena | 0.1 | 3 |
| VZ08 | WF03 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 30 |
| VZ08 | WF08 | *Aira caryophyllea* | Exotic | Silvery Hair | 0.1 | 3 |
| VZ08 | WF08 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 2 |
| VZ08 | WF08 | *Avena spp.* | Exotic | Oats | 0.5 | 80 |
| VZ08 | WF08 | *Avena spp.* | Exotic | Oats | 0.2 | 100 |
| VZ08 | WF08 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ08 | WF08 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.1 | 5 |
| VZ08 | WF08 | *Leiocarpa websteri* | Forb | | 1 | 20 |
| VZ08 | WF08 | *Lolium perenne* | Exotic | Perennial Rye | 10 | 500 |
| VZ08 | WF08 | *Maireana aphylla* | Shrub | Cotton Bush | 10 | 50 |
| VZ08 | WF08 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 1.5 | 150 |
| VZ08 | WF08 | *Oxalis perennans* | Forb | | 0.1 | 10 |
| VZ08 | WF08 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 1 | 50 |
| VZ08 | WF08 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.5 | 4 |
| VZ08 | WF08 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ08 | WF08 | *Solanum esuriale* | Forb | Quena | 0.1 | 15 |
| VZ08 | WF08 | *Sporobolus caroli* | Grass | Fairy Grass | 1 | 10 |
| VZ08 | WF08 | *Vittadinia cuneata* | Forb | | 0.1 | 10 |
| VZ08 | WF18 | *Calotis scabiosifolia* | Forb | Rough Burr-daisy | 0.1 | 6 |
| VZ08 | WF18 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 1 | 20 |
| VZ08 | WF18 | *Eragrostis australasica* | Grass | Cane Grass | 7 | 25 |
| VZ08 | WF18 | *Lolium perenne* | Exotic | Perennial Rye | 25 | 300 |
| VZ08 | WF18 | *Maireana aphylla* | Shrub | Cotton Bush | 20 | 100 |
| VZ08 | WF18 | *Minuria cunninghamii* | Forb | Bush Minuria | 0.1 | 2 |
| VZ08 | WF18 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 35 | 200 |
| VZ08 | WF18 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |
| VZ08 | WF18 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ08 | WF19 | *Aira caryophyllea* | Exotic | Silvery Hair | 0.1 | 2 |
| VZ08 | WF19 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 15 |
| VZ08 | WF19 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.5 | 200 |
| VZ08 | WF19 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 5 |
| VZ08 | WF19 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 0.1 | 3 |
| VZ08 | WF19 | *Lolium perenne* | Exotic | Perennial Rye | 3 | 100 |
| VZ08 | WF19 | *Maireana aphylla* | Shrub | Cotton Bush | 20 | 40 |
| VZ08 | WF19 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 50 |
| VZ08 | WF19 | *Oxalis perennans* | Forb | | 0.1 | 10 |
| VZ08 | WF19 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ08 | WF19 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 55 | 3000 |
| VZ08 | WF19 | *Sida trichopoda* | Forb | High Sida | 0.1 | 10 |
| VZ08 | WF19 | *Solanum esuriale* | Forb | Quena | 0.1 | 5 |
| VZ08 | WF19 | *Vittadinia cuneata* | Forb | | 0.1 | 3 |
| VZ08 | WF19 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 20 |
| VZ08 | WF23 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 3 |
| VZ08 | WF23 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 5 | 80 |
| VZ08 | WF23 | *Lolium perenne* | Exotic | Perennial Rye | 15 | 400 |
| VZ08 | WF23 | *Maireana aphylla* | Shrub | Cotton Bush | 37 | 200 |
| VZ08 | WF23 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 25 | 200 |
| VZ08 | WF23 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.1 | 5 |
| VZ08 | WF23 | *Sida trichopoda* | Forb | High Sida | 0.2 | 40 |
| VZ08 | WF23 | *Solanum esuriale* | Forb | Quena | 0.2 | 30 |
| VZ08 | WF30 | *Aira caryophyllea* | Exotic | Silvery Hair | 0.1 | 5 |
| VZ08 | WF30 | *Lolium perenne* | Exotic | Perennial Rye | 2 | 500 |
| VZ08 | WF30 | *Maireana aphylla* | Shrub | Cotton Bush | 10 | 50 |
| VZ08 | WF30 | *Maireana appressa* | Shrub | | 0.1 | 5 |
| VZ08 | WF30 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 4 | 1000 |
| VZ08 | WF30 | *Nitraria billardierei* | Shrub | Dillon Bush | 1 | 2 |
| VZ08 | WF30 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ08 | WF30 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 10 |
| VZ08 | WF30 | *Pycnosorus globosus* | Forb | Drumsticks | 0.1 | 1 |
| VZ08 | WF30 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ08 | WF30 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 40 | 1500 |
| VZ08 | WF30 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 50 |
| VZ08 | WF30 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |
| VZ08 | WF30 | *Sporobolus caroli* | Grass | Fairy Grass | 2 | 100 |
| VZ08 | WF30 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 5 |
| VZ08 | WF32 | *Lolium perenne* | Exotic | Perennial Rye | 40 | 2000 |
| VZ08 | WF32 | *Maireana aphylla* | Shrub | Cotton Bush | 10 | 60 |
| VZ08 | WF32 | *Maireana appressa* | Shrub | | 0.1 | 5 |
| VZ08 | WF32 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 3 | 500 |
| VZ08 | WF32 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 15 |
| VZ08 | WF32 | *Nitraria billardierei* | Shrub | Dillon Bush | 4 | 8 |
| VZ08 | WF32 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ08 | WF32 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 1 | 100 |
| VZ08 | WF32 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ08 | WF32 | *Sporobolus caroli* | Grass | Fairy Grass | 1 | 80 |
| VZ08 | WF33 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 1 |
| VZ08 | WF33 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 10 |
| VZ08 | WF33 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ08 | WF33 | *Lolium perenne* | Exotic | Perennial Rye | 80 | 4000 |
| VZ08 | WF33 | *Maireana aphylla* | Shrub | Cotton Bush | 6 | 40 |
| VZ08 | WF33 | *Maireana appressa* | Shrub | | 0.2 | 4 |
| VZ08 | WF33 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 1 | 4 |
| VZ08 | WF33 | *Malacocera tricornis* | Shrub | Soft Horns | 0.1 | 5 |
| VZ08 | WF33 | *Nitraria billardierei* | Shrub | Dillon Bush | 2 | 4 |
| VZ08 | WF33 | *Pycnosorus globosus* | Forb | Drumsticks | 0.1 | 1 |
| VZ08 | WF33 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 1.5 | 1 |
| VZ08 | WF33 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 2 | 100 |
| VZ08 | WF33 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 2 |
| VZ08 | WF33 | *Sida trichopoda* | Forb | High Sida | 0.1 | 10 |
| VZ08 | WF33 | *Sporobolus caroli* | Grass | Fairy Grass | 3 | 100 |
| VZ08 | WF45 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.2 | 20 |
| VZ08 | WF45 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 20 |
| VZ08 | WF45 | *Lolium perenne* | Exotic | Perennial Rye | 5 | 400 |
| VZ08 | WF45 | *Maireana aphylla* | Shrub | Cotton Bush | 28 | 150 |
| VZ08 | WF45 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 1 | 200 |
| VZ08 | WF45 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ08 | WF45 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 10 |
| VZ08 | WF45 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ08 | WF45 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 30 | 300 |
| VZ08 | WF45 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.2 | 50 |
| VZ08 | WF45 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.2 | 5 |
| VZ08 | WF45 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 1 | 30 |
| VZ08 | WF45 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 15 |
| VZ09 | WF35 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 20 |
| VZ09 | WF35 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.5 | 5 |
| VZ09 | WF35 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 20 |
| VZ09 | WF35 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 100 |
| VZ09 | WF35 | *Lolium perenne* | Exotic | Perennial Rye | 0.1 | 10 |
| VZ09 | WF35 | *Maireana aphylla* | Shrub | Cotton Bush | 0.8 | 7 |
| VZ09 | WF35 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.5 | 100 |
| VZ09 | WF35 | *Malacocera tricornis* | Shrub | Soft Horns | 40 | 100 |
| VZ09 | WF35 | *Minuria leptophylla* | Forb | | 0.1 | 10 |
| VZ09 | WF35 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ09 | WF35 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ09 | WF35 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 30 |
| VZ09 | WF35 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.2 | 50 |
| VZ09 | WF35 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.5 | 10 |
| VZ09 | WF35 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 3 |
| VZ09 | WF35 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 20 |
| VZ09 | WF36 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 2 |
| VZ09 | WF36 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 10 |
| VZ09 | WF36 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 20 |
| VZ09 | WF36 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 2 |
| VZ09 | WF36 | *Lolium perenne* | Exotic | Perennial Rye | 0.1 | 10 |
| VZ09 | WF36 | *Lycium ferocissimum* | ManHTW | African Boxthorn | 0.1 | 1 |
| VZ09 | WF36 | *Maireana aphylla* | Shrub | Cotton Bush | 3 | 20 |
| VZ09 | WF36 | *Maireana appressa* | Shrub | | 0.2 | 10 |
| VZ09 | WF36 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 20 |
| VZ09 | WF36 | *Malacocera tricornis* | Shrub | Soft Horns | 35 | 80 |
| VZ09 | WF36 | *Minuria leptophylla* | Forb | | 0.1 | 15 |
| VZ09 | WF36 | *Nitraria billardierei* | Shrub | Dillon Bush | 0.5 | 2 |
| VZ09 | WF36 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ09 | WF36 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.1 | 1 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ09 | WF36 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ09 | WF36 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 20 |
| VZ09 | WF36 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |
| VZ09 | WF36 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 5 |
| VZ09 | WF36 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 5 |
| VZ09 | WF36 | *Sporobolus caroli* | Grass | Fairy Grass | 0.1 | 10 |
| VZ09 | WF36 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.2 | 200 |
| VZ09 | WF47 | *Atriplex leptocarpa* | Shrub | Slender-fruit Saltbush | 0.1 | 2 |
| VZ09 | WF47 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 20 |
| VZ09 | WF47 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 10 |
| VZ09 | WF47 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 30 |
| VZ09 | WF47 | *Lycium ferocissimum* | ManHTW | African Boxthorn | 0.1 | 1 |
| VZ09 | WF47 | *Maireana aphylla* | Shrub | Cotton Bush | 1.5 | 12 |
| VZ09 | WF47 | *Maireana appressa* | Shrub | | 0.1 | 3 |
| VZ09 | WF47 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 40 |
| VZ09 | WF47 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 10 |
| VZ09 | WF47 | *Malacocera tricornis* | Shrub | Soft Horns | 50 | 100 |
| VZ09 | WF47 | *Minuria leptophylla* | Forb | | 0.1 | 5 |
| VZ09 | WF47 | *Nitraria billardierei* | Shrub | Dillon Bush | 2 | 6 |
| VZ09 | WF47 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ09 | WF47 | *Rhagodia spinescens* | Shrub | Thorny Saltbush | 0.1 | 1 |
| VZ09 | WF47 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ09 | WF47 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 0.1 | 5 |
| VZ09 | WF47 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.1 | 10 |
| VZ09 | WF47 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.2 | 10 |
| VZ09 | WF47 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |
| VZ09 | WF47 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 30 |
| VZ10 | WF01 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 20 |
| VZ10 | WF01 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 25 |
| VZ10 | WF01 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 10 | 50 |
| VZ10 | WF01 | *Leiocarpa websteri* | Forb | | 0.1 | 15 |
| VZ10 | WF01 | *Lolium perenne* | Exotic | Perennial Rye | 15 | 300 |
| VZ10 | WF01 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 30 |
| VZ10 | WF01 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ10 | WF01 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 10 |
| VZ10 | WF01 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 60 | 700 |
| VZ10 | WF01 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.5 | 6 |
| VZ10 | WF01 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.3 | 7 |
| VZ10 | WF01 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 35 |
| VZ10 | WF01 | *Solanum esuriale* | Forb | Quena | 0.2 | 50 |
| VZ10 | WF01 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 30 |
| VZ10 | WF01 | *Walwhalleya proluta* | Grass | | 0.5 | 15 |
| VZ10 | WF04 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 20 |
| VZ10 | WF04 | *Avena spp.* | Exotic | Oats | 3 | 150 |
| VZ10 | WF04 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 1 |
| VZ10 | WF04 | *Lolium perenne* | Exotic | Perennial Rye | 30 | 1000 |
| VZ10 | WF04 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 20 |
| VZ10 | WF04 | *Maireana appressa* | Shrub | | 0.1 | 1 |
| VZ10 | WF04 | *Minuria leptophylla* | Forb | | 4 | 50 |
| VZ10 | WF04 | *Oxalis perennans* | Forb | | 0.1 | 3 |
| VZ10 | WF04 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ10 | WF04 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.2 | 30 |
| VZ10 | WF04 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 45 | 300 |
| VZ10 | WF04 | *Sida corrugata* | Forb | Corrugated Sida | 0.5 | 50 |
| VZ10 | WF04 | *Solanum esuriale* | Forb | Quena | 0.1 | 6 |
| VZ10 | WF05 | *Avena spp.* | Exotic | Oats | 0.3 | 60 |
| VZ10 | WF05 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 20 |
| VZ10 | WF05 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 10 | 75 |
| VZ10 | WF05 | *Lolium perenne* | Exotic | Perennial Rye | 25 | 600 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ10 | WF05 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 35 |
| VZ10 | WF05 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ10 | WF05 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 30 |
| VZ10 | WF05 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 35 | 300 |
| VZ10 | WF05 | *Solanum esuriale* | Forb | Quena | 0.1 | 10 |
| VZ10 | WF05 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 15 |
| VZ10 | WF05 | *Walwhalleya proluta* | Grass | | 0.5 | 15 |
| VZ10 | WF09 | *Atriplex semibaccata* | Shrub | Creeping Saltbush | 0.1 | 3 |
| VZ10 | WF09 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 2 |
| VZ10 | WF09 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 10 |
| VZ10 | WF09 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.1 | 3 |
| VZ10 | WF09 | *Lolium perenne* | Exotic | Perennial Rye | 15 | 2000 |
| VZ10 | WF09 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 30 |
| VZ10 | WF09 | *Maireana appressa* | Shrub | | 0.1 | 2 |
| VZ10 | WF09 | *Oxalis perennans* | Forb | | 0.1 | 10 |
| VZ10 | WF09 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 50 | 1000 |
| VZ10 | WF09 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 1 |
| VZ10 | WF09 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.5 | 4 |
| VZ10 | WF09 | *Sida corrugata* | Forb | Corrugated Sida | 0.1 | 10 |
| VZ10 | WF09 | *Solanum esuriale* | Forb | Quena | 0.1 | 15 |
| VZ10 | WF09 | *Sporobolus caroli* | Grass | Fairy Grass | 1 | 8 |
| VZ10 | WF13 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 10 |
| VZ10 | WF13 | *Avena spp.* | Exotic | Oats | 0.2 | 50 |
| VZ10 | WF13 | *Calotis scabiosifolia* | Forb | Rough Burr-daisy | 0.1 | 2 |
| VZ10 | WF13 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 5 |
| VZ10 | WF13 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 5 | 70 |
| VZ10 | WF13 | *Lolium perenne* | Exotic | Perennial Rye | 30 | 1000 |
| VZ10 | WF13 | *Maireana aphylla* | Shrub | Cotton Bush | 7 | 40 |
| VZ10 | WF13 | *Minuria leptophylla* | Forb | | 0.2 | 40 |
| VZ10 | WF13 | *Plantago spp.* | Forb | Plantain | 0.1 | 3 |
| VZ10 | WF13 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 5 |
| VZ10 | WF13 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ10 | WF13 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 40 | 300 |
| VZ10 | WF13 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 0.1 | 2 |
| VZ10 | WF13 | *Sida corrugata* | Forb | Corrugated Sida | 0.2 | 50 |
| VZ10 | WF13 | *Solanum esuriale* | Forb | Quena | 0.1 | 15 |
| VZ10 | WF13 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 5 |
| VZ10 | WF14 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 15 |
| VZ10 | WF14 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 5 | 50 |
| VZ10 | WF14 | *Lolium perenne* | Exotic | Perennial Rye | 35 | 600 |
| VZ10 | WF14 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 33 |
| VZ10 | WF14 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ10 | WF14 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 8 |
| VZ10 | WF14 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 45 | 400 |
| VZ10 | WF14 | *Sida corrugata* | Forb | Corrugated Sida | 0.3 | 50 |
| VZ10 | WF14 | *Solanum esuriale* | Forb | Quena | 0.1 | 20 |
| VZ10 | WF14 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 20 |
| VZ10 | WF21 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 5 |
| VZ10 | WF21 | *Avena spp.* | Exotic | Oats | 0.1 | 15 |
| VZ10 | WF21 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 3 |
| VZ10 | WF21 | *Lycium ferocissimum* | ManHTW | African Boxthorn | 0.1 | 1 |
| VZ10 | WF21 | *Maireana aphylla* | Shrub | Cotton Bush | 1.5 | 10 |
| VZ10 | WF21 | *Minuria leptophylla* | Forb | | 0.5 | 3 |
| VZ10 | WF21 | *Oxalis perennans* | Forb | | 0.1 | 10 |
| VZ10 | WF21 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ10 | WF21 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 60 | 2000 |
| VZ10 | WF21 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 3 |
| VZ10 | WF21 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |
| VZ10 | WF26 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 1 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ10 | WF26 | *Lolium perenne* | Exotic | Perennial Rye | 45 | 1500 |
| VZ10 | WF26 | *Maireana aphylla* | Shrub | Cotton Bush | 7 | 40 |
| VZ10 | WF26 | *Maireana appressa* | Shrub | | 0.1 | 1 |
| VZ10 | WF26 | *Nitraria billardierei* | Shrub | Dillon Bush | 1 | 3 |
| VZ10 | WF26 | *Plantago spp.* | Forb | Plantain | 0.1 | 3 |
| VZ10 | WF26 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 5 |
| VZ10 | WF26 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 5 |
| VZ10 | WF26 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 0.1 | 6 |
| VZ10 | WF26 | *Sida corrugata* | Forb | Corrugated Sida | 0.3 | 80 |
| VZ10 | WF26 | *Solanum esuriale* | Forb | Quena | 0.1 | 5 |
| VZ10 | WF31 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 200 |
| VZ10 | WF31 | *Chloris truncata* | Grass | Windmill Grass | 0.1 | 10 |
| VZ10 | WF31 | *Eragrostis australasica* | Grass | Cane Grass | 2.5 | 8 |
| VZ10 | WF31 | *Juncus amabilis* | Grass | | 0.2 | 6 |
| VZ10 | WF31 | *Lolium perenne* | Exotic | Perennial Rye | 1 | 100 |
| VZ10 | WF31 | *Maireana aphylla* | Shrub | Cotton Bush | 5 | 40 |
| VZ10 | WF31 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.1 | 10 |
| VZ10 | WF31 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 2 |
| VZ10 | WF31 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 10 |
| VZ10 | WF31 | *Nitraria billardierei* | Shrub | Dillon Bush | 3 | 5 |
| VZ10 | WF31 | *Oxalis perennans* | Forb | | 0.1 | 5 |
| VZ10 | WF31 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ10 | WF31 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 45 | 1500 |
| VZ10 | WF31 | *Sida trichopoda* | Forb | High Sida | 0.1 | 10 |
| VZ10 | WF31 | *Sporobolus caroli* | Grass | Fairy Grass | 0.5 | 20 |
| VZ10 | WF31 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 10 |
| VZ10 | WF37 | *Atriplex vesicaria* | Shrub | Bladder Saltbush | 0.1 | 2 |
| VZ10 | WF37 | *Austrostipa scabra* | Grass | Speargrass | 0.1 | 10 |
| VZ10 | WF37 | *Chamaesyce drummondii* | Forb | Caustic Weed | 0.1 | 2 |
| VZ10 | WF37 | *Chloris truncata* | Grass | Windmill Grass | 5 | |
| VZ10 | WF37 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 15 |
| VZ10 | WF37 | *Eragrostis australasica* | Grass | Cane Grass | 0.1 | 1 |
| VZ10 | WF37 | *Lolium perenne* | Exotic | Perennial Rye | 5 | 1000 |
| VZ10 | WF37 | *Maireana aphylla* | Shrub | Cotton Bush | 2 | 12 |
| VZ10 | WF37 | *Maireana appressa* | Shrub | | 0.1 | 3 |
| VZ10 | WF37 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 2 | 500 |
| VZ10 | WF37 | *Nitraria billardierei* | Shrub | Dillon Bush | 0.8 | 1 |
| VZ10 | WF37 | *Plantago spp.* | Forb | Plantain | 0.1 | 10 |
| VZ10 | WF37 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 25 | 1000 |
| VZ10 | WF37 | *Sida trichopoda* | Forb | High Sida | 0.1 | 5 |
| VZ10 | WF37 | *Solanum esuriale* | Forb | Quena | 0.1 | 5 |
| VZ10 | WF37 | *Sporobolus caroli* | Grass | Fairy Grass | 0.5 | 20 |
| VZ10 | WF44 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 10 |
| VZ10 | WF44 | *Chamaesyce drummondii* | Forb | Caustic Weed | 0.1 | 50 |
| VZ10 | WF44 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 20 |
| VZ10 | WF44 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 15 | |
| VZ10 | WF44 | *Enchylaena tomentosa* | Shrub | Ruby Saltbush | 1.5 | 30 |
| VZ10 | WF44 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 0.5 | 50 |
| VZ10 | WF44 | *Lolium perenne* | Exotic | Perennial Rye | 8 | 500 |
| VZ10 | WF44 | *Maireana aphylla* | Shrub | Cotton Bush | 1 | 10 |
| VZ10 | WF44 | *Maireana enchylaenoides* | Forb | Wingless Fissure-weed | 0.5 | 150 |
| VZ10 | WF44 | *Maireana pentagona* | Forb | Hairy Bluebush, Slender Fissure-weed | 0.1 | 3 |
| VZ10 | WF44 | *Marsilea drummondii* | Fern | Common Nardoo | 0.1 | 10 |
| VZ10 | WF44 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ10 | WF44 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 10 |
| VZ10 | WF44 | *Rhodanthe corymbiflora* | Forb | Small White Sunray | 0.1 | 10 |
| VZ10 | WF44 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 80 | 800 |
| VZ10 | WF44 | *Sclerolaena brachyptera* | Shrub | Short-winged Copperburr | 0.2 | 30 |
| VZ10 | WF44 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.2 | 30 |

| VegZone | BAM plot | Scientific Name | Growth Form | Common name | Cover | Abundance |
|---|---|---|---|---|---|---|
| VZ10 | WF44 | *Sclerolaena tricuspis* | Shrub | Giant Redburr | 1.5 | 50 |
| VZ10 | WF44 | *Sida corrugata* | Forb | Corrugated Sida | 0.5 | 50 |
| VZ10 | WF44 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 10 |
| VZ11 | WF25 | *Avena spp.* | Exotic | Oats | 1 | 70 |
| VZ11 | WF25 | *Calocephalus sonderi* | Forb | Pale Beauty-heads | 0.1 | 2 |
| VZ11 | WF25 | *Cynosurus echinatus* | Exotic | Rough Dog's Tail | 0.1 | 10 |
| VZ11 | WF25 | *Einadia nutans* | Forb | Climbing Saltbush | 0.1 | 2 |
| VZ11 | WF25 | *Enteropogon acicularis* | Grass | Curly Windmill Grass | 3 | 50 |
| VZ11 | WF25 | *Lolium perenne* | Exotic | Perennial Rye | 50 | 1000 |
| VZ11 | WF25 | *Maireana appressa* | Shrub | | 0.1 | 2 |
| VZ11 | WF25 | *Nitraria billardierei* | Shrub | Dillon Bush | 1 | 5 |
| VZ11 | WF25 | *Plantago spp.* | Forb | Plantain | 0.1 | 5 |
| VZ11 | WF25 | *Podolepis muelleri* | Forb | Small Copper-wire Daisy | 0.1 | 10 |
| VZ11 | WF25 | *Rytidosperma caespitosum* | Grass | Ringed Wallaby | 30 | 300 |
| VZ11 | WF25 | *Sclerolaena diacantha* | Shrub | Grey Copperburr | 0.1 | 5 |
| VZ11 | WF25 | *Sclerolaena muricata* | Shrub | Black Rolypoly | 2 | 15 |
| VZ11 | WF25 | *Sida corrugata* | Forb | Corrugated Sida | 0.3 | 100 |
| VZ11 | WF25 | *Vulpia spp.* | Exotic | Rat's-tail Fescue | 0.1 | 15 |

| vegzone | plot | pct | area | patchsize | conditionclass | zone | easting | northing | bearing | compTree | compShrub | compGrass | compForbs | compFerns | compOther | strucTree | strucShrub | strucGrass | strucForbs | strucFerns | strucOther | funLargeTrees | funHollowtrees | funLitterCover | funLenFallenLogs | funTreeStem5to9 | funTreeStem10to19 | funTreeStem20to29 | funTreeStem30to49 | funTreeStem50to79 | funTreeRegen | funHighThreatExotic |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ12 | BAM01_139 | 123 | 0.29 | 101 | Moderate | 54 | 541226 | 6461698.01 | 139 | 0 | 9 | 3 | 13 | 0 | 1 | 0.0 | 46.1 | 1.2 | 4.0 | 0.0 | 0.2 | 0 | 0 | 3.0 | 3.0 | 1 | 1 | 0 | 0 | 0 | 0 | 2.1 |
| VZ13 | BAM03_352 | 155 | 0.69 | 101 | Low | 54 | 538769 | 6461992 | 352 | 0 | 12 | 2 | 9 | 0 | 0 | 0.0 | 22.7 | 71.0 | 3.1 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 |
| VZ13 | BAM04_308 | 155 | 0.69 | 101 | Low | 54 | 538877 | 6461794 | 308 | 0 | 17 | 5 | 12 | 0 | 1 | 0.0 | 23.6 | 5.2 | 1.8 | 0.0 | 0.1 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 15.0 |
| VZ13 | BAM05_242 | 155 | 0.69 | 101 | Low | 54 | 538637 | 6462457 | 242 | 0 | 10 | 5 | 8 | 0 | 1 | 0.0 | 27.9 | 0.7 | 1.2 | 0.0 | 0.1 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.1 |
| VZ13 | BAM06_231 | 155 | 0.69 | 101 | Low | 54 | 540052 | 6461371 | 231 | 0 | 11 | 4 | 11 | 0 | 1 | 0.0 | 16.9 | 7.0 | 3.7 | 0.0 | 0.1 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 |
| VZ14 | BAM02_036 | 158 | 0.22 | 101 | Moderate | 54 | 540773 | 6461606 | 36 | 0 | 5 | 1 | 6 | 0 | 0 | 0.0 | 70.8 | 0.1 | 6.1 | 0.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 |

| Column1 | Column2 | Plot Number | BAM01_139 | BAM01_1393 | BAM02_036 | BAM02_0364 | BAM03_352 | BAM03_3525 | BAM04_308 | BAM04_3086 | BAM05_242 | BAM05_2427 | BAM06_231 | BAM06_2318 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scientific Name | Common Name | BAM Growth Form Group | Cover | Abundance | Cover | Abundance | Cover | Abundance | Cover | Abundance | Cover | Abundance | Cover | Abundance |
| *Abutilon halophilum* | | Shrub (SG) | | | | | | | | | 0.1 | 1 | | |
| *Acacia aneura* | Mulga | Shrub (SG) | 7.0 | 2 | | | | | | | | | | |
| *Acacia brachystachya* | Umbrella Mulga | Shrub (SG) | 4.0 | 1 | | | | | | | | | | |
| *Acacia victoriae subsp. arida* | Prickly Wattle | Shrub (SG) | | | | | 0.1 | 1 | | | | | | |
| *Actinobole uliginosum* | Flannel Cudweed | Forb (FG) | 0.1 | 3 | | | | | | | | | | |
| *Arabidella sp. Tibooburra* | | Shrub (SG) | | | | | | | 0.1 | 1 | | | | |
| *Arabidella trisecta* | | Shrub (SG) | | | | | | | | | | | 0.1 | 10 |
| *Atriplex spp.* | | Shrub (SG) | | | | | | | | | | | 0.1 | 1 |
| *Atriplex nummularia* | Old Man Saltbush | Shrub (SG) | | | 70.0 | 300 | | | | | | | | |
| *Atriplex stipitata* | Mallee Saltbush | Shrub (SG) | | | | | | | 0.2 | 12 | | | 1.0 | 14 |
| *Atriplex vesicaria* | Bladder Saltbush | Shrub (SG) | | | | | 0.3 | 7 | 0.3 | 5 | 5.0 | 40 | 0.1 | 2 |
| *Austrostipa eremophila* | | Grass & grasslike (GG) | | | | | | | | | | | 0.3 | 4 |
| *Austrostipa nitida* | | Grass & grasslike (GG) | 0.1 | 10 | 0.1 | 1 | 70.0 | 150 | 2.0 | 150 | 0.2 | 25 | 0.2 | 10 |
| *Brachyscome spp.* | | Forb (FG) | | | 0.1 | 1 | | | | | | | | |
| *Brachycome ciliaris* | Variable Daisy | Forb (FG) | 0.1 | 25 | | | 0.1 | 5 | 0.1 | 25 | 0.1 | 15 | 0.5 | 15 |
| *Bromus arenarius* | Sand Brome | Grass & grasslike (GG) | 0.1 | 5 | | | | | | | | | | |
| *Calandrinia eremaea* | Small Purslane | Forb (FG) | 0.1 | 2 | | | | | | | | | | |
| *Chloris truncata* | Windmill Grass | Grass & grasslike (GG) | | | | | | | 0.1 | 3 | 0.2 | 15 | | |
| *Convolvulus remotus* | | Other (OG) | 0.2 | 5 | | | | | 0.1 | 10 | 0.1 | 15 | 0.1 | 1 |
| *Cotula spp.* | | Forb (FG) | 0.1 | 25 | | | | | | | | | | |
| *Crassula colorata var. acuminata* | | Forb (FG) | 0.2 | 100 | 0.1 | 40 | | | | | | | | |
| *Daucus glochidiatus* | Native Carrot | Forb (FG) | | | | | 0.1 | 20 | | | | | | |
| *Disphyma crassifolium* | | Forb (FG) | | | 5.0 | 30 | | | | | | | | |
| *Dissocarpus paradoxus* | Cannonball Burr | Shrub (SG) | | | 0.2 | 4 | 1.5 | 15 | 2.0 | 60 | 0.2 | 20 | 0.2 | 15 |
| *Einadia nutans* | Climbing Saltbush | Forb (FG) | 0.3 | 10 | | | | | | | | | | |
| *Einadia nutans subsp. nutans* | Climbing Saltbush | Forb (FG) | | | 0.7 | 12 | | | | | | | 0.1 | 1 |
| *Enchylaena tomentosa* | Ruby Saltbush | Shrub (SG) | 2.0 | 12 | | | 1.0 | 12 | 0.2 | 3 | | | | |
| *Enneapogon spp.* | Nineawn Grass, Bottlewashers | Grass & grasslike (GG) | | | | | | | | | 0.1 | 2 | | |
| *Enneapogon avenaceus* | Bottle Washers | Grass & grasslike (GG) | 1.0 | 100 | | | | | 1.5 | 20 | 0.1 | 5 | 5.0 | 200 |
| *Enneapogon cylindricus* | Jointed Nineawn | Grass & grasslike (GG) | | | | | 1.0 | 75 | 1.5 | 50 | 0.1 | 10 | 1.5 | 70 |
| *Erodium crinitum* | Blue Crowfoot | Forb (FG) | 0.1 | 10 | | | | | | | | | | |
| *Euphorbia drummondii* | Caustic Weed | Forb (FG) | 0.1 | 10 | | | | | 0.1 | 1 | 0.1 | 30 | 0.1 | 4 |
| *Evolvulus alsinoides* | Bindweed | Forb (FG) | 0.1 | 200 | | | | | | | | | | |
| *Goodenia fascicularis* | Mallee Goodenia | Forb (FG) | | | | | 0.1 | 2 | 0.1 | 4 | | | | |
| *Leiocarpa spp.* | | Forb (FG) | | | | | | | | | | | 0.1 | 5 |
| *Leiocarpa brevicompta* | Flat Billy-buttons | Forb (FG) | | | | | 0.1 | 1 | | | | | 2.0 | 20 |
| *Lotus cruentus* | Red-flowered Lotus | Forb (FG) | | | | | 0.3 | 40 | 0.2 | 15 | 0.1 | 5 | 0.1 | 5 |
| *Maireana georgei* | Slit-wing Bluebush | Shrub (SG) | | | | | | | | | | | 0.2 | 12 |
| *Maireana integra* | | Shrub (SG) | | | | | | | 1.0 | 20 | | | | |
| *Maireana pyramidata* | Black Bluebush | Shrub (SG) | | | 0.4 | 7 | 8.0 | 30 | 7.0 | 35 | 20.0 | 40 | 12.0 | 70 |
| *Maireana sclerolaenoides* | | Shrub (SG) | | | | | 1.0 | 50 | 1.0 | 80 | | | | |
| *Maireana sedifolia* | Pearl Bluebush | Shrub (SG) | | | | | 0.5 | 1 | | | | | | |
| *Maireana triptera* | Three-wing Bluebush | Shrub (SG) | | | | | 2.0 | 30 | 0.1 | 10 | 0.2 | 4 | 0.2 | 5 |
| *Maireana turbinata* | | Shrub (SG) | | | | | 1.0 | 10 | | | | | 0.7 | 12 |
| *Minuria cunninghamii* | Bush Minuria | Forb (FG) | | | | | 0.1 | 7 | 0.2 | 5 | 0.1 | 5 | 0.2 | 7 |
| *Ptilotus obovatus* | Smoke Bush | Shrub (SG) | 1.0 | 20 | | | | | | | | | | |
| *Rhagodia spinescens* | Thorny Saltbush | Shrub (SG) | 1.0 | 5 | | | | | 0.1 | 2 | 1.0 | 2 | | |
| *Rhodanthe microglossa* | Clustered Sunray | Forb (FG) | 0.2 | 300 | | | | | | | | | | |
| *Rhodanthe moschata* | | Forb (FG) | | | | | | | | | | | 0.1 | 3 |
| *Roepera eremaea* | Climbing Twinleaf | Forb (FG) | | | | | 2.0 | 115 | 0.3 | 4 | 0.2 | 4 | | |
| *Rytidosperma caespitosum* | Ringed Wallaby Grass | Grass & grasslike (GG) | | | | | | | 0.1 | 5 | | | | |
| *Salsola australis* | | Shrub (SG) | | | | | | | 0.1 | 4 | 0.1 | 2 | | |
| *Sarcozona praecox* | Sarcozona | Forb (FG) | 1.5 | 10 | 0.1 | 3 | | | 0.1 | 1 | 0.1 | 3 | | |
| *Sclerolaena bicornis var. bicornis* | | Shrub (SG) | | | | | | | 3.0 | 30 | | | 2.0 | 15 |
| *Sclerochlamys brachyptera* | Short-winged Copperburr | Shrub (SG) | | | | | 0.2 | 60 | | | | | | |
| *Sclerolaena cuneata* | | Shrub (SG) | | | 0.1 | 1 | | | | | | | | |
| *Sclerolaena patenticuspis* | | Shrub (SG) | 0.1 | 10 | | | | | | | 0.2 | 14 | | |
| *Sclerolaena tricuspis* | Giant Redburr | Shrub (SG) | | | | | 7.0 | 60 | 4.0 | 40 | | | | |
| *Sclerolaena ventricosa* | Salt Copperburr | Shrub (SG) | | | 0.1 | 2 | | | 4.0 | 40 | | | | |
| *Senecio spp.* | Groundsel, Fireweed | Forb (FG) | | | | | | | 0.1 | 10 | 0.1 | 10 | 0.1 | 5 |
| *Senna artemisioides* | | Shrub (SG) | | | | | 0.1 | 1 | | | | | | |
| *Senna artemisioides nothosubsp. artemisioides* | | Shrub (SG) | 10.0 | 15 | | | | | | | | | | |
| *Senna artemisioides nothosubsp. coriacea* | | Shrub (SG) | | | | | | | 0.2 | 1 | | | | |
| *Senna artemisioides subsp. filifolia* | | Shrub (SG) | | | | | | | 0.2 | 1 | 1.0 | 3 | 0.3 | 3 |
| *Sida corrugata* | Corrugated Sida | Forb (FG) | 1.0 | 8 | | | | | 0.1 | 1 | | | | |
| *Sida fibulifera* | Pin Sida | Forb (FG) | | | | | 0.1 | 1 | 0.1 | 1 | | | | |
| *Sida petrophila* | | Shrub (SG) | 20.0 | 8 | | | | | 0.1 | 2 | 0.1 | 1 | | |
| *Solanum esuriale* | Quena | Forb (FG) | | | | | | | 0.3 | 40 | | | | |
| *Solanum sturtianum* | Thargomindah Nightshade | Shrub (SG) | 1.0 | 6 | | | | | | | | | | |
| *Swainsona fissimontana* | | Forb (FG) | | | | | | | | | | | 0.1 | 1 |
| *Vittadinia spp.* | Fuzzweed | Forb (FG) | | | 0.1 | 2 | | | | | | | | |
| *Vittadinia cuneata* | | Forb (FG) | | | | | 0.2 | 15 | 0.1 | 10 | 0.4 | 15 | 0.3 | 20 |
| *Wurmbea dioica* | Early Nancy | Forb (FG) | 0.1 | 3 | | | | | | | | | | |

# APPENDIX B FAUNA RECORDS ACROSS THE PREP

## APPENDIX B

| Common Name | Scientific Name | BC Act | EPBC Act |
|---|---|---|---|
| **Birds** | | | |
| Australian Hobby | *Falco longipennis* | - | - |
| Australian Magpie | *Gymnorhina tibicen* | - | - |
| Australian Pelican | *Pelecanus conspicillatus* | - | Marine |
| Australian Raven | *Corvus coronoides* | - | - |
| Australian Ringneck | *Barnadius zonarius var. barnardi* | - | - |
| Australian White-Ibis | *Threskiornis moluccus* | - | - |
| Australian Wood Duck | *Chenonetta jubata* | - | - |
| Australasian Grebe | *Tachybaptus novaehollandiae* | - | - |
| Australasian Shoveler | *Anas rhynchotis* | - | - |
| Australasian Pipit | *Anthus novaeseelandiae* | - | - |
| Banded Lapwing | *Vanellus tricolor* | - | - |
| Black Falcon | *Falco subniger* | Vulnerable | - |
| Black Kite | *Milvus migrans* | - | - |
| Black Swan | *Cygnus atratus* | - | - |
| Black-eared Cuckoo | *Chrysococcyx osculans* | - | Marine |
| Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | - | Marine |
| Black-faced Woodswallow | *Artamus cinereus* | - | - |
| Black-fronted Dotterel | *Elseyornis melanops* | - | - |
| Black-shouldered Kite | *Elanus axillaris* | - | - |
| Black-tailed Native Hen | *Tribonyx ventralis* | - | - |
| Black-winged Stilt | *Himantopus himantopus* | - | - |
| Bluebonnet | *Northiella haematogaster* | - | - |
| Brown Falcon | *Falco berigora* | - | - |
| Brown Quail | *Coturnix ypsilophora* | - | - |
| Brown Songlark | *Cincloramphus cruralis* | - | - |
| Brown Treecreeper | *Climacteris picumnus picumnus* | - | - |
| Budgerigar | *Melopsittacus undulatus* | - | - |
| Cockatiel | *Nymphicus hollandicus* | - | - |
| Common Blackbird* | *Turdus merula* | - | - |
| Common Bronzewing | *Phaps chalcoptera* | - | - |
| Common Starling* | *Sturnus vulgaris* | - | - |
| Chestnut-crowned Babbler | *Pomatostomus ruficeps* | - | - |

APPENDIX B

| Common Name | Scientific Name | BC Act | EPBC Act |
|---|---|---|---|
| Chestnut-rumped Thornbill | *Acanthiza uropygialis* | - | - |
| Crested Pigeon | *Ocyphaps lophotes* | - | - |
| Crimson Rosella | *Platycercus elegans* | - | - |
| Dusky Woodswallow | *Artamus cyanopterus cyanopterus* | Vulnerable | - |
| Eastern Barn Owl | *Tyto javanica* | - | - |
| Eastern Rosella | *Platycercus eximius* | - | - |
| Emu | *Dromaius novaehollandiae* | - | - |
| Fairy Martin | *Petrochelidon ariel* | - | - |
| Galah | *Eolophus roseicapilla* | - | - |
| Great Egret | *Ardea alba* | - | - |
| Grey Butcherbird | *Cracticus torquatus* | - | - |
| Grey-crowned Babbler (eastern subspecies) | *Pomatostomus temporalis temporalis* | Vulnerable | - |
| Grey Fantail | *Rhipidura albiscapa* | - | - |
| Grey Shrike-thrush | *Colluricincla harmonica* | - | - |
| Grey Teal | *Anas gracilis* | - | - |
| Ground Cuckoo-shrike | *Coracina maxima* | - | - |
| Hardhead | *Aythya australis* | - | - |
| Hoary-headed Grebe | *Poliocephalus poliocephalus* | - | - |
| Horsfield's Bronze-Cuckoo | *Chalcites basalis* | - | - |
| House Sparrow* | *Passer domesticus* | - | - |
| Horsfield's Bushlark | *Mirafra javanica* | - | - |
| Inland Dotterel | *Peltohyas australis* | - | - |
| Inland Thornbill | *Acanthiza apicalis* | - | - |
| Intermediate Egret | *Ardea intermedia* | - | |
| Little Black Cormorant | *Phalacrocorax sulcirostris* | - | - |
| Little Crow | *Corvus bennetti* | - | - |
| Little Eagle | *Hieraaetus morphnoides* | Vulnerable | - |
| Little Grassbird | *Megalurus leucopterus* | - | - |
| Little Raven | *Corvus mellori* | - | - |
| Magpie-lark | *Grallina cyanoleuca* | - | - |
| Masked Lapwing | *Vanellus miles* | - | - |
| Masked Woodswallow | *Artamus personatus* | - | - |
| Mistletoebird | *Dicaeum hirundinaceum* | - | - |
| Nankeen Kestrel | *Falco cenchroides* | - | - |

APPENDIX B

| Common Name | Scientific Name | BC Act | EPBC Act |
|---|---|---|---|
| Noisy Miner | *Manorina melanocephala* | - | - |
| Olive-backed Oriole | *Oriolus sagittatus* | - | - |
| Orange Chat | *Epthianura aurifrons* | - | - |
| Australian Owlet Nightjar | *Aegotheles cristatus* | - | - |
| Pacific Black Duck | *Anas superciliosa* | - | - |
| Pallid Cuckoo | *Cuculus pallidus (Cacomantis pallidu)* | - | Marine |
| Peregrine Falcon | *Falco peregrinus* | - | - |
| Pied Butcherbird | *Cracticus nigrogularis* | - | - |
| Pied Cormorant | *Phalacrocorax varius* | - | - |
| Pink-eared Duck | *Malacorhynchus membranaceus* | - | - |
| Plains-wanderer | *Pedionomus torquatus* | Endangered | Critically Endangered |
| Plum-headed Finch | *Neochmia modesta* | - | - |
| Plumed Whistling Duck | *Dendrocygna eytoni* | - | - |
| Purple-backed Fairywren | *Malurus assimilis* | | |
| Rainbow Bee-eater | *Merops ornatus* | - | Marine |
| Red-capped Robin | *Petroica goodenovii* | - | - |
| Red-kneed Dotterel | *Erythrogonys cinctus* | - | - |
| Red-rumped Parrot | *Psephotus haematonotus* | - | - |
| Royal Spoonbill | *Platalea regia* | - | - |
| Rufous Songlark | *Cincloramphus mathewsi* | - | - |
| Rufous Whistler | *Pachycephala rufiventrus* | - | - |
| Sacred Kingfisher | *Todiramphus sanctus* | - | Marine |
| Sharp-tailed Sandpiper | *Calidris acuminata* | - | Vulnerable, Marine, Migratory |
| Singing Honeyeater | *Lichenostomus virescens* | - | - |
| Southern Whiteface | *Aphelocephala leucopsis* | Vulnerable | Vulnerable |
| Spiny-cheeked Honeyeater | *Acanthegenys rufogularis* | - | - |
| Splendid Fairy-wren | *Malurus splendens* | - | - |
| Spotted Harrier | *Circus assimilis* | Vulnerable | - |
| Striated Pardalote | *Pardalotus striatus* | - | - |
| Stubble Quail | *Coturnix pectoralis* | - | - |
| Superb Fairy-wren | *Malurus cyaneus* | - | - |
| Swamp Harrier | *Circus approximans* | - | - |
| Common Starling | *Sturnus vulgaris* | - | - |

## APPENDIX B

| Common Name | Scientific Name | BC Act | EPBC Act |
|---|---|---|---|
| Straw-necked Ibis | *Threskiornis spinicollis* | - | Marine |
| Thornbill | *Acanthiza spp.* | | |
| Tree Martin | *Petrochelidon nigricans* | - | - |
| Variegated Fairy Wren | *Malurus lamberti* | - | - |
| Wedge-tailed Eagle | *Aquila audux* | - | - |
| Welcome Swallow | *Hirundo neoxana* | - | - |
| Western Gerygone | *Gerygone fusca* | - | - |
| Willie Wagtail | *Rhipidura leucophrys* | - | - |
| Whistling Kite | *Haliastur sphenurus* | - | - |
| White-backed swallow | *Cheramoeca leucosternus* | - | - |
| White-breasted Woodswallow | *Artamus leucorynchus* | - | - |
| White-fronted Chat | *Epthianura albifrons* | Vulnerable | - |
| White-faced Heron | *Egretta novaehollandiae* | - | - |
| White-necked Heron | *Ardea pacifica* | - | - |
| White-winged Chough | *Corcorax melanorhamphos* | - | - |
| White-winged Fairy-wren | *Malurus leucopterus* | - | - |
| Yellow-billed Spoonbill | *Platalea flavipes* | - | - |
| Yellow-rumped Thornbill | *Acanthiza chrysorrhoa* | - | - |
| Yellow-throated Miner | *Manorina flavigula* | - | - |
| Zebra Finch | *Taeniopygia guttata* | - | - |
| **Mammals** | | | |
| Eastern Grey Kangaroo | *Macropus fuliginosus* | - | - |
| Red Kangaroo | *Macropus rufus* | - | - |
| European Rabbit* | *Oryctolagus cuniculus* | - | - |
| White-striped Free-tailed Bat | *Austronomus australis* | - | - |
| Gould's Wattled Bat | *Chalinolobus gouldii* | - | - |
| Chocolate Wattled Bat | *Chalinolobus morio* | - | - |
| Southern Myotis^ | *Myotis macropus* | Vulnerable | - |
| South-Eastern Free-Tailed Bat+ | *Ozimops planiceps* | - | - |
| Corben's Long-Eared Bat^ | *Nyctophilus corbeni* | Vulnerable | Vulnerable |
| Lesser Long-eared Bat^ | *Nyctophilus geoffroyi* | - | - |
| Gould's Long-eared Bat^ | *Nyctophilus gouldi* | - | - |
| Eastern Free-tailed Bat | *Ozimops ridei* | - | - |

APPENDIX B

| Common Name | Scientific Name | BC Act | EPBC Act |
|---|---|---|---|
| Yellow-bellied Sheathtail-bat | *Saccolaimus flaviventris* | Vulnerable | - |
| Inland Broad-nosed Bat | *Scotorepens balstoni* | - | - |
| Little Broad-nosed Bat | *Scotorepens greyii* | - | - |
| Large Forest Bat | *Vespadelus darlingtoni* | - | - |
| Southern Forest Bat^ | *Vespadelus regulus* | - | - |
| Little Forest Bat^ | *Vespadelus vulturnus* | - | - |
| Feral Cat* | *Felis Catus* | - | - |
| European Red Fox* | *Vulpes vulpes* | - | - |
| Sheep* | *Ovis aries* | - | - |
| Wild Boar* | *Sus scrofa* | - | - |
| Cow* | *Bos taurus* | - | - |
| **Reptiles** | | | |
| Shingleback | *Tiliqua rugosa* | - | - |
| Eastern Blue-tongue Lizard | *Tiliqua scinoides* | - | - |
| Ragged Snake-eyed Skink | *Cryptoblepharus pannosus* | - | - |
| Nobbi Dragon | *Diporiphora nobbi* | - | - |
| Sand Goanna | *Varanus gouldii* | - | - |
| Lace Monitor | *Varanus varius* | - | - |
| Central Bearded Dragon | *Pogona vitticeps* | - | - |
| Eastern Brown Snake | *Pseudonaja textilis* | - | - |
| **Amphibians** | | | |
| Southern Bell Frog | *Litoria raniformis* | Endangered | Vulnerable |

* denotes non-native species;
^ denotes 'possible' record – microbat call is comparable with the named species, with a moderate to high probability of confusion with species of similar calls;

\+ denotes 'probable' record - most likely to be the species named, low probability of confusion with species that use similar calls

# APPENDIX C MICROBAT CALL ANALYSIS REPORT SUMMER 2022

# Bat Call Analysis Report

# The Plains Project

Prepared for ERM

Prepared by:

PO BOX 282
Morayfield Qld 4506

M: 0423 081 428
E: kelly.matthews@greentapesolutions.com.au
W: www.greentapesolutions.com.au

Client Manager: Kelly Matthews
Report Number: ME22022_The Plains

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# 1.0 Introduction

## 1.1 Background

Green Tape Solutions were commissioned to undertake bat call analysis for The Plains project located north of Deniliquin in New South Wales.

## 1.2 Scope of Work

The specific scope of works for this report includes the following:

- Outline the methodology used to analyse the microbat call within the subject site; and,
- Present the findings of all of the bat call surveys conducted at the project site;

# 2.0 Methodology

## 2.1 Capture Technique

Microbat calls were sampled using eight (8) Anabat Swift detectors (Titley Electronics). Passive monitoring was undertaken from 13 to 24 February 2022. The original call files display Australian Eastern Standard Time. The data was analysed using Anabat Insight.

Monitoring commenced at dusk (approximately 1800 hours) and continued until dawn (approximately 0530 hours). Ultrasonic call monitoring surveys on anabat detectors were conducted using full-spectrum fitted with omnidirectional ultrasonic microphone.

## 2.2 Call Identification

Anabat recordings were analysed using Anabat software (Anabat Insight). Identifications were made by categorising call shape and frequency, with a species match given in consideration to region, known bat distributions, and habitats present. The focus of the bat surveys was to assess the presence of bat species found within the Project Area, and to assess the potential for rare and threatened species to occur.

Call identification for this dataset was based on call keys and descriptions published for Queensland (Reinhold *et al.*, 2001) and New South Wales (Pennay *et al.*, 2004).

Species' identification was further refined using the probability of occurrence of each species based on their geographic distribution (Churchill, 2008, Van Dyck and Strahan, 2008). Species nomenclature used in this report follows Churchill (2008).

The reliability of identification is as follows:

- **Definite** - one or more calls where there is no doubt about the identification of the species;
- **Probable** - most likely to be the species named, low probability of confusion with species that use similar calls; and,
- **Possible -** call is comparable with the named species, with a moderate to high probability of confusion with species of similar calls.

## 2.3 National Standard

The format and content of this report complies with the nationally accepted standards for the interpretation and reporting of Anabat and Songmeter data (Reardon, 2003), which is currently available from the Australasian Bat Society at www.ausbats.org.au.

# 3.0 Results

## 3.1 Total Species Recorded

The majority of calls were considered to be of medium to good quality calls.

A total of 91,171 sequence files were analysed. A proportion of these files (20,836) in this dataset contained background noise or resulted in poor quality calls that did not provide bat calls for analysis. While some call sequences were recognised as bat calls, the quality was not sufficient to assign species identification.

A summary of the species identified through bat call analysis is provided in **Table 1**.

**Table 1: Summary of bat call analysis (QLD)**

| Species | Biodiversity Act | EPBC Act | SD1 | SD2 | Anabat 1 | Anabat 2 | Anabat 6 | Anabat 10 | Anabat 11 | Anabat 12 |
|---|---|---|---|---|---|---|---|---|---|---|
| *Austronomus australis* | LC | NOC | Definite | Definite | | | | | | |
| *Chalinolobus gouldii* | LC | NOC | Definite | Definite | Definite | | Definite | | Definite | Definite |
| *Chalinolobus morio* | LC | NOC | Definite | Definite | | | Definite | | Definite | |
| *Myotis macropus* | V | NOC | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |
| *Nyctophilus sp* | V (*N. Coberni and N bifax)* | V (*N. Coberni and N bifax)* | Possible | | | | Possible | | | |
| *Ozimops planiceps* | LC | NOC | Probable | Probable | | | | | Definite | |
| *Ozimops ridei* | LC | NOC | Probable | Definite | | | Definite | | Definite | |
| *Saccolaimus flaviventris* | V | NOC | Definite | Definite | | | | | | |
| *Scotorepens balstoni* | LC | NOC | Definite | Definite | | | Definite | | | Probable |
| *Scotorepens greyi* | LC | NOC | Definite | Definite | | | Definite | | | Probable |
| *Vespadelus darlingtoni* | LC | NOC | Probable | Definite | | Definite | | | | Definite |
| *Vespadelus regulus* | LC | NOC | Possible | Possible | Possible | Probable | Possible | Possible | Possible | Possible |
| *Vespadelus vulturnus* | LC | NOC | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |

LC: Least Concern, NOC: Not of Concern, V: Vulnerable

## 3.2 Samples of Calls / Sequences Files

Samples of call extracted from the dataset for each species identified is provided in the following figures

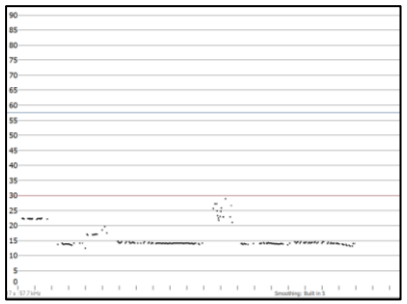
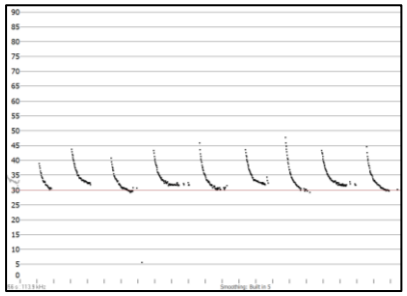
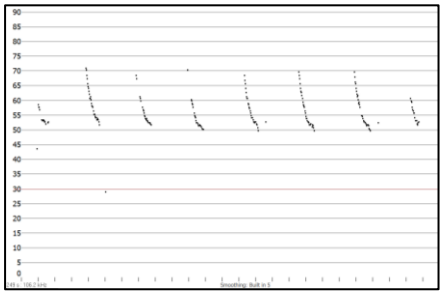
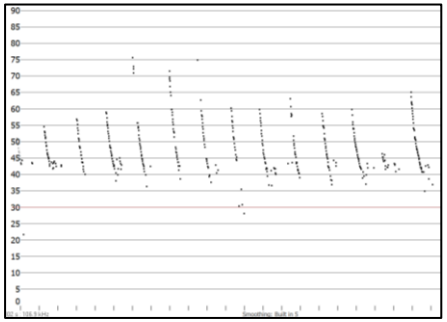
| Species | Calls | Known distribution (Extract from Ausbats maps from Australian Bat Society) |
|---|---|---|
| **Figure 1: *Austronomus australis*** <br> This bat is easily recognised by its constant frequency calls range in bandwidth from 10.5 to 15 kHz (Pennay *et al.*, 2004). |  | |
| **Figure 2: *Chalinolobus gouldii*** <br> This species has a curved shape call with characteristic frequency 28 to 34kHz. Pulse alternates in frequency and mostly down-sweeping tail or no tail. |  | |

**Figure 3: *Chalinolobus morio***



*C. morio* has a down-sweeping tail curved pulse with characteristic frequency 47.5 to 53 kHz. It has often a very brief characteristic section. Species that overlap in frequency (*V. vulturnus*) but all have up-sweeping tails.

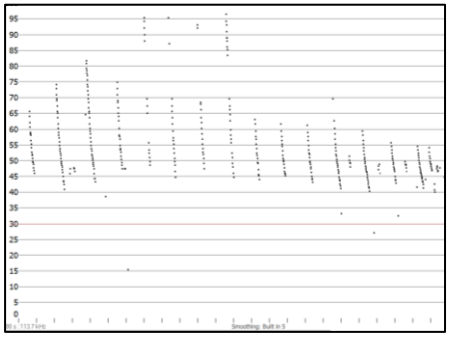
**Figure 4: *Myotis macropus***



Near-vertical pulse dropping to about 30 to 35-50kHz. *M. macropus* mostly have a pulse interval of less than 75ms and usually have one kink close to the middle so that the second part has a lesser slope than the first (Reinhold, 2001).

This call can be confused with *Nyctophilus spp* calls. The latest have usually a pulse interval greater than 95ms and are slightly more complicated structure with two kinks instead of one.

**Figure 5: *Nyctophilus spp***



This species displays a near-vertical pulse, characteristic frequency between 80 and 35KHz (Pennay *et al*, 2004).

The species from this genus cannot be distinguished from each other. There are 3 species that are known to occur in the project area.

N. Corbeni

N. geoffroyi

N. gouldi

**Figure 6: *Ozimops planiceps***

This bat calls between 24 and 29 kHz. These search calls have their energy max around 25-26 kHz.

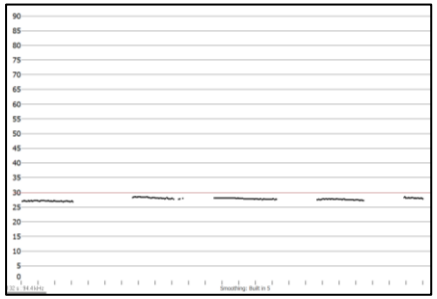


**Figure 7: *Ozimops ridei***

*O. ridei* calls are flat. Characteristic frequency of this species is between 28 to 36 kHz.

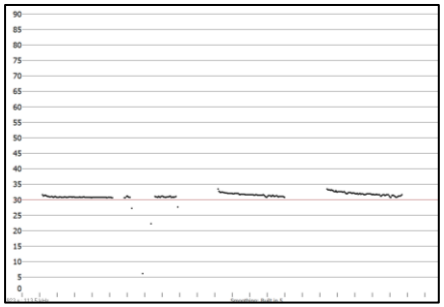


**Figure 8: *Saccolaimus flaviventris***

Curved, characteristic frequency 18 to 21.5 kHz. The characteristic frequency does not go above 22 kHz. Other species that could overlap do not occur in this area.

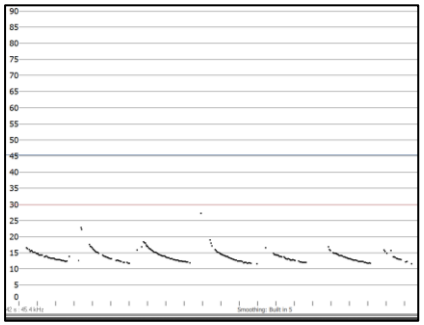


**Figure 9: *Scotorepens balstoni***

Pulse of this species is curved with tail variable, but an up-sweeping tail is often more prominent with greater duration. Characteristic frequency 31 to 35 kHz and the frequency of the knee 33 to 37 kHz.

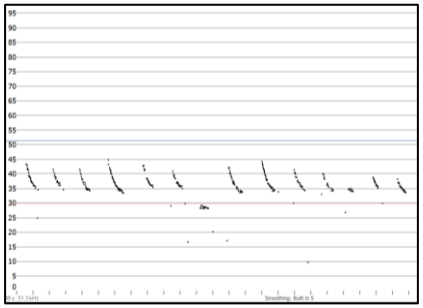


**Figure 10: *Scotorepens greyii***

*S. greyii* has a curved and up-sweeping tail pulse. Its characteristic frequency is between 36 to 41.5 kHz.

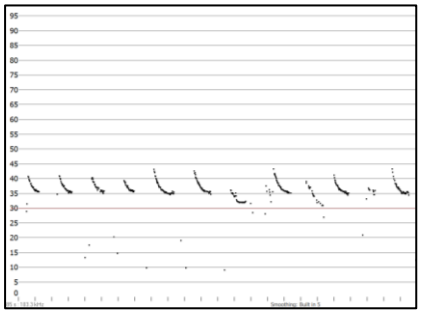


**Figure 11: *Vespadelus darlingtoni***

This species call has a curved call with no tail or sometime an up-sweeping tail. The call's characteristic frequency is between 42.5 to 48.5 kHz. Characteristic section is often, but not always, relatively long.

Shorter duration with up-sweeping tails and higher frequencies, cannot be distinguished from *V. regulus* or *V. vulturnus*.

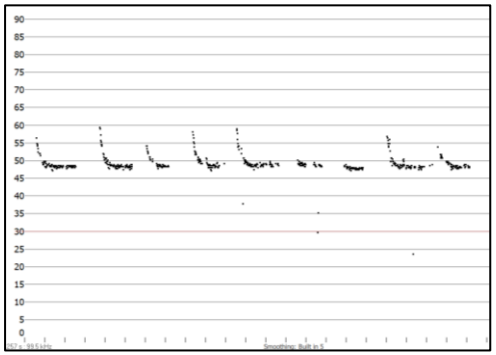
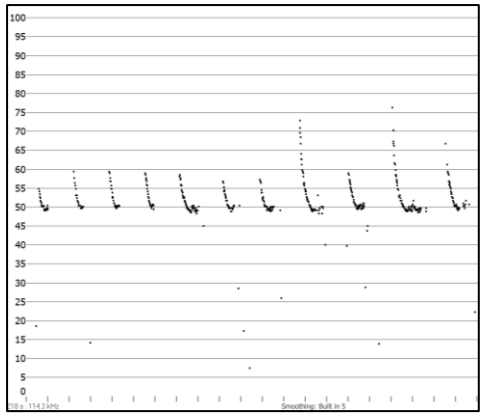


**Figure 12: *Vespadelus regulus or Vespadelus vulturnus***

Characteristic frequency varies significantly over distribution from 40 to 55 kHz (n = 95). Call shape also varies between regions (see regional information).



*Vespadelus regulus*

*Vespadelus vulturnus*

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# APPENDIX D MICROBAT CALL ANALYSIS REPORT SUMMER/AUTUMN 2023

# Bat Call Analysis Report

# The Plains Renewable Energy Park Project (0667692)

Prepared for ERM

Prepared by:

PO BOX 282
Morayfield Qld 4506

M: 0423 081 428
E: kelly.matthews@greentapesolutions.com.au
W: www.greentapesolutions.com.au

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# 1.0 Introduction

## 1.1 Background

Green Tape Solutions were commissioned to undertake bat call analysis for the Plains Renewable Energy Park project located near Hay, New South Wales.

## 1.2 Scope of Work

The specific scope of works for this report includes the following:

- Outline the methodology used to analyse the microbat call within the subject site; and,
- Present the findings of all of the bat call surveys conducted at the project site.

# 2.0 Methodology

## 2.1 Capture Technique

Microbat calls were sampled using six Anabat Swift detectors (Titley Electronics). Passive monitoring was undertaken from February to March 2023. The original call files display Australian Eastern Standard Time. The data was analysed using Anabat Insight.

Monitoring commenced at dusk (approximately 1800 hours) and continued until dawn (approximately 0530 hours). Ultrasonic call monitoring surveys on anabat detectors were conducted using full-spectrum fitted with omnidirectional ultrasonic microphone.

## 2.2 Call Identification

Anabat recordings were analysed using Anabat software (Anabat Insight). Identifications were made by categorising call shape and frequency, with a species match given in consideration to region, known bat distributions, and habitats present. The focus of the bat surveys was to assess the presence of bat species found within the Project Area, and to assess the potential for rare and threatened species to occur.

Call identification for this dataset was based on call keys and descriptions published for Queensland (Reinhold *et al.*, 2001) and New South Wales (Pennay *et al.*, 2004).

Species' identification was further refined using the probability of occurrence of each species based on their geographic distribution (Churchill, 2008, Van Dyck and Strahan, 2008). Species nomenclature used in this report follows Churchill (2008).

The reliability of identification is as follows:

- **Definite** - one or more calls where there is no doubt about the identification of the species;
- **Probable** - most likely to be the species named, low probability of confusion with species that use similar calls; and,
- **Possible -** call is comparable with the named species, with a moderate to high probability of confusion with species of similar calls.

## 2.3 National Standard

The format and content of this report complies with the nationally accepted standards for the interpretation and reporting of Anabat and Songmeter data (Reardon, 2003), which is currently available from the Australasian Bat Society at www.ausbats.org.au.

# 3.0 Results

## 3.1 Total Species Recorded

The majority of calls were considered to be of medium to good quality calls.

A total of 45,403 sequence files were analysed. A proportion of the files (12,511) in this dataset contained background noise or resulted in poor quality calls that did not provide bat calls for analysis. While some call sequences were recognised as bat calls, the quality was not sufficient to assign species identification.

Anabats swift numbers 01 and 02 didn't record any identifiable calls.

A summary of the species identified through bat call analysis is provided in **Table 1**.

**Table 1: Summary of bat call analysis**

| Species | Biodiversity Act | EPBC Act | Site 10 | Site 14 | Site 17 | Site 27 |
|---|---|---|---|---|---|---|
| *Austronomus australis* | LC | NOC | Definite | | | Definite |
| *Chalinolobus gouldii* | LC | NOC | Definite | Definite | | Definite |
| *Chalinolobus morio* | LC | NOC | | Probable | | Probable |
| *Myotis macropus* | V | NOC | Possible | | Possible | Possible |
| *Nyctophilus geoffroyi* | LC | NOC | Possible | | Possible | Possible |
| *Nyctophilus gouldi* | LC | NOC | Possible | | Possible | Possible |
| *Ozimops ridei* | LC | NOC | Definite | Definite | Definite | Definite |
| *Scotorepens balstoni* | LC | NOC | Possible | Possible | Possible | Possible |
| *Scotorepens greyii* | LC | NOC | Possible | Possible | Possible | Possible |
| *Vespadelus darlingtoni* | LC | NOC | | Possible | | |
| *Vespadelus regulus* | LC | NOC | Possible | Possible | Possible | Possible |
| *Vespadelus vulturnus* | LC | NOC | Possible | Possible | Possible | Possible |

LC: Least Concern, NOC: Not of Concern, V: Vulnerable

## 3.2 Samples of Calls / Sequences Files

Samples of call extracted from the dataset for each species identified is provided in the following figures

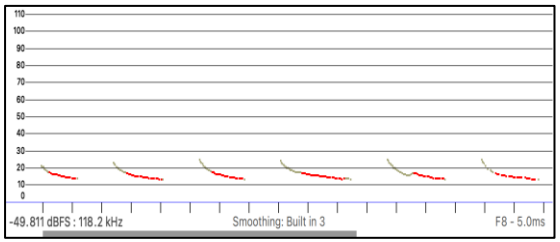
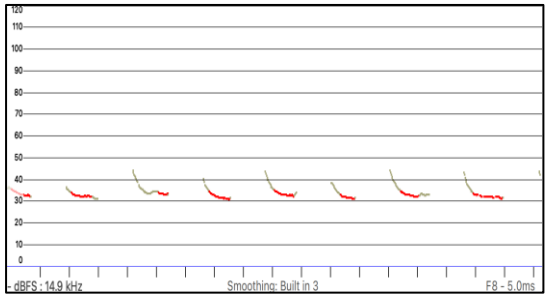
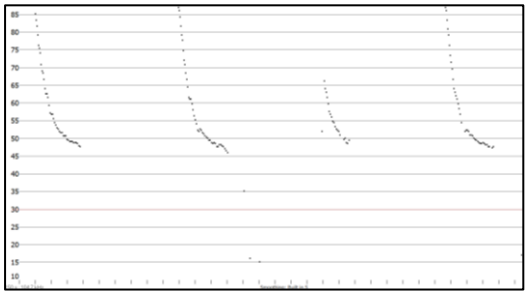
| Species | Calls | Known distribution (Extract from Ausbats maps from Australian Bat Society) |
|---|---|---|
| **Figure 1: *Austronomus australis*** <br> Definite call. <br> This bat is easily recognised by its constant frequency calls range in bandwidth from 10.5 to 15 kHz (Pennay *et al.*, 2004). |   | |
| **Figure 2: *Chalinolobus gouldii*** <br> Definite call. <br> This species has a curved shape call with characteristic frequency 28 to 34kHz. Pulse alternates in frequency and mostly down-sweeping tail or no tail. |   | |

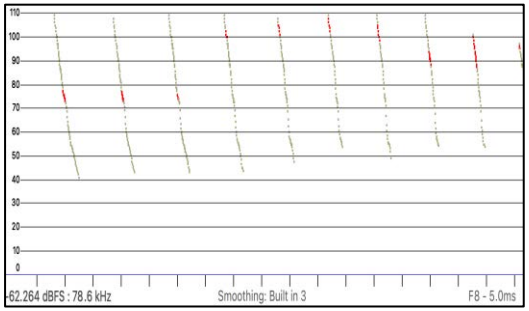
**Figure 3: *Chalinolobus morio***



Definite call.

*C. morio* has a down-sweeping tail curved pulse with characteristic frequency 47.5 to 53 kHz. It has often a very brief characteristic section. Species that overlap in frequency (*Vespadelus troughtoni, V. pumilus* and *V. vulturnus*) but all have up-sweeping tails.

**Figure 4: *Myotis macropus***

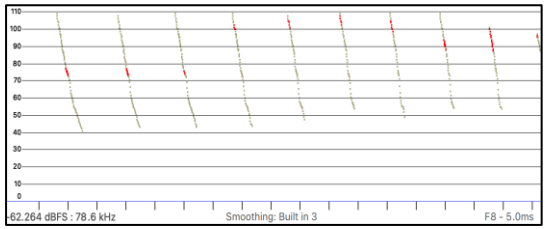


Possible call.

Near-vertical pulse dropping to about 30 to 35-50kHz. *M. macropus* mostly have a pulse interval of less than 75ms and usually have one kink close to the middle so that the second part has a lesser slope than the first (Reinhold, 2001).

This call can be confused with *Nyctophilus spp* calls. The latest have usually a pulse interval greater than 95ms and are slightly more complicated structure with two kinks instead of one.

**Figure 5: *Nyctophilus spp***



*N. geoffroyi*

Possible call.

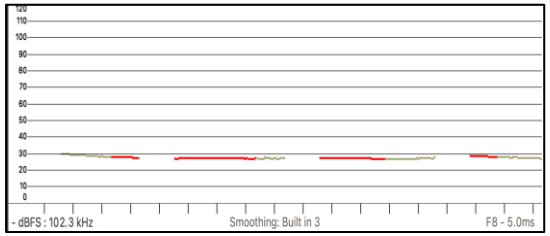
This species displays a near-vertical pulse, characteristic frequency between 80 and 35KHz

(Pennay *et al*, 2004).

The species from this genus cannot be distinguished from each other. There are 3 species that are known to occur in the project area.

*N. gouldi*

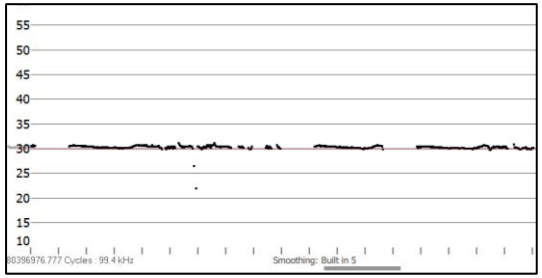
**Figure 6: *Ozimops planiceps***




Definite call.

This bat calls are flat and its characteristic is between 24 and 29 kHz.

**Figure 7: *Ozimops ridei***




Definite call.

*O. ridei* calls are flat and sometimes a bit curved with frequency a bit lower than 30kHz. Characteristic frequency of this species is between 28 to 36 kHz. Calls in the same frequency range as *Micronomus norfolkensis*, but *O. ridei* calls may jump up to a higher frequency than the surrounding pulses, this does not occur in a regular pattern like in *M. norfolkensis*.

**Figure 8: *Scotorepens balstoni***

Possible call.

Pulse of this species is curved with tail variable, but an up-sweeping tail is often more prominent with greater duration. Characteristic frequency 31 to 35 kHz (n = 28) and the frequency of the knee 33 to 37 kHz.

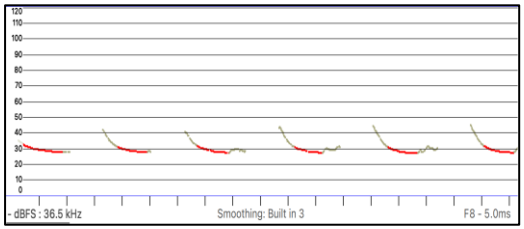


**Figure 9: *Scotorepens greyii***

Prossible call.

*S. greyii* has a curved and up-sweeping tail pulse. Its characteristic frequency is between 36 to 41.5 kHz.

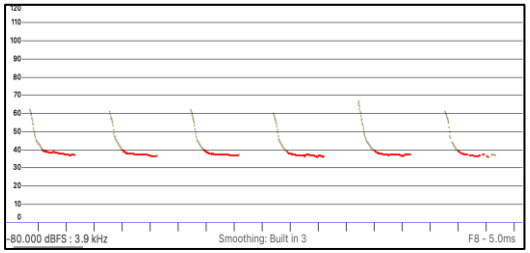
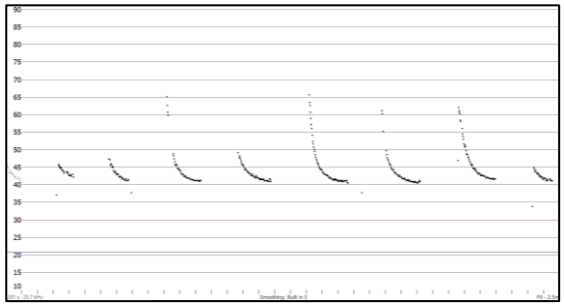


**Figure 10: *Vespadelus darlingtoni***

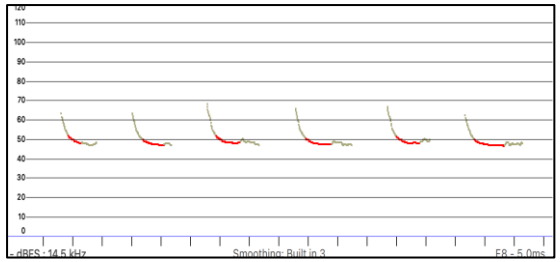


Definite call.

This species call has a curved call with no tail or sometime an up-sweeping tail. The call's characteristic frequency is between 42.5 to 48.5 kHz. Characteristic section is often, but not always, relatively long.

Shorter duration with up-sweeping tails and higher frequencies, cannot be distinguished from *V. regulus* or *V. vulturnus*.

**Figure 11: *Vespadelus regulus***



Possible call.

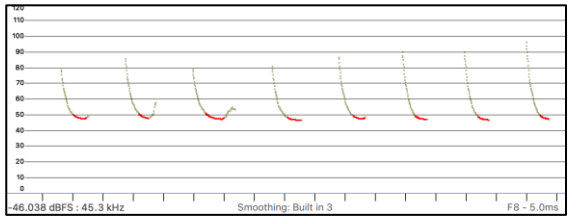
Characteristic frequency varies significantly over distribution from 40 to 55 kHz (n = 95). Call shape also varies between regions (see regional information). Characteristic frequency 45 to 47 kHz (n = 19). Curved with up-sweeping tail.

May overlap with *Vespadelus darlingtoni* calling above 45kHz from the border ranges if sympatric.

**Figure 12: *Vespadelus vulturnus***

Curved and up-sweeping tail calls with characteristic frequency between 45 to 53 kHz.

It cannot be distinguished from *V. regulus*, or some *V. darlingtoni* when up-sweeping tail.



# 4.0 Conclusion

A total of 12 microbat species were either confirmed ‘definite’, ‘probable’ or ‘possible’ within the Project area. All bats identified on the site were expected to be present within the region.

Calls from *Nyctophilus sp* have been confirmed across the project areas. Two species of *Nyctophilus* possibly occur within the Project Area. The call of this species cannot be distinguished from other species in the genus.

Two of the reliably identified call types were only attributable to genus level due to similarities in call characteristics of the following groups:

- Nyctophilus species
    - ✓ Steep, almost-linear linear (FM) call pulses are distinctive from those of other bat calls but cannot be reliably identified to species
    - ✓ Three species potentially occur in the project area (*N. bifax* and *N. gouldi*)
- *Scotorepens greyii* and *S. sanborni*
    - o Steep, curvilinear (FM-qCF) pulses with Fc of 37-41 kHz
    - o Both Scotorepens spp. are likely to occur in the project area

## 5.0 References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**Lachlan McRae Fauna Services**
**ABN: 96 905 438 927**
Lmcrae.ecology@gmail.com

**MICROBAT CALL ANALYSIS REPORT** **20 March 2024**

**Job #:** 009
**Project name:** The Plains Wind Farm, Microbat Call Analysis
**Client:** Sam Sanders/ERM
**Location:** -34.835478, 144.750472 (Hay Plains, NSW).

# 1. Introduction

## 1.1 Background/Disclaimer

The author of this report, Lachlan McRae, has been engaged to undertake microbat echolocation call analysis for ERM. The analysis will determine the presence/absence of microbat species on each ultrasonic recording device within the audio data set supplied by ERM.

The data necessary for this analysis was provided to the author on a single 256GB SD card. The author was not involved in the data collection. As such, the author makes no claim that the data was collected appropriately.

Microbat call identification works on a probabilistic scale due to the wide variety of overlapping call types most species can make, and it can therefore be almost impossible to be 100% certain of a call identification for many species. As such, the author is only presenting their professional opinion as opposed to an objective truth (see section 5.1 for analyst experience and qualifications).

# 2. Methods

## 2.1 Supplied Data

The author was supplied with 51 nights of ultrasonic data from a single acoustic recording device. The recorder was deployed from 24th March 2023 to 13th May 2023.

The recorder deployment information supplied to the author from ERM is as follows:

*Table 1 - Acoustic recorder deployment information supplied by ERM.*

| Recorder Deployment Category | Answer (you can tick more than 1) |
|---|---|
| Broad habitat type | Open woodland ☑<br>Dry sclerophyll ☐<br>Wet sclerophyll ☐<br>Rainforest ☐<br>Coastal scrub ☐<br>Wetland ☐<br>Open grassland ☐<br>Street trees ☐<br>Garden ☐<br>Other: |
| Urbanisation level | City ☐<br>Urban ☐<br>Suburban ☐<br>Rural/farmland ☑<br>Small bush-block ☐<br>Natural habitat for >1km in all directions ☐ |
| Proximity to a waterbody that is >3m wide/diameter | Overlooking water ☐<br>Within 200m of water ☐<br>>200m from water ☑ |
| Proximity to a moderate or large rocky escarpment/cliff line | Directly facing nearby rocky habitat ☐<br>Within 1km of rocky habitat ☐<br>Further than 1km from rocky habitat ☑ |
| Clutter category | Amongst forest ☐<br>Edge of forest ☐<br>Open area with scattered or no trees ☑ |

## 2.2 Analysis Software

Microbat calls were analysed using Titley Scientific's Anabat Insight (version 2.0.8) on MacOS Ventura (version 13.3.1).

## 2.3 Candidate microbat species

A list of microbat species with potential to occur at the data collection point, based solely on geographic distribution range, was generated using BatMap (Australasian Bat Society, 2024). A radius of 70km from the data collection point was used (Fig. 1)

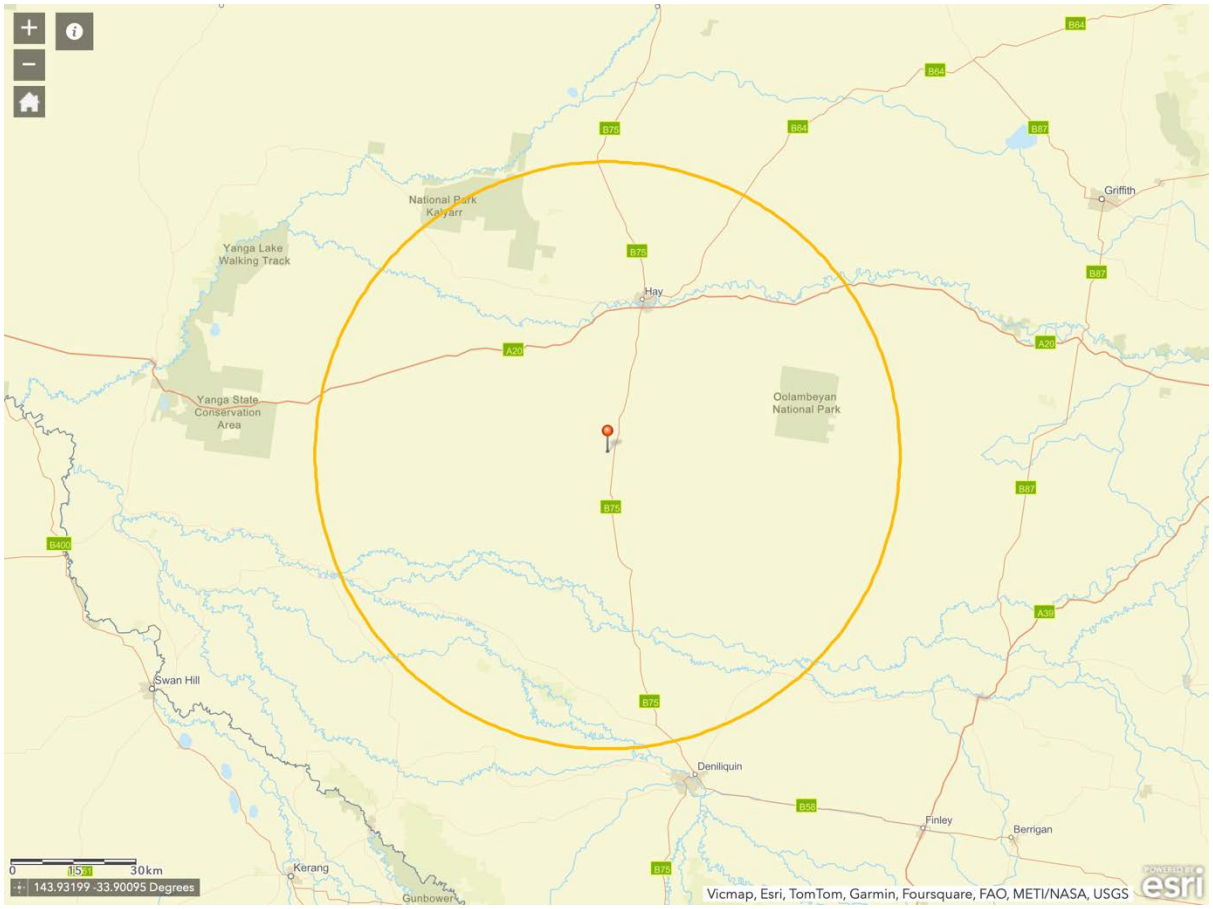


*Figure 1 - 70km search distance used to generate a microbat species list with BatMap. Search distance centred on the data collection point at -34.835478, 144.750472 (Hay Plains, NSW).*

A total of 16 possible microbat species were generated from BatMap (Table 2).

*Table 2 - The list of candidate microbat species produced by BatMap's search tool, with a 70km radius search distance applied from the data collection point at -34.835478, 144.750472 (Hay Plains, NSW).*

| Common Name | Scientific Name |
|---|---|
| White-striped Freetail Bat | *Austronomus australis* |
| Gould's Wattled Bat | *Chalinolobus gouldii* |
| Chocolate Wattled Bat | *Chalinolobus morio* |
| Southern Myotis | *Myotis macropus* |
| Corben's Long-eared Bat | Nyctophilus corbeni |
| Lesser Long-eared Bat | *Nyctophilus geoffroyi* |
| Gould's Long-eared Bat | *Nyctophilus gouldi* |
| Ride's Free-tailed Bat | *Ozimops ridei* |
| South-Eastern Free-Tailed Bat | *Ozimops planiceps* |
| Inland Free-Tailed Bat | *Ozimops petersi* |
| Yellow-bellied Sheathtail Bat | *Saccolaimus flaviventis* |
| Inland Broad-nosed Bat | *Scotorepens balstoni* |
| Little Broad-nosed Bat | *Scotorepens greyii* |
| Large Forest Bat | *Vespadelus darlingtoni* |
| Southern Forest Bat | *Vespadelus regulus* |
| Little Forest Bat | *Vespadelus vulturnus* |

## 2.4 Call Identification

Calls were identified to one or more of the 16 species listed above (Table 2) based on 1) *Bat Calls of NSW* by Pennay et al. (2004), 2) reference calls personally collected by Lachlan McRae within NSW, 3) *Bat Calls of Central Eastern NSW* by Chris Corben (2009), 4) call metrics and ID features obtained from discussions with recognised bat experts including Michael Pennay, Brad Law, and Chris Corben, 5) the deployment information outlined in Section 2.1 (Table 1), and 6) the author's understanding of each species' foraging behaviour and habitat requirements (Churchill 2008, Baker & Gynther 2023).

Each call was assigned to one of the following identification confidence categories:

1) **Certain** — no doubt about the identification of the species. This rating is typically reserved for species that do not overlap in characteristic frequency and/or call shape with other species.
2) **High** — small chance of confusion with another species. This rating is typically given if there are other species that overlap in characteristic frequency and call shape.
3) **Moderate** —moderate chance of confusion with another species;
4) **Species Group** — call could more or less equally belong to one of two or more species. Occurs more frequently when calls contain only a few pulses, are of poor quality, and/or if recordings are in zero-crossing as opposed to full-spectrum.

# 3. Results

A total of ~29,000 files were analysed, of which 466 contained bat calls. A summary of the six species and one species group identified in the Hay Plains data set is provided below in Table 3.

*Table 3 - Summary of the results from the supplied The Plains Wind Farm, NSW data set.*

| Common Name | Scientific Name | BC Act | EPBC Act | ID confidence |
|---|---|---|---|---|
| White-striped Free-tailed Bat | *Austronomus australis* | - | - | Certain |
| South-east free-tailed Bat | *Ozimops planiceps* | - | - | High |
| Gould's Wattled Bat | *Chalinolobus gouldii* | - | - | High |
| Ride's Free-tailed Bat or Inland Free-tailed Bat | *Ozimops ridei* or *Ozimops petersi* | - | - | High |
| Inland Broad-nosed Bat | *Scotorepens balstoni* | - | - | Moderate |
| Little Forest Bat | *Vespadelus vulturnus* | - | - | High |
| Chocolate Wattled Bat | *Chalinolobus morio* | - | - | High |

An example call from each recorded species/species group is shown below in compressed mode. Full spectrum and zero-crossing views are both shown on the same spectrogram.

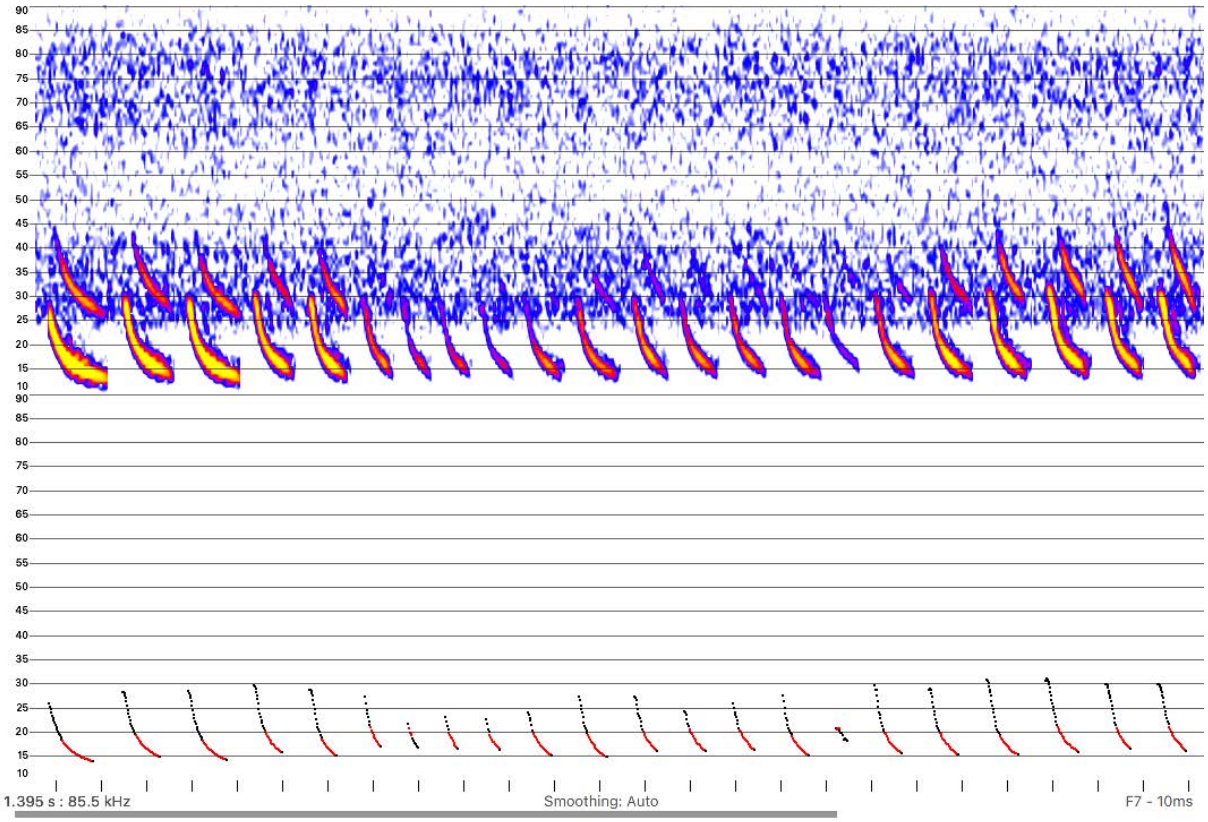


*Figure 2 - Austronomus australis.*

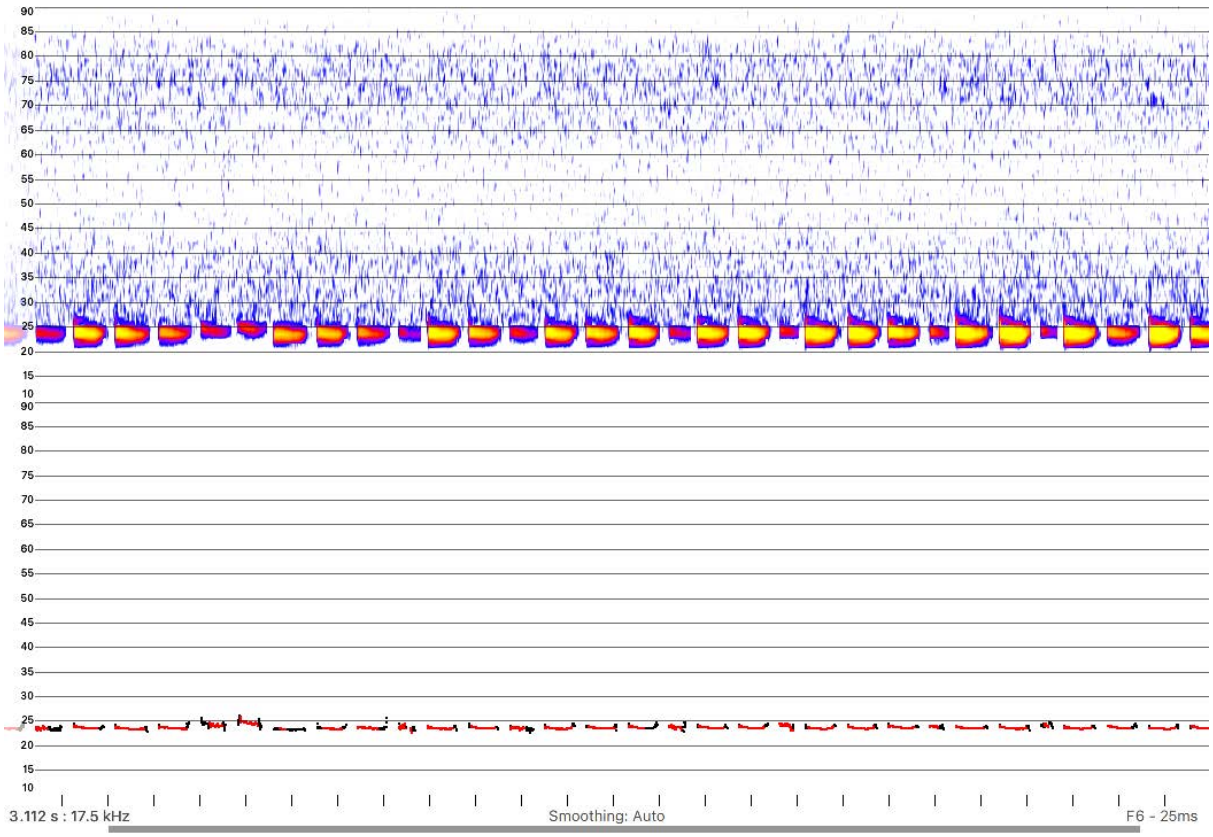


*Figure 3: Ozimops planiceps (high confidence ID).*

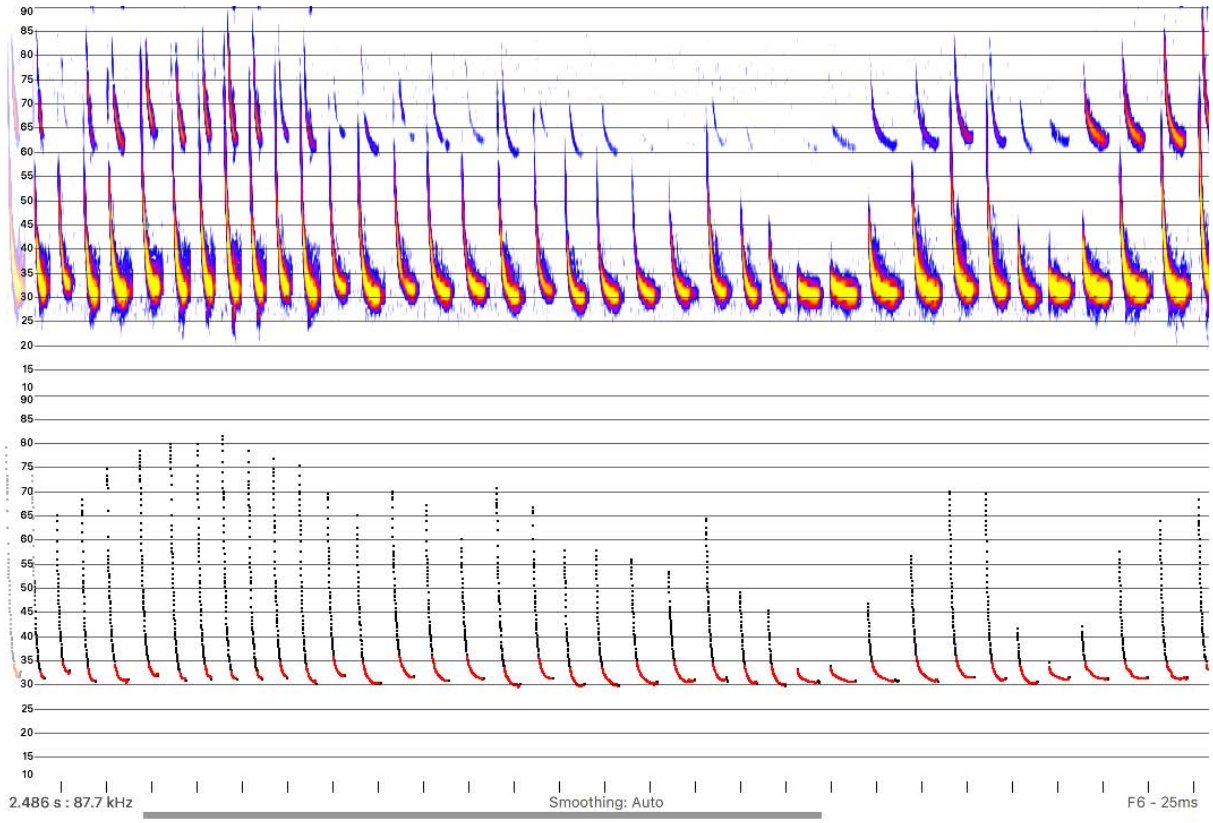


*Figure 4 – Chalinolobus gouldii (high confidence ID).*

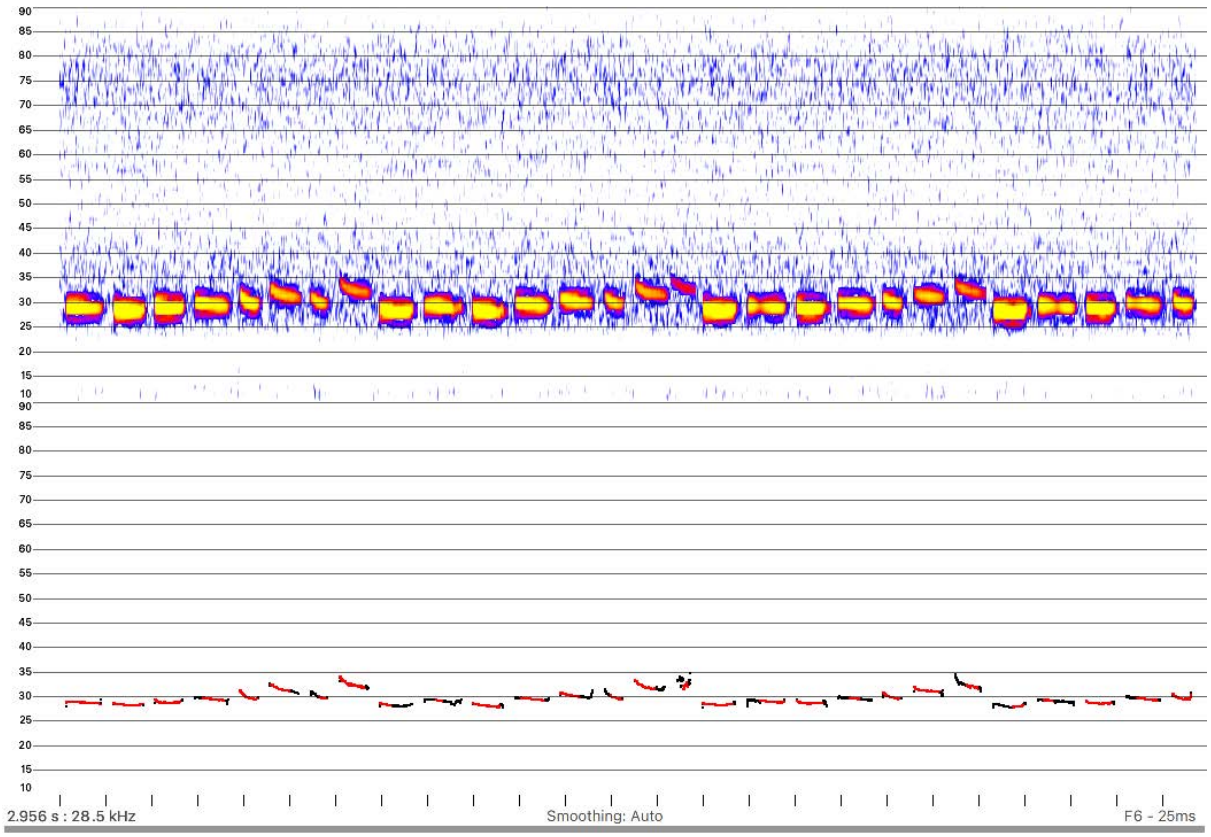


*Figure 5: Ozimops ridei or Ozimops petersi (high confidence ID).*

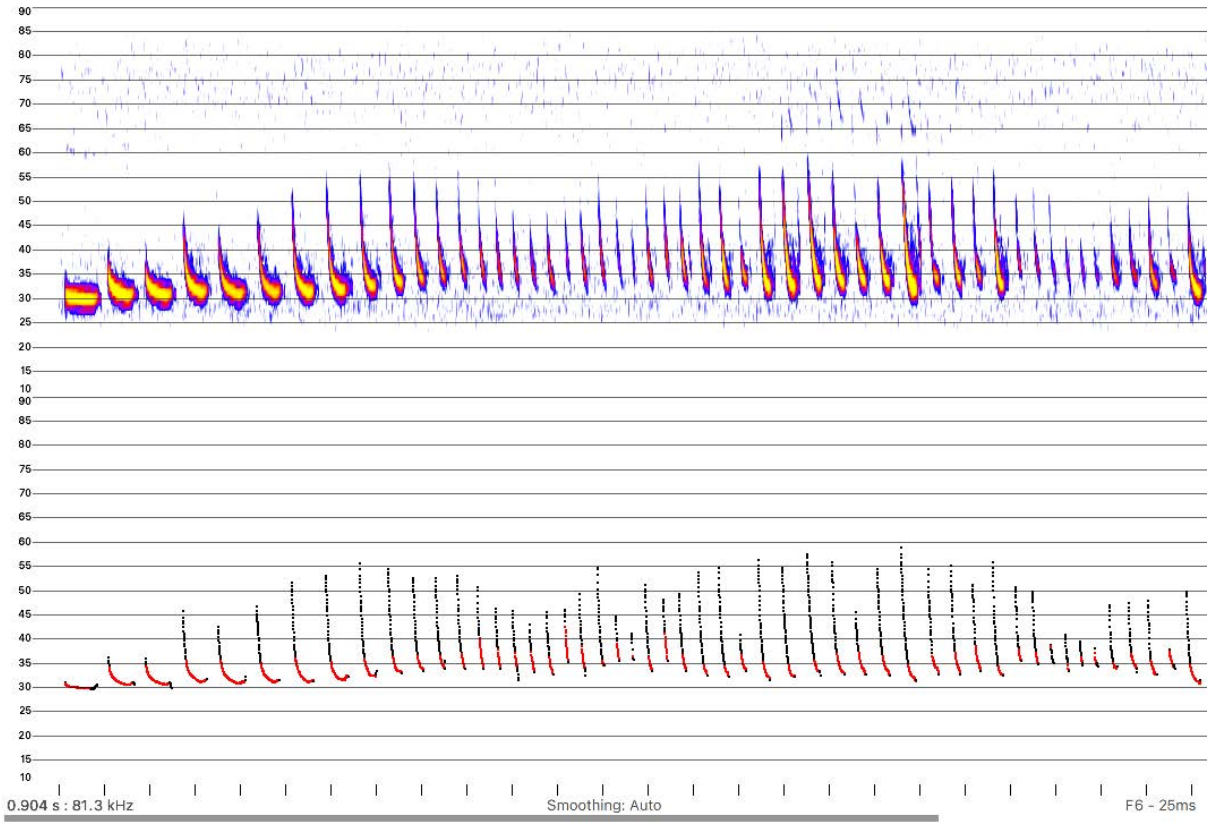


*Figure 6 – Scotorepens balstoni (moderate ID confidence)*

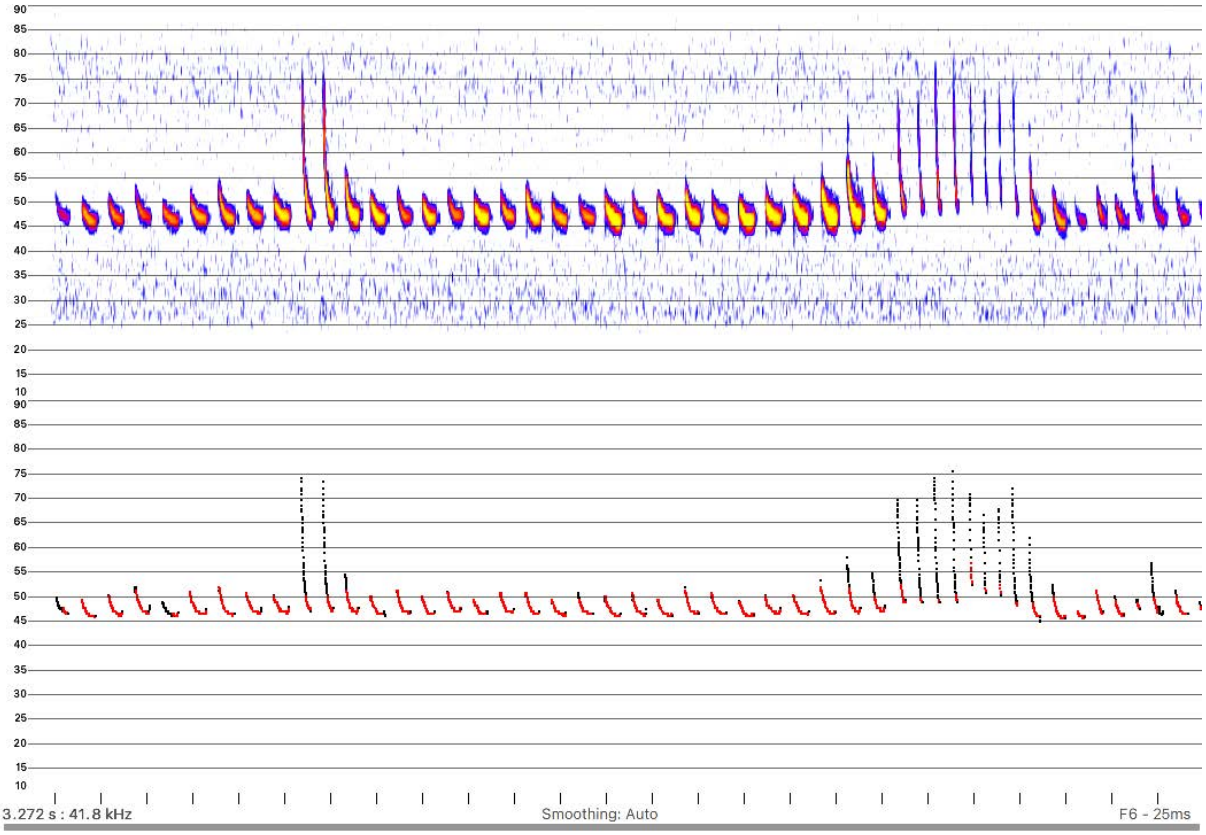


*Figure 7: Vespadelus vulturnus (high ID confidence).*

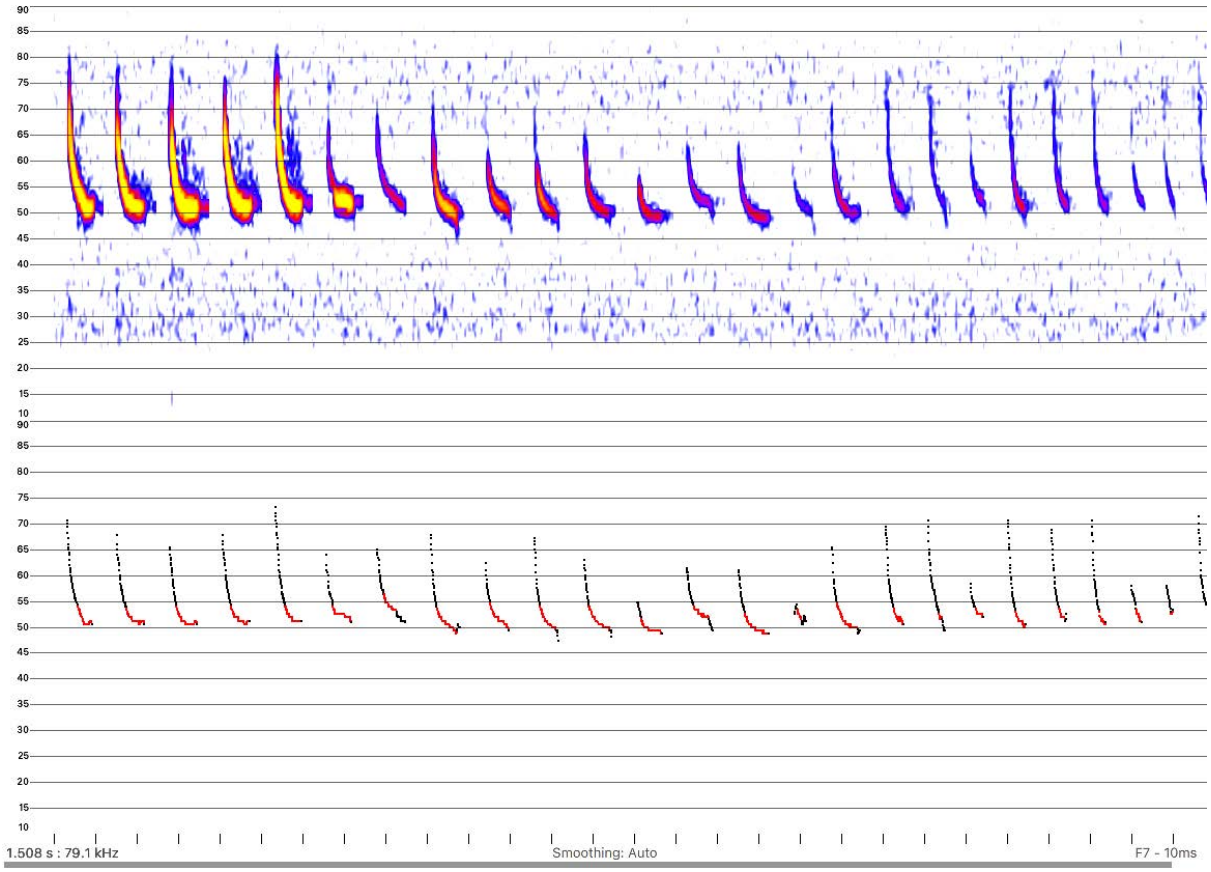


*Figure 8 – Chalinolobus morio (high ID confidence).*

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# 5. Appendix

## 5.1 Analyst experience

The author and analyst, Lachlan McRae, has collected hundreds of microbat reference calls throughout NSW. Hundreds of hours have been spent processing and extracting call metrics from those reference calls to determine identification features for each species. These reference calls now form part of his personal NSW reference call library, which is used to significantly increase the accuracy of microbat call analysis within NSW. Relevant official qualifications/completed-courses are listed below:

- PhD on the ecology and conservation of the threatened large-eared pied bat (*Chalinolobus dwyeri*) and eastern cave bat (*Vespadelus troughtoni*) – Macquarie University (in progress).
- Anabat Insight Advanced Workshop – Titley Scientific.
- Kaleidoscope Pro Advanced Training – Wildlife Acoustics.
- Worked as a Fauna Ecologist within the NSW Biodiversity Offset Scheme since 2019.
- Bachelor of Environmental Science and Management HONOURS (1st Class) – University of Newcastle.

Lachlan has also gone on to have multiple one-on-one trainings with Dave Roberts from Wildlife Acoustics, Julie Dawson (formerly Broken-Brow) from Titley Scientific, and Brad Law from NSW DPI to further validate his analysis skills and discuss advanced concepts beyond the scope of the courses. Lachlan keeps in regular communication with recognised bat experts such as Brad Law, Chris Corben, and Michael Pennay to ensure he remains at the forefront of the latest techniques and knowledge to identify bat calls.

# APPENDIX E MICROBAT CALL ANALYSIS REPORT SUMMER 2024

# Bat Call Analysis Report

# The Plains Renewable Energy Park Project

Prepared for ERM

Prepared by:

Green Tape Solutions / ACN 162 130 627 / ABN 20 162 130 627
PO BOX 416 Rockhampton QLD 4700 / PO BOX 282, Morayfield, QLD, 4506 / www.greentapesolutions.com.au
Telephone: 07 5428 6372 / Email: admin@greentapesolutions.com.au

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| Revision | Date | Prepared by | Reviewed by | Approved by |
|---|---|---|---|---|
| Version A | 14/11/2024 | KM | ERM | Client |

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# 1.0 Introduction

## 1.1 Background

Green Tape Solutions were commissioned to undertake bat call analysis for The Plains project located north of Deniliquin in New South Wales.

## 1.2 Scope of Work

The specific scope of works for this report includes the following:

- Outline the methodology used to analyse the microbat call within the subject site; and,
- Present the findings of all of the bat call surveys conducted at the project site;

# 2.0 Methodology

## 2.1 Capture Technique

Microbat calls were sampled using eight (8) Chorus detectors (Titley Electronics). Passive monitoring was undertaken over a three months period over December 2023 – March 2024. One device was attached to a met mast and collected three (3) months of data. Seven (7) devices were then placed in one location for five (5) days and moved to another location for another 12 days. The original call files display Australian Eastern Standard Time. The data was analysed using Anabat Insight.

Monitoring commenced at dusk (approximately 1800 hours) and continued until dawn (approximately 0530 hours). Ultrasonic call monitoring surveys on anabat detectors were conducted using full-spectrum fitted with omnidirectional ultrasonic microphone.

## 2.2 Call Identification

Anabat recordings were analysed using Anabat software (Anabat Insight). Identifications were made by categorising call shape and frequency, with a species match given in consideration to region, known bat distributions, and habitats present. The focus of the bat surveys was to assess the presence of bat species found within the Project Area, and to assess the potential for rare and threatened species to occur.

Call identification for this dataset was based on call keys and descriptions published for Queensland (Reinhold *et al.*, 2001) and New South Wales (Pennay *et al.*, 2004).

Species' identification was further refined using the probability of occurrence of each species based on their geographic distribution (Churchill, 2008, Van Dyck and Strahan, 2008). Species nomenclature used in this report follows Churchill (2008).

The reliability of identification is as follows:

- **Definite** - one or more calls where there is no doubt about the identification of the species;
- **Probable** - most likely to be the species named, low probability of confusion with species that use similar calls; and,
- **Possible -** call is comparable with the named species, with a moderate to high probability of confusion with species of similar calls.

## 2.3 National Standard

The format and content of this report complies with the nationally accepted standards for the interpretation and reporting of Anabat and Songmeter data (Reardon, 2003), which is currently available from the Australasian Bat Society at www.ausbats.org.au.

# 3.0 Results

## 3.1 Total Species Recorded

The majority of calls were considered to be of medium to good quality calls.

A total of 91,171 sequence files were analysed. A proportion of these files (20,836) in this dataset contained background noise or resulted in poor-quality calls (or calls containing less than two pulses) that did not provide bat calls for analysis. While some call sequences were recognised as bat calls, the quality was not sufficient to assign species identification.

The location of each detector, including both the locality and GPS coordinates, is included in **Table 1.**

A summary of the species identified through bat call analysis is provided in **Table 2**. The total number of calls per detector (and the number of noise files) is also given in **Table 2**; this number is indicative of bat activity but may still include some background noise, poor-quality calls or calls with less than two pulses that were not identifiable.

**Table 1: Detector locations**

| Detectors | Coordinates – First Placement | Coordinates – Second placement |
|---|---|---|
| Chorus 17 | -34.810375,144.754074 | -34.813225,144.742096 |
| Chorus 18 | -34.740196,144.718170 | -34.685852,144.706467 |
| Chorus 22 | -34.675293,144.857895 | -34.677402,144.880356 |
| Chorus 3 | -34.800701,144.840134 | -34.792194,144.872406 |
| Chorus 9 | -34.698093,144.863831 | -34.807762,144.875259 |
| Chorus 17 | -34.810375,144.754074 | -34.813225,144.742096 |
| Chorus 18 | -34.740196,144.718170 | -34.685852,144.706467 |
| Met mast | -34.835568,144.750468 | |

A summary of the species identified through bat call analysis is provided in **Table 1**.

**Table 2: Summary of bat call analysis**

| Species | Biodiversity Act | EPBC Act | Chorus 3 | Chorus 9 | Chorus 13 | Chorus 16 | Chorus 17 | Chorus 18 | Chorus 22 | Metmast |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number of Calls (Noise and low quality calls)** | | | 6,196 (3369) | 5,794 (66) | 7,243 (704) | 9,608 (1639) | 7,553 (1631) | 9,941 (1290) | 8,995 (920) | 108,480 (101,278) |
| *Austronomus australis* | LC | NOC | Definite | Definite | Definite | Definite | Definite | Definite | Definite | Definite |
| *Chalinolobus gouldii* | LC | NOC | Definite | Definite | Definite | Definite | Definite | | Definite | Definite |
| *Chalinolobus morio* | LC | NOC | | Definite | | Definite | | | Definite | Definite |
| *Myotis macropus* | V | NOC | | Probable | Probable | Probable | Probable | Probable | | |
| *Nyctophilus geoffroyi* | LC | NOC | | Possible | Probable | Probable | Probable | Probable | | |
| *Nyctophilus gouldii* | LC | NOC | | Possible | Probable | Probable | Probable | Probable | | |
| *Ozimops planiceps* | LC | NOC | Probable | Probable | Probable | Probable | | Probable | Probable | Probable |
| *Ozimops ridei* | LC | NOC | Probable | Definite | Definite | Definite | Definite | Definite | Definite | Definite |
| *Scotorepens balstoni* | LC | NOC | Probable | Probable | Probable | Probable | Definite | Probable | Probable | Probable |
| *Scotorepens greyii* | LC | NOC | Possible | Possible | Probable | Definite | Probable | Possible | Possible | Definite |
| *Vespadelus darlingtoni* | LC | NOC | Probable | Definite | Probable | Probable | Probable | Definite | Definite | Probable |
| *Vespadelus regulus* | LC | NOC | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |
| *Vespadelus vulturnus* | LC | NOC | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |

LC: Least Concern, NOC: Not of Concern, V: Vulnerable

Note: where species occurred more than once, the highest reliability of identification has been included in the above table

## 3.2 Samples of Calls / Sequences Files

Samples of call extracted from the dataset for each species identified is provided in the following figures

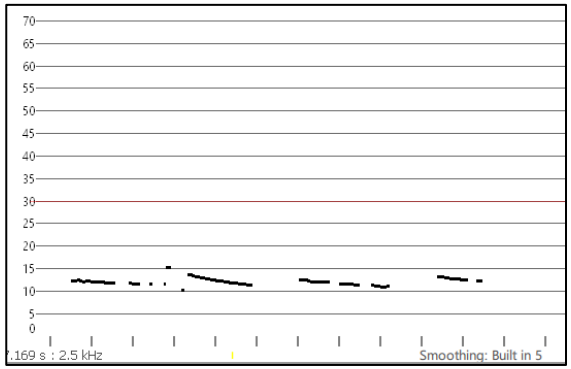
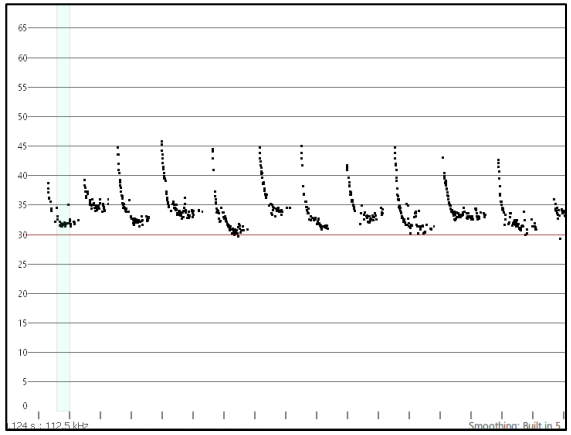
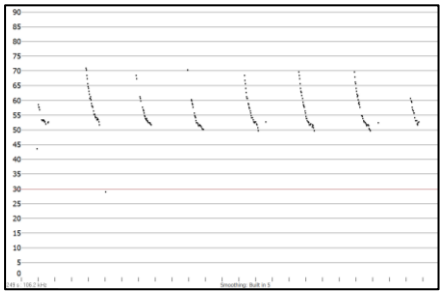
| Species | Calls | Known distribution (Extract from Ausbats maps from Australian Bat Society) |
|---|---|---|
| **Figure 1: *Austronomus australis***<br>Definite call.<br>This bat is easily recognised by its constant frequency calls range in bandwidth from 10.5 to 15 kHz (Pennay *et al.*, 2004). |  | |
| **Figure 2: *Chalinolobus gouldii***<br>Definite call.<br>This species has a curved shape call with characteristic frequency 28 to 34kHz. Pulse alternates in frequency and mostly down-sweeping tail or no tail. |  | |

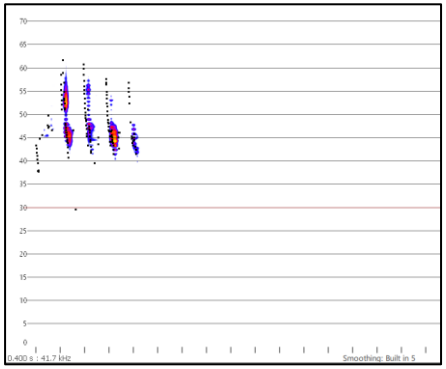
**Figure 3: *Chalinolobus morio***



Definite call.

*C. morio* has a down-sweeping tail curved pulse with characteristic frequency 47.5 to 53 kHz. It has often a very brief characteristic section. Species that overlap in frequency (*V. vulturnus*) but all have up-sweeping tails.

**Figure 4: *Myotis macropus***



Probable call.

Near-vertical pulse dropping to about 30 to 35-50kHz. *M. macropus* mostly have a pulse interval of less than 75ms and usually have one kink close to the middle so that the second part has a lesser slope than the first (Reinhold, 2001).

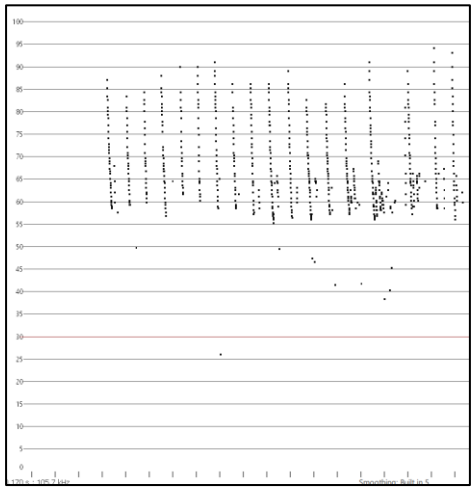
This call can be confused with *Nyctophilus spp* calls. The latest have usually a pulse interval greater than 95ms and are slightly more complicated structure with two kinks instead of one.

**Figure 5: *Nyctophilus spp***

Probable call.

This species displays a near-vertical pulse, characteristic frequency between 80 and 35KHz (Pennay *et al*, 2004).

The species from this genus cannot be distinguished from each other. There are 2 species that are known to occur in the project area.



*N. geoffroyi*

*N. gouldi*

**Figure 6: *Ozimops planiceps***

Probable call.

This bat calls between 24 and 29 kHz. These search calls have their energy max around 25-26 kHz.

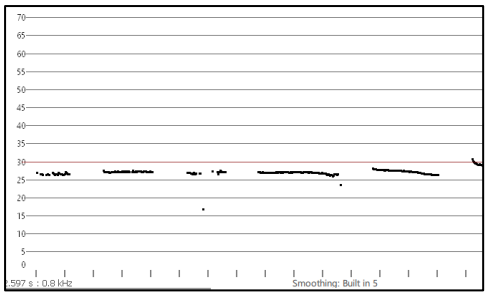


**Figure 7: *Ozimops ridei***

Probable call.

*O. ridei* calls are flat. Characteristic frequency of this species is between 28 to 36 kHz.

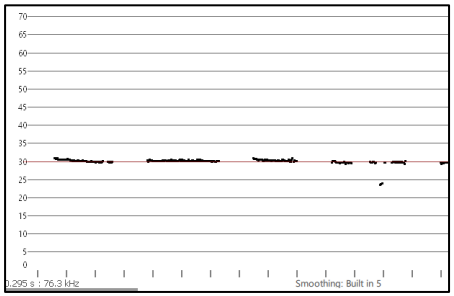


**Figure 8: *Scotorepens balstoni***

Probable call.

Pulse of this species is curved with tail variable, but an up-sweeping tail is often more prominent with greater duration. Characteristic frequency 31 to 35 kHz and the frequency of the knee 33 to 37 kHz.

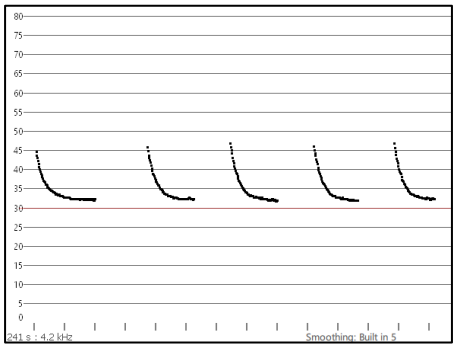


**Figure 9: *Scotorepens greyii***

Probable call.

*S. greyii* has a curved and up-sweeping tail pulse. Its characteristic frequency is between 36 to 41.5 kHz.

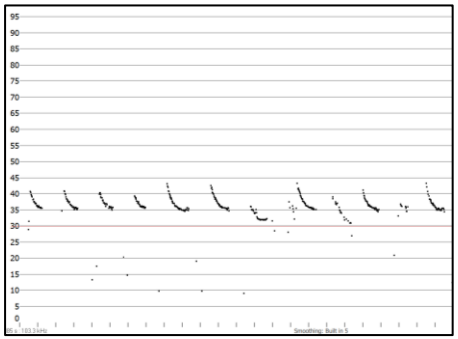
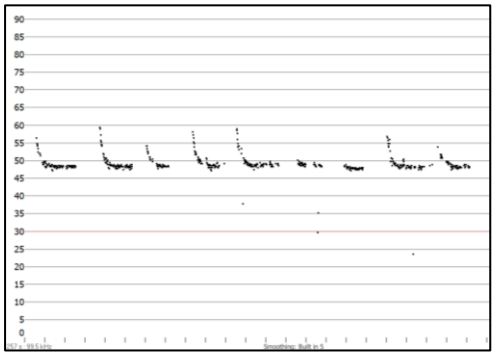


**Figure 10: *Vespadelus darlingtoni***



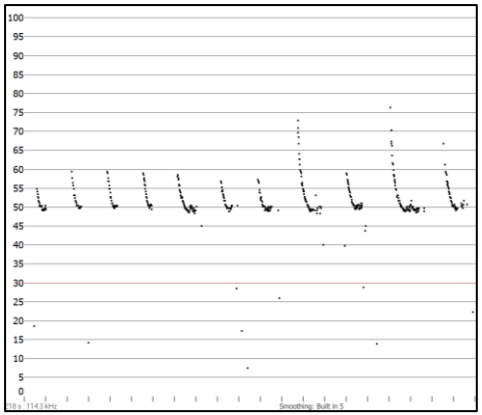
Probable call.

This species call has a curved call with no tail or sometime an up-sweeping tail. The call's characteristic frequency is between 42.5 to 48.5 kHz. Characteristic section is often, but not always, relatively long.

Shorter duration with up-sweeping tails and higher frequencies, cannot be distinguished from *V. regulus* or *V. vulturnus*.

---

**Figure 11: *Vespadelus regulus or Vespadelus vulturnus***



*Vespadelus regulus*

*Vespadelus vulturnus*

Probable call.

Characteristic frequency varies significantly over distribution from 40 to 55 kHz (n = 95). Call shape also varies between regions (see regional information).

# 4.0 Conclusion

A total of 13 microbat species were either confirmed 'definite', 'probable' or 'possible' within the Project area.

Calls from *Nyctophilus sp* or *Myotis macropus* have been confirmed across the project area. Two species of *Nyctophilus* possibly occur within the Project Area. None of them are listed under the Act. The calls of these species cannot be distinguished from each other.

Two of the reliably identified call types were only attributable to genus level due to similarities in call characteristics of the following groups:

- *Nyctophilus sp* and *Myotis macropus* species
  - ✓ Steep, almost-linear linear (FM) call pulses are distinctive from those of other bat calls but cannot be reliably identified to species; and
  - ✓ Two species potentially occur in the project area (*N. geoffroyi* and *N. gouldi*).
- *Scotorepens greyii* and *S. sanborni*
  - Steep, curvilinear (FM-qCF) pulses with Fc of 37-41 kHz;
  - Both Scotorepens spp. are likely to occur in the project area.

Table 3 outlines the calls that are considered probable or possible to be identified as *Myotis macropus*.

**Table 3: Summary of *Myotis macropus* Probable and Possible Calls Occurrence**

| Chorus 9 | | Chorus 13 | | Chorus 16 | | Chorus 17 | | Chorus 18 | |
|---|---|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **Date** | **Time** | **Date** | **Time** | **Date** | **Time** | **Date** | **Time** |
| 25/02/2024 | 3:15 pm | 20/02/2024 | 6:10 am | 20/02/2024 | 6:10 am | 19/02/2024 | 9.00 – 11.00 pm | 25/02/2024 | 9.00 - 10.30 pm |
| 28/02/2024 | 9.00 - 10.15 pm | 21/02/2024 | 12.50 - 5.30 am | 21/02/2024 | 12.50 - 5.30 am | 21/02/2024 | 12.00- 1.00 am | 26/02/2024 | 1.00 -1.30 am |
| 1/03/2024 | 10.00 - 10.30 pm | 23/02/2024 | 00.01 - 5.30 am | 23/02/2024 | 12 - 5.30 am | 24/02/2024 | 9.00 - 12.00 pm | 27/02/2024 | 9.00 - 11.52 pm |
| 2/03/2024 | 22:11 pm | 24/02/2024 | 8:27 - 11.08 am | 24/02/2024 | 8:27 - 11.08 am | | | 3/03/2024 | 12.22 - 2.40 am |
| 3/03/2024 | 3:29 pm | 25/02/2024 | 12.00 – 5.00 am | 25/02/2024 | 12.00 – 5.00 am | | | 9/03/2024 | 11.18 pm |
| 5/03/2024 | 0:06 am | 27/02/2024 | 9.00 - 11.30 am | 27/02/2024 | 9 - 11.30 am | | | 10/03/2024 | 12.53 am |
| | | 28/02/2024 | 12.-3.30 am | 28/02/2024 | 12.-3.30 am | | | | |

# 5.0 References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REINHOLD, L., LAW, B., FORD, G. A. & PENNAY, M. 2001. *Key to the Bat Calls of South-east Queensland and North-east New South Wales*, Queensland Department of Natural Resources and Mines.

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# APPENDIX F EPBC PROTECTED MATTER SEARCH TOOL RESULTS

# EPBC Act Protected Matters Report

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

Report created: 01-Oct-2024

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

Caveat
Acknowledgements

# Summary

## Matters of National Environment Significance

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

| | |
|---|---|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance (Ramsar | 5 |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 6 |
| Listed Threatened Species: | 41 |
| Listed Migratory Species: | 8 |

## Other Matters Protected by the EPBC Act

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

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

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

| | |
|---|---|
| Commonwealth Lands: | 23 |
| Commonwealth Heritage Places: | 1 |
| Listed Marine Species: | 16 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Australian Marine Parks: | None |
| Habitat Critical to the Survival of Marine Turtles: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 6 |
| Regional Forest Agreements: | None |
| Nationally Important Wetlands: | 3 |
| EPBC Act Referrals: | 18 |
| Key Ecological Features (Marine): | None |
| Biologically Important Areas: | None |
| Bioregional Assessments: | None |
| Geological and Bioregional Assessments: | None |

# Details

## Matters of National Environmental Significance

| Wetlands of International Importance (Ramsar Wetlands) | | [ Resource Information ] |
|---|---|---|
| Ramsar Site Name | Proximity | Buffer Status |
| Banrock station wetland complex | 300 - 400km upstream from Ramsar site | In feature area |
| Hattah-kulkyne lakes | 100 - 150km upstream from Ramsar site | In feature area |
| Nsw central murray state forests | Within Ramsar site | In buffer area only |
| Riverland | 200 - 300km upstream from Ramsar site | In feature area |
| The coorong, and lakes alexandrina and albert wetland | 400 - 500km upstream from Ramsar site | In feature area |

| 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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

| Community Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions | Endangered | Community may occur within area | In feature area |
| Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia | Endangered | Community likely to occur within area | In feature area |
| Natural Grasslands of the Murray Valley Plains | Critically Endangered | Community likely to occur within area | In buffer area only |
| Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions | Critically Endangered | Community likely to occur within area | In feature area |
| Weeping Myall Woodlands | Endangered | Community likely to occur within area | In feature area |

| Community Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered | Community likely to occur within area | In buffer area only |

## Listed Threatened Species [ Resource Information ]

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

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| BIRD | | | |
| Aphelocephala leucopsis<br>Southern Whiteface [529] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat known to occur within area | In feature area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area | In feature area |
| Climacteris picumnus victoriae<br>Brown Treecreeper (south-eastern) [67062] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Falco hypoleucos<br>Grey Falcon [929] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Leipoa ocellata<br>Malleefowl [934] | Vulnerable | Species or species habitat likely to occur within area | In buffer area only |
| Lophochroa leadbeateri leadbeateri<br>Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern) [82926] | Endangered | Species or species habitat known to occur within area | In feature area |
| Melanodryas cucullata cucullata<br>South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093] | Endangered | Species or species habitat known to occur within area | In feature area |
| Neophema chrysostoma<br>Blue-winged Parrot [726] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Pedionomus torquatus<br>Plains-wanderer [906] | Critically Endangered | Species or species habitat known to occur within area | In feature area |
| Polytelis swainsonii<br>Superb Parrot [738] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat known to occur within area | In feature area |
| Stagonopleura guttata<br>Diamond Firetail [59398] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| FISH | | | |
| Bidyanus bidyanus<br>Silver Perch, Bidyan [76155] | Endangered | Species or species habitat known to occur within area | In buffer area only |
| Craterocephalus fluviatilis<br>Murray Hardyhead [56791] | Endangered | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Galaxias rostratus<br>Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745] | Critically Endangered | Species or species habitat likely to occur within area | In feature area |
| Maccullochella macquariensis<br>Trout Cod [26171] | Endangered | Species or species habitat may occur within area | In buffer area only |
| Maccullochella peelii<br>Murray Cod [66633] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Macquaria australasica<br>Macquarie Perch [66632] | Endangered | Species or species habitat may occur within area | In feature area |
| **FROG** | | | |
| Crinia sloanei<br>Sloane's Froglet [59151] | Endangered | Species or species habitat may occur within area | In feature area |
| Litoria raniformis<br>Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| **MAMMAL** | | | |
| Dasyurus maculatus maculatus (SE mainland population)<br>Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat known to occur within area | In buffer area only |
| Nyctophilus corbeni<br>Corben's Long-eared Bat, South-eastern Long-eared Bat [83395] | Vulnerable | Species or species habitat may occur within area | In feature area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)<br>Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Endangered | Species or species habitat may occur within area | In buffer area only |
| **PLANT** | | | |
| Austrostipa metatoris<br>[66704] | Vulnerable | Species or species habitat may occur within area | In buffer area only |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Austrostipa wakoolica [66623] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| Brachyscome papillosa Mossgiel Daisy [6625] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Eleocharis obicis a spike rush [15320] | Vulnerable | Species or species habitat known to occur within area | In buffer area only |
| Lepidium monoplocoides Winged Pepper-cress [9190] | Endangered | Species or species habitat known to occur within area | In feature area |
| Maireana cheelii Chariot Wheels [8008] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Sclerolaena napiformis Turnip Copperburr [11742] | Endangered | Species or species habitat likely to occur within area | In buffer area only |
| Solanum karsense Menindee Nightshade [7776] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Swainsona plagiotropis Red Darling-pea, Red Swainson-pea [10804] | Vulnerable | Species or species habitat may occur within area | In buffer area only |
| REPTILE | | | |
| Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665] | Vulnerable | Species or species habitat likely to occur within area | In feature area |
| Hemiaspis damelii Grey Snake [1179] | Endangered | Species or species habitat known to occur within area | In feature area |
| Listed Migratory Species | | | [ Resource Information ] |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| **Migratory Marine Birds** | | | |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area | In feature area |
| **Migratory Terrestrial Species** | | | |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area | In feature area |
| **Migratory Wetlands Species** | | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat may occur within area | In feature area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area | In feature area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat likely to occur within area | In feature area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | Endangered | Species or species habitat likely to occur within area | In buffer area only |

## Other Matters Protected by the EPBC Act

**Commonwealth Lands** [ Resource Information ]

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

| Commonwealth Land Name | State | Buffer Status |
|---|---|---|
| **Commonwealth Bank of Australia** | | |
| Commonwealth Land - Commonwealth Bank of Australia [15296] | NSW | In buffer area only |
| **Commonwealth Trading Bank of Australia** | | |

| Commonwealth Land Name | State | Buffer Status |
|---|---|---|
| Commonwealth Land - Commonwealth Trading Bank of Australia [15308] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15309] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15312] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15311] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15310] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15303] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15305] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15304] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15307] | NSW | In buffer area only |
| Commonwealth Land - Commonwealth Trading Bank of Australia [15306] | NSW | In buffer area only |
| Communications, Information Technology and the Arts - Australian Postal Corporation | | |
| Commonwealth Land - Australian Postal Commission [15294] | NSW | In buffer area only |
| Communications, Information Technology and the Arts - Telstra Corporation Limited | | |
| Commonwealth Land - Australian Telecommunications Commission [15350] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Commission [15295] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Corporation [15313] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Corporation [15340] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Corporation [15302] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Corporation [15298] | NSW | In buffer area only |
| Commonwealth Land - Australian Telecommunications Corporation [15315] | NSW | In buffer area only |
| Commonwealth Land - Telstra Corporation Limited [15297] | NSW | In buffer area only |

| Commonwealth Land Name | State | Buffer Status |
|---|---|---|
| Commonwealth Land - Telstra Corporation Limited [15293] | NSW | In buffer area only |
| Commonwealth Land - Telstra Corporation Limited [15351] | NSW | In buffer area only |
| **Defence** | | |
| Commonwealth Land - Defence Service Homes Corporation [15292] | NSW | In buffer area only |

## Commonwealth Heritage Places [ Resource Information ]

| Name | State | Status | Buffer Status |
|---|---|---|---|
| **Historic** | | | |
| Hay Post Office | NSW | Listed place | In buffer area only |

## Listed Marine Species [ Resource Information ]

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| **Bird** | | | |
| Actitis hypoleucos<br>Common Sandpiper [59309] | | Species or species habitat may occur within area | In feature area |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Bubulcus ibis as Ardea ibis<br>Cattle Egret [66521] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Calidris acuminata<br>Sharp-tailed Sandpiper [874] | Vulnerable | Species or species habitat known to occur within area | In feature area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Calidris melanotos<br>Pectoral Sandpiper [858] | | Species or species habitat likely to occur within area overfly marine area | In feature area |
| Chalcites osculans as Chrysococcyx osculans<br>Black-eared Cuckoo [83425] | | Species or species habitat known to occur within area overfly marine area | In feature area |

| Scientific Name | Threatened Category | Presence Text | Buffer Status |
|---|---|---|---|
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | Vulnerable | Species or species habitat known to occur within area overfly marine area | In feature area |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area | In feature area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat known to occur within area overfly marine area | In feature area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat may occur within area overfly marine area | In feature area |
| Neophema chrysostoma<br>Blue-winged Parrot [726] | Vulnerable | Species or species habitat known to occur within area overfly marine area | In feature area |
| Rostratula australis as Rostratula benghalensis (sensu lato)<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat known to occur within area overfly marine area | In feature area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | Endangered | Species or species habitat likely to occur within area overfly marine area | In buffer area only |

# Extra Information

## State and Territory Reserves [ Resource Information ]

| Protected Area Name | Reserve Type | State | Buffer Status |
|---|---|---|---|
| Kalyarr | National Park | NSW | In buffer area only |
| Murrumbidgee Valley | Regional Park | NSW | In buffer area only |
| Murrumbidgee Valley | National Park | NSW | In buffer area only |
| Oolambeyan | National Park | NSW | In buffer area only |
| South West Woodland | Nature Reserve | NSW | In buffer area only |
| Toogimbie | Indigenous Protected Area | NSW | In buffer area only |

## Nationally Important Wetlands [ Resource Information ]

| Wetland Name | State | Buffer Status |
|---|---|---|
| Black Swamp and Coopers Swamp | NSW | In buffer area only |
| Lachlan Swamp (Part of mid Lachlan Wetlands) | NSW | In buffer area only |
| Werai Forest | NSW | In buffer area only |

## EPBC Act Referrals [ Resource Information ]

| Title of referral | Reference | Referral Outcome | Assessment Status | Buffer Status |
|---|---|---|---|---|
| Baldon Wind Farm | 2024/09772 | | Assessment | In buffer area only |
| Billabong Creek Regulators Project | 2024/09939 | | Completed | In buffer area only |
| Bullawah Wind Farm | 2022/09423 | | Assessment | In buffer area only |
| Dinawan Wind Farm | 2023/09537 | | Assessment | In buffer area only |
| EnergyConnect NSW - Eastern Section | 2020/8766 | | Post-Approval | In feature area |
| New transmission infrastructure ? Victoria NSW Interconnector ? West (NSW) | 2024/09871 | | Assessment | In buffer area only |
| Pottinger Solar Farm | 2023/09678 | | Referral Decision | In buffer area only |
| Pottinger Wind Farm | 2023/09679 | | Assessment | In feature area |

| Title of referral | Reference | Referral Outcome | Assessment Status | Buffer Status |
|---|---|---|---|---|
| | | | | |
| Tchelery Wind Farm | 2023/09617 | | Referral Decision | In buffer area only |
| The Plains Solar Farm | 2023/09584 | | Assessment | In feature area |
| The Plains Wind Farm | 2022/09404 | | Assessment | In feature area |
| Wilan Wind Farm | 2022/09437 | | Assessment | In buffer area only |
| Yanco Delta Wind Farm | 2022/09214 | | Post-Approval | In buffer area only |
| Not controlled action | | | | |
| Construction of a nominal 150mm diameter water main | 2011/5839 | Not Controlled Action | Completed | In buffer area only |
| Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia | 2015/7522 | Not Controlled Action | Completed | In feature area |
| INDIGO Central Submarine Telecommunications Cable | 2017/8127 | Not Controlled Action | Completed | In feature area |
| Nimmie-Caira Water Project, Maude to Balranald, NSW | 2018/8234 | Not Controlled Action | Completed | In buffer area only |
| Not controlled action (particular manner) | | | | |
| INDIGO Marine Cable Route Survey (INDIGO) | 2017/7996 | Not Controlled Action (Particular Manner) | Post-Approval | In feature area |

# Caveat

## 1 PURPOSE

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

The report contains the mapped locations of:

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

## 2 DISCLAIMER

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

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

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

## 4 LIMITATIONS

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

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

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

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

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

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

# Acknowledgements

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

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

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

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

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Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

# APPENDIX G CREDIT REPORTS (SUBJECT LAND)

Vegetation Zones

Predicted Species

Candidate Species

Credit Summary

Biodiversity Credit Report (Like for Like)

Biodiversity Credit Report (Variations)

# BAM Vegetation Zones Report

## Proposal Details

Assessment Id
00048619/BAAS23027/24/00048622

Assessment name
The Plains Wind Farm Subject Land

BAM data last updated *
05/08/2025

Assessor Name
Claire Hewitt

Report Created
07/08/2025

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS20009

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
5

BOS entry trigger

Date Finalised
07/08/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Vegetation Zones

| # | Name | PCT | Condition | Area | Minimum number of plots | Management zones |
|---|---|---|---|---|---|---|
| 1 | 17_Moderate | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Moderate | 1.02 | 1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 24_Moderate | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Moderate | 3.77 | 2 | |
| 3 | 44_Moderate | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Moderate | 54.5 | 5 | |
| 4 | 153_Good | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones | Good | 4.67 | 2 | |
| 5 | 157_Good | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Good | 13.65 | 3 | |
| 6 | 160_Good | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Good | 27.61 | 4 | |
| 7 | 163_Moderate | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Moderate | 28.82 | 4 | |
| 8 | 164_Good | 164-Cotton Bush open shrubland of the semi-arid (warm) zone | Good | 841.5 | 7 | |
| 9 | 164_Malacocera | 164-Cotton Bush open shrubland of the semi-arid (warm) zone | Malacocera | 6.81 | 3 | |
| 10 | 164_Moderate | 164-Cotton Bush open shrubland of the semi-arid (warm) zone | Moderate | 1029.77 | 8 | |
| 11 | 216_Low | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Low | 1.18 | 1 | |

# BAM Predicted Species Report

## Proposal Details

| Assessment Id | Proposal Name | BAM data last updated * |
|---|---|---|
| 00048619/BAAS23027/24/00048622 | The Plains Wind Farm Subject Land | 05/08/2025 |
| **Assessor Name** | **Report Created** | **BAM Data version *** |
| Claire Hewitt | 07/08/2025 | Current classification (live - default) (82) |
| **Assessor Number** | **Assessment Type** | **BAM Case Status** |
| BAAS20009 | Major Projects | Finalised |
| **Assessment Revision** | **BOS entry trigger** | **Date Finalised** |
| 5 | | 07/08/2025 |

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

| Common Name | Scientific Name | Vegetation Types(s) |
|---|---|---|
| Australasian Bittern | Botaurus poiciloptilus | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| Australian Painted Snipe | Rostratula australis | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| Black Falcon | Falco subniger | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |

| | | |
|---|---|---|
| Black Falcon | Falco subniger | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Blue-billed Duck | Oxyura australis | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| Blue-winged Parrot | Neophema chrysostoma | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |

| | | |
|---|---|---|
| Brolga | Grus rubicunda | |
| Curlew Sandpiper | Calidris ferruginea | |
| Diamond Firetail | Stagonopleura guttata | |
| Dusky Woodswallow | Artamus cyanopterus cyanopterus | |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Freckled Duck | Stictonetta naevosa | |

| | | |
|---|---|---|
| Gilbert's Whistler | Pachycephala inornata | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| Grey Falcon | Falco hypoleucos | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Grey-crowned Babbler (eastern subspecies) | Pomatostomus temporalis temporalis | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |

| | | |
|---|---|---|
| Grey-crowned Babbler (eastern sub | Pomatostomus temporalis temporali | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Little Eagle | Hieraaetus morphnoides | |
| Little Pied Bat | Chalinolobus picatus | |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Magpie Goose | Anseranas semipalmata | |

| | | |
|---|---|---|
| Magpie Goose | Anseranas semipalmata | |
| Pied Honeyeater | Certhionyx variegatus | |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| Pink Cockatoo | Lophochroa leadbeateri | |
| Plains-wanderer | Pedionomus torquatus | |
| Redthroat | Pyrrholaemus brunneus | |
| Southern Whiteface | Aphelocephala leucopsis | |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |

| | | |
|---|---|---|
| Southern Whiteface | Aphelocephala leucopsis | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Spotted Harrier | Circus assimilis | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| Square-tailed Kite | Lophoictinia isura | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| Swift Parrot | Lathamus discolor | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| Western Blue-tongued Lizard | Tiliqua occipitalis | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| White-bellied Sea-Eagle | Haliaeetus leucogaster | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |

| | | |
|---|---|---|
| White-bellied Sea-Eagle | Haliaeetus leucogaster | |
| White-fronted Chat | Epthianura albifrons | |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion |
| | | 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones |
| | | 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |
| | | 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones |
| | | 164-Cotton Bush open shrubland of the semi-arid (warm) zone |
| | | 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion |
| White-throated Needletail | Hirundapus caudacutus | |

| | | |
|---|---|---|
| Yellow-bellied Sheathtail-bat | Saccolaimus flaviventris | 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) |
| | | 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains |
| | | 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains |

### Threatened species Manually Added

| Common Name | Scientific Name |
|---|---|
| Grey-crowned Babbler (eastern subspecies) | Pomatostomus temporalis temporalis |

### Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

| Common Name | Scientific Name | Justification in the BAM-C |
|---|---|---|

# BAM Candidate Species Report

## Proposal Details

| | | |
|---|---|---|
| Assessment Id<br>00048619/BAAS23027/24/00048622 | Proposal Name<br>The Plains Wind Farm Subject Land | BAM data last updated *<br>05/08/2025 |
| Assessor Name<br>Claire Hewitt | Report Created<br>07/08/2025 | BAM Data version *<br>Current classification (live - default) (82) |
| Assessor Number<br>BAAS20009 | Assessment Type<br>Major Projects | BAM Case Status<br>Finalised |
| Assessment Revision<br>5 | BOS entry trigger | Date Finalised<br>07/08/2025 |

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## List of Species Requiring Survey

| Name | Presence | Survey Months |
|---|---|---|
| ***Ardeotis australis***<br>Australian Bustard | No (surveyed) | ☐ Jan ☑ Feb ☑ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Austrostipa wakoolica***<br>A spear-grass | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Brachyscome muelleroides***<br>Claypan Daisy | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |

| | | |
|---|---|---|
| ***Brachyscome papillosa***<br>Mossgiel Daisy | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Calotis moorei***<br>A burr-daisy | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Convolvulus tedmoorei***<br>Bindweed | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Cullen parvum***<br>Small Scurf-pea | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Hemiaspis damelii***<br>Grey Snake | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Lepidium monoplocoides***<br>Winged Peppercress | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☑ Dec<br>☐ Survey month outside the specified months? |

| | | |
|---|---|---|
| ***Leptorhynchos orientalis***<br>Lanky Buttons | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Litoria raniformis***<br>Southern Bell Frog | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☑ Dec<br>☐ Survey month outside the specified months? |
| ***Lophochroa leadbeateri***<br>Pink Cockatoo | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☑ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Lophoictinia isura***<br>Square-tailed Kite | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☑ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Maireana cheelii***<br>Chariot Wheels | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☑ Dec<br>☐ Survey month outside the specified months? |
| ***Myotis macropus***<br>Southern Myotis | Yes (surveyed) | ☑ Jan ☑ Feb ☑ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☑ Dec<br>☐ Survey month outside the specified months? |

| | | |
|---|---|---|
| ***Pedionomus torquatus***<br>Plains-wanderer | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Pilularia novae-hollandiae***<br>Austral Pillwort | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Sclerolaena napiformis***<br>Turnip Copperburr | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☑ Dec<br>☐ Survey month outside the specified months? |
| ***Swainsona murrayana***<br>Slender Darling Pea | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Swainsona plagiotropis***<br>Red Darling Pea | Yes (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Swainsona sericea***<br>Silky Swainson-pea | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |

# BAM Candidate Species Report

## Threatened species Manually Added

None added

## Threatened species assessed as not on site

Refer to BAR for detailed justification

| Common name | Scientific name | Justification in the BAM-C |
|---|---|---|
| Curlew Sandpiper | Calidris ferruginea | Habitat constraints |
| Koala | Phascolarctos cinereus | Habitat constraints |
| Little Eagle | Hieraaetus morphnoides | Habitat constraints |
| Masked Owl | Tyto novaehollandiae | Habitat constraints |
| Menindee Nightshade | Solanum karsense | Refer to BAR |
| Pink-tailed Legless Lizard | Aprasia parapulchella | Habitat constraints |
| Swift Parrot | Lathamus discolor | Habitat constraints |
| White-bellied Sea-Eagle | Haliaeetus leucogaster | Habitat constraints |

# BAM Credit Summary Report

## Proposal Details

Assessment Id
00048619/BAAS23027/24/00048622

Proposal Name
The Plains Wind Farm Subject Land

BAM data last updated *
05/08/2025

Assessor Name
Claire Hewitt

Report Created
07/08/2025

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS20009

BAM Case Status
Finalised

Date Finalised
07/08/2025

Assessment Revision
5

BOS entry trigger

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

| Zone | Vegetation zone name | TEC name | Current Vegetation integrity score | Change in Vegetation integrity (loss / gain) | Area (ha) | Sensitivity to loss (Justification) | Species sensitivity to gain class | BC Act Listing status | EPBC Act listing status | Biodiversity risk weighting | Potential SAII | Ecosystem credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones** | | | | | | | | | | | | |
| 4 | 153_Good | Not a TEC | 86.5 | 86.5 | 4.7 | PCT Cleared - 40% | High Sensitivity to Gain | | | 1.50 | | 152 |
| | | | | | | | | | | | **Subtotal** | **152** |
| **Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion** | | | | | | | | | | | | |
| 11 | 216_Low | Not a TEC | 34.2 | 34.2 | 1.2 | PCT Cleared - 0% | High Sensitivity to Gain | | | 1.50 | | 15 |
| | | | | | | | | | | | **Subtotal** | **15** |
| **Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion** | | | | | | | | | | | | |
| 5 | 157_Good | Not a TEC | 82.5 | 82.5 | 13.6 | PCT Cleared - 60% | High Sensitivity to Gain | | | 1.75 | | 493 |
| | | | | | | | | | | | **Subtotal** | **493** |
| **Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains** | | | | | | | | | | | | |
| 2 | 24_Moderate | Not a TEC | 53.1 | 53.1 | 3.8 | PCT Cleared - 20% | High Sensitivity to Gain | | | 1.50 | | 75 |
| | | | | | | | | | | | **Subtotal** | **75** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cotton Bush open shrubland of the semi-arid (warm) zone** | | | | | | | | | | | | |
| 8 | 164_Good | Not a TEC | 80.4 | 80.4 | 841.5 | PCT Cleared - 8% | High Sensitivity to Gain | | | 1.50 | | 25382 |
| 9 | 164_Malacocera | Not a TEC | 80.5 | 80.5 | 6.8 | PCT Cleared - 8% | High Sensitivity to Gain | | | 1.50 | | 205 |
| 10 | 164_Moderate | Not a TEC | 39.8 | 39.8 | 1029.8 | PCT Cleared - 8% | High Sensitivity to Gain | | | 1.50 | | 15372 |
| | | | | | | | | | | | **Subtotal** | **40959** |
| **Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones** | | | | | | | | | | | | |
| 7 | 163_Moderate | Not a TEC | 64 | 64.0 | 28.8 | PCT Cleared - 26% | High Sensitivity to Gain | | | 1.50 | | 692 |
| | | | | | | | | | | | **Subtotal** | **692** |
| **Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion** | | | | | | | | | | | | |
| 3 | 44_Moderate | Not a TEC | 56.6 | 56.6 | 54.5 | PCT Cleared - 73% | High Sensitivity to Gain | | | 2.00 | | 1544 |
| | | | | | | | | | | | **Subtotal** | **1544** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)** | | | | | | | | | | | | |
| 1 | 17_Moderate | Not a TEC | 67.6 | 67.6 | 1 | PCT Cleared - 63% | High Sensitivity to Gain | | | 1.75 | | 30 |
| | | | | | | | | | | | **Subtotal** | **30** |
| **Nitre Goosefoot shrubland wetland on clays of the inland floodplains** | | | | | | | | | | | | |
| 6 | 160_Good | Not a TEC | 72.6 | 72.6 | 27.6 | PCT Cleared - 28% | High Sensitivity to Gain | | | 1.50 | | 751 |
| | | | | | | | | | | | **Subtotal** | **751** |
| | | | | | | | | | | | **Total** | **44711** |

## Species credits for threatened species

| Vegetation zone name | Habitat condition (Vegetation Integrity) | Change in habitat condition | Area (ha)/Count (no. individuals) | Sensitivity to loss (Justification) | Sensitivity to gain (Justification) | BC Act Listing status | EPBC Act listing status | Potential SAII | Species credits |
|---|---|---|---|---|---|---|---|---|---|
| ***Austrostipa wakoolica / A spear-grass ( Flora )*** | | | | | | | | | |
| 17_Moderate | 67.6 | 67.6 | 1 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 34 |
| | | | | | | | | **Subtotal** | **34** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ***Brachyscome papillosa / Mossgiel Daisy ( Flora )*** | | | | | | | | | |
| 24_Moderate | 53.1 | 53.1 | 1.5 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 39 |
| 157_Good | 82.5 | 82.5 | 8 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 328 |
| 160_Good | 72.6 | 72.6 | 16.8 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 609 |
| 164_Good | 80.4 | 80.4 | 247.1 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 9938 |
| 164_Malacocera | 80.5 | 80.5 | 2.3 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 94 |
| 164_Moderate | 39.8 | 39.8 | 371.6 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 7397 |
| 216_Low | 34.2 | 34.2 | 1.2 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 20 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Subtotal** | **18425** |
| ***Calotis moorei / A burr-daisy ( Flora )*** | | | | | | | | | |
| 153_Good | 86.5 | 86.5 | 3 | Geographic Distribution | Ecology or response to management is poorly known | Endangered | Endangered | True | 191 |
| 157_Good | 82.5 | 82.5 | 7.2 | Geographic Distribution | Ecology or response to management is poorly known | Endangered | Endangered | True | 444 |
| | | | | | | | | **Subtotal** | **635** |
| ***Cullen parvum / Small Scurf-pea ( Flora )*** | | | | | | | | | |
| 44_Moderate | 56.6 | 56.6 | 18.6 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Endangered | Not Listed | False | 526 |
| | | | | | | | | **Subtotal** | **526** |
| ***Hemiaspis damelii / Grey Snake ( Fauna )*** | | | | | | | | | |
| 17_Moderate | 67.6 | 67.6 | 1 | Biodiversity Conservation Act listing status | Ecology or response to management is poorly known | Endangered | Endangered | False | 34 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24_Moderate | 53.1 | 53.1 | 3.8 | Biodiversity Conservation Act listing status | Ecology or response to management is poorly known | Endangered | Endangered | False | 100 |
| 160_Good | 72.6 | 72.6 | 27.6 | Biodiversity Conservation Act listing status | Ecology or response to management is poorly known | Endangered | Endangered | False | 1002 |
| | | | | | | | | **Subtotal** | **1136** |
| ***Lepidium monoplocoides / Winged Peppercress ( Flora )*** | | | | | | | | | |
| 153_Good | 86.5 | 86.5 | 3 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 128 |
| 160_Good | 72.6 | 72.6 | 14 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 510 |
| 163_Moderate | 64.0 | 64.0 | 5.9 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 189 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 164_Good | 80.4 | 80.4 | 0.06 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 2 |
| 164_Moderate | 39.8 | 39.8 | 2.8 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 56 |
| 216_Low | 34.2 | 34.2 | 1.2 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 20 |
| | | | | | | | | **Subtotal** | **905** |
| ***Leptorhynchos orientalis / Lanky Buttons ( Flora )*** | | | | | | | | | |
| 24_Moderate | 53.1 | 53.1 | 1.5 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Not Listed | False | 39 |
| | | | | | | | | **Subtotal** | **39** |
| ***Litoria raniformis / Southern Bell Frog ( Fauna )*** | | | | | | | | | |
| 164_Good | 80.4 | 80.4 | 1.9 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Vulnerable | False | 76 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 164_Moderate | 39.8 | 39.8 | 4.9 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Vulnerable | False | 97 |
| 163_Moderate | 64.0 | 64.0 | 0.23 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Vulnerable | False | 7 |
| | | | | | | | | **Subtotal** | **180** |
| ***Maireana cheelii / Chariot Wheels ( Flora )*** | | | | | | | | | |
| 157_Good | 82.5 | 82.5 | 9.6 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 394 |
| 164_Good | 80.4 | 80.4 | 237.8 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 9562 |
| 164_Malacocera | 80.5 | 80.5 | 2.3 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 94 |
| 164_Moderate | 39.8 | 39.8 | 376.1 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 7485 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 163_Moderate | 64.0 | 64.0 | 2 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 65 |
| | | | | | | | | **Subtotal** | **17600** |
| ***Myotis macropus / Southern Myotis ( Fauna )*** | | | | | | | | | |
| 17_Moderate | 67.6 | 67.6 | 1 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 34 |
| 24_Moderate | 53.1 | 53.1 | 0.18 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 5 |
| 157_Good | 82.5 | 82.5 | 0.81 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 33 |
| 160_Good | 72.6 | 72.6 | 11.7 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 426 |
| 164_Good | 80.4 | 80.4 | 107.5 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 4325 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 164_Moderate | 39.8 | 39.8 | 193.2 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 3846 |
| 163_Moderate | 64.0 | 64.0 | 5.9 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Vulnerable | Not Listed | False | 189 |
| | | | | | | | | **Subtotal** | **8858** |
| ***Pedionomus torquatus / Plains-wanderer ( Fauna )*** | | | | | | | | | |
| 164_Good | 80.4 | 80.4 | 0.18 | Environment Protection and Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Critically Endangered | True | 11 |
| | | | | | | | | **Subtotal** | **11** |
| ***Pilularia novae-hollandiae / Austral Pillwort ( Flora )*** | | | | | | | | | |
| 44_Moderate | 56.6 | 56.6 | 18.6 | Geographic Distribution | Ecology or response to management is poorly known | Endangered | Not Listed | False | 526 |
| | | | | | | | | **Subtotal** | **526** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ***Sclerolaena napiformis / Turnip Copperburr ( Flora )*** | | | | | | | | | |
| 157_Good | 82.5 | 82.5 | 0.1 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 4 |
| 164_Good | 80.4 | 80.4 | 1.6 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 63 |
| 164_Moderate | 39.8 | 39.8 | 3.6 | Biodiversity Conservation Act listing status | Effectiveness of management in controlling threats | Endangered | Endangered | False | 71 |
| | | | | | | | | **Subtotal** | **138** |
| ***Swainsona murrayana / Slender Darling Pea ( Flora )*** | | | | | | | | | |
| 157_Good | 82.5 | 82.5 | 7.9 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 326 |
| 160_Good | 72.6 | 72.6 | 0.09 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 164_Good | 80.4 | 80.4 | 275.1 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 11063 |
| 164_Malacocera | 80.5 | 80.5 | 2.3 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 94 |
| 164_Moderate | 39.8 | 39.8 | 372 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 7404 |
| 216_Low | 34.2 | 34.2 | 1.2 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 20 |
| 163_Moderate | 64.0 | 64.0 | 10 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 321 |
| | | | | | | | | **Subtotal** | **19231** |
| ***Swainsona plagiotropis / Red Darling Pea ( Flora )*** | | | | | | | | | |
| 164_Good | 80.4 | 80.4 | 0.23 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 9 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 164_Moderate | 39.8 | 39.8 | 0.57 | Biodiversity Conservation Act listing status | Ability to colonise improved habitat | Vulnerable | Vulnerable | False | 11 |
| | | | | | | | | **Subtotal** | **20** |

# BAM Biodiversity Credit Report (Like for like)

## Proposal Details

Assessment Id
00048619/BAAS23027/24/00048622

Proposal Name
The Plains Wind Farm Subject Land

BAM data last updated *
05/08/2025

Assessor Name
Claire Hewitt

Assessor Number
BAAS20009

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
07/08/2025

BAM Case Status
Finalised

Assessment Revision
5

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
07/08/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Potential Serious and Irreversible Impacts

| Name of threatened ecological community | Listing status | Name of Plant Community Type/ID |
|---|---|---|
| **Nil** | | |

| Species |
|---|
| **Calotis moorei** / A burr-daisy |
| **Pedionomus torquatus** / Plains-wanderer |

## Additional Information for Approval

PCT Outside Ibra Added

| PCT |
| --- |
| 164-Cotton Bush open shrubland of the semi-arid (warm) zone |

PCTs With Customized Benchmarks

| PCT |
| --- |
| No Changes |

Predicted Threatened Species Not On Site

| Name |
| --- |
| No Changes |

## Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

# BAM Biodiversity Credit Report (Like for like)

| Name of Plant Community Type/ID | Name of threatened ecological community | Area of impact | HBT Cr | No HBT Cr | Total credits to be retired |
|---|---|---|---|---|---|
| 17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Not a TEC | 1.0 | 0 | 30 | 30 |
| 24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Not a TEC | 3.8 | 0 | 75 | 75 |
| 44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Not a TEC | 54.5 | 0 | 1544 | 1544 |
| 153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones | Not a TEC | 4.7 | 0 | 152 | 152 |
| 157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Not a TEC | 13.7 | 0 | 493 | 493 |
| 160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Not a TEC | 27.6 | 0 | 751 | 751 |
| 163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Not a TEC | 28.8 | 0 | 692 | 692 |
| 164-Cotton Bush open shrubland of the semi-arid (warm) zone | Not a TEC | 1878.1 | 0 | 40959 | 40959 |
| 216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Not a TEC | 1.2 | 0 | 15 | 15 |

**17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Inland Floodplain Shrublands<br>This includes PCT's: 17, 115, 161, 241, 247, 375 | Inland Floodplain Shrublands >=50% and <70% | 17_Moderate | No | 30 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

**24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Inland Floodplain Shrublands<br>This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375 | Inland Floodplain Shrublands <50% | 24_Moderate | No | 75 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

**44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Riverine Plain Grasslands This includes PCT's: 44 | Riverine Plain Grasslands >=70% and <90% | 44_Moderate | No | 1544 | Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

**153-Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Aeolian Chenopod Shrublands This includes PCT's: 151, 152, 153, 154, 222, 225 | Aeolian Chenopod Shrublands <50% | 153_Good | No | 152 | Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

**157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | Riverine Chenopod Shrublands<br>This includes PCT's: 157, 158, 159, 195, 196, 211, 377 | Riverine Chenopod Shrublands >=50% and <70% | 157_Good | No | 493 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |
| | | | | | | |
| **160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains** | **Like-for-like credit retirement options** | | | | | |
| | Class | Trading group | Zone | HBT | Credits | IBRA region |
| | Inland Floodplain Shrublands<br>This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375 | Inland Floodplain Shrublands <50% | 160_Good | No | 751 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |
| | | | | | | |
| **163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones** | **Like-for-like credit retirement options** | | | | | |
| | Class | Trading group | Zone | HBT | Credits | IBRA region |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Riverine Chenopod Shrublands<br>This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466 | Riverine Chenopod Shrublands <50% | 163_Moderate | No | 692 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

| **164-Cotton Bush open shrubland of the semi-arid (warm) zone** | **Like-for-like credit retirement options** | | | | | |
|---|---|---|---|---|---|---|
| | Class | Trading group | Zone | HBT | Credits | IBRA region |
| | Riverine Chenopod Shrublands<br>This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466 | Riverine Chenopod Shrublands <50% | 164_Good | No | 25382 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |
| | Riverine Chenopod Shrublands<br>This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466 | Riverine Chenopod Shrublands <50% | 164_Malacocera | No | 205 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Riverine Chenopod Shrublands<br>This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466 | Riverine Chenopod Shrublands <50% | 164_Moderate | No | 15372 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

**216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Riverine Chenopod Shrublands<br>This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466 | Riverine Chenopod Shrublands <50% | 216_Low | No | 15 | Murrumbidgee,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

## Species Credit Summary

| Species | Vegetation Zone/s | Area / Count | Credits |
|---|---|---|---|
| **Austrostipa wakoolica** / A spear-grass | **17_Moderate** | 1.0 | 34.00 |

| | | | |
|---|---|---|---|
| **Brachyscome papillosa** / Mossgiel Daisy | **24_Moderate, 157_Good, 160_Good, 164_Good, 164_Malacocera, 164_Moderate, 216_Low** | 648.4 | 18425.00 |
| **Calotis moorei** / A burr-daisy | **153_Good, 157_Good** | 10.1 | 635.00 |
| **Cullen parvum** / Small Scurf-pea | **44_Moderate** | 18.6 | 526.00 |
| **Hemiaspis damelii** / Grey Snake | **17_Moderate, 24_Moderate, 160_Good** | 32.4 | 1136.00 |
| **Lepidium monoplocoides** / Winged Peppercress | **153_Good, 160_Good, 163_Moderate, 164_Good, 164_Moderate, 216_Low** | 26.9 | 905.00 |
| **Leptorhynchos orientalis** / Lanky Buttons | **24_Moderate** | 1.5 | 39.00 |
| **Litoria raniformis** / Southern Bell Frog | **164_Good, 164_Moderate, 163_Moderate** | 7.0 | 180.00 |
| **Maireana cheelii** / Chariot Wheels | **157_Good, 164_Good, 164_Malacocera, 164_Moderate, 163_Moderate** | 627.7 | 17600.00 |
| **Myotis macropus** / Southern Myotis | **17_Moderate, 24_Moderate, 157_Good, 160_Good, 164_Good, 164_Moderate, 163_Moderate** | 320.4 | 8858.00 |
| **Pedionomus torquatus** / Plains-wanderer | **164_Good** | 0.2 | 11.00 |
| **Pilularia novae-hollandiae** / Austral Pillwort | **44_Moderate** | 18.6 | 526.00 |

| | | | |
|---|---|---|---|
| **Sclerolaena napiformis** / Turnip Copperburr | **157_Good, 164_Good, 164_Moderate** | 5.2 | 138.00 |
| **Swainsona murrayana** / Slender Darling Pea | **157_Good, 160_Good, 164_Good, 164_Malacocera, 164_Moderate, 216_Low, 163_Moderate** | 668.6 | 19231.00 |
| **Swainsona plagiotropis** / Red Darling Pea | **164_Good, 164_Moderate** | 0.8 | 20.00 |

## Credit Retirement Options

Like-for-like credit retirement options

| | | |
|---|---|---|
| **Austrostipa wakoolica** / A spear-grass | Spp | IBRA subregion |
| | **Austrostipa wakoolica /** A spear-grass | Any in NSW |
| **Brachyscome papillosa** / Mossgiel Daisy | Spp | IBRA subregion |
| | **Brachyscome papillosa /** Mossgiel Daisy | Any in NSW |
| **Calotis moorei** / A burr-daisy | Spp | IBRA subregion |
| | **Calotis moorei /** A burr-daisy | Any in NSW |
| **Cullen parvum** / Small Scurf-pea | Spp | IBRA subregion |
| | **Cullen parvum /** Small Scurf-pea | Any in NSW |

| | | |
|---|---|---|
| **Hemiaspis damelii** / Grey Snake | Spp | IBRA subregion |
| | **Hemiaspis damelii /** Grey Snake | Any in NSW |
| **Lepidium monoplocoides** / Winged Peppercress | Spp | IBRA subregion |
| | **Lepidium monoplocoides /** Winged Peppercress | Any in NSW |
| **Leptorhynchos orientalis** / Lanky Buttons | Spp | IBRA subregion |
| | **Leptorhynchos orientalis /** Lanky Buttons | Any in NSW |
| **Litoria raniformis** / Southern Bell Frog | Spp | IBRA subregion |
| | **Litoria raniformis /** Southern Bell Frog | Any in NSW |
| **Maireana cheelii** / Chariot Wheels | Spp | IBRA subregion |
| | **Maireana cheelii /** Chariot Wheels | Any in NSW |
| **Myotis macropus** / Southern Myotis | Spp | IBRA subregion |
| | **Myotis macropus /** Southern Myotis | Any in NSW |
| **Pedionomus torquatus** / Plains-wanderer | Spp | IBRA subregion |

| | | |
|---|---|---|
| | **Pedionomus torquatus /** Plains-wanderer | Any in NSW |
| **Pilularia novae-hollandiae** / Austral Pillwort | Spp | IBRA subregion |
| | **Pilularia novae-hollandiae /** Austral Pillwort | Any in NSW |
| **Sclerolaena napiformis** / Turnip Copperburr | Spp | IBRA subregion |
| | **Sclerolaena napiformis /** Turnip Copperburr | Any in NSW |
| **Swainsona murrayana** / Slender Darling Pea | Spp | IBRA subregion |
| | **Swainsona murrayana /** Slender Darling Pea | Any in NSW |
| **Swainsona plagiotropis** / Red Darling Pea | Spp | IBRA subregion |
| | **Swainsona plagiotropis /** Red Darling Pea | Any in NSW |

# APPENDIX H CREDIT REPORTS (HAUL ROUTE DF)

Vegetation Zones

Predicted Species

Candidate Species

Credit Summary

Biodiversity Credit Report (Like for Like)

Biodiversity Credit Report (Variations)

# BAM Vegetation Zones Report

## Proposal Details

Assessment Id
00048619/BAAS23027/25/00054788

Assessment name
The Plains Wind Farm Haul Route

BAM data last updated *
05/08/2025

Assessor Name
Claire Hewitt

Report Created
07/08/2025

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS20009

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
2

BOS entry trigger

Date Finalised
07/08/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Vegetation Zones

| # | Name | PCT | Condition | Area | Minimum number of plots | Management zones |
|---|---|---|---|---|---|---|
| 1 | 123_Moderate | 123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion | Moderate | 0.29 | 1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 155_Low | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones | Low | 0.69 | 1 | |
| 3 | 158_Moderate | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) | Moderate | 0.22 | 1 | |

# BAM Predicted Species Report

## Proposal Details

| Assessment Id | Proposal Name | BAM data last updated * |
|---|---|---|
| 00048619/BAAS23027/25/00054788 | The Plains Wind Farm Haul Route | 05/08/2025 |
| **Assessor Name** | **Report Created** | **BAM Data version *** |
| Claire Hewitt | 07/08/2025 | Current classification (live - default) (82) |
| **Assessor Number** | **Assessment Type** | **BAM Case Status** |
| BAAS20009 | Major Projects | Finalised |
| **Assessment Revision** | **BOS entry trigger** | **Date Finalised** |
| 2 | | 07/08/2025 |

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

| Common Name | Scientific Name | Vegetation Types(s) |
|---|---|---|
| Black Falcon | Falco subniger | 123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Black-breasted Buzzard | Hamirostra melanosternon | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Blue-winged Parrot | Neophema chrysostoma | 123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion |
| Bolam's Mouse | Pseudomys bolami | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| Brolga | Grus rubicunda | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Dusky Hopping-mouse | Notomys fuscus | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |

| | | |
|---|---|---|
| Dusky Woodswallow | Artamus cyanopterus cyanopterus | 123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Flock Bronzewing | Phaps histrionica | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Forrest's Mouse | Leggadina forresti | |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Grey Falcon | Falco hypoleucos | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Hall's Babbler | Pomatostomus halli | |
| Kultarr | Antechinomys laniger | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Little Eagle | Hieraaetus morphnoides | |

| | | |
|---|---|---|
| Little Eagle | Hieraaetus morphnoides | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Little Pied Bat | Chalinolobus picatus | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Long-haired Rat | Rattus villosissimus | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Pied Honeyeater | Certhionyx variegatus | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Pink Cockatoo | Lophochroa leadbeateri | |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Redthroat | Pyrrholaemus brunneus | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Ringed Brown Snake | Pseudonaja modesta | |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |

| | | |
|---|---|---|
| Ringed Brown Snake | Pseudonaja modesta | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Rufous Fieldwren | Calamanthus campestris | |
| Sandy Inland Mouse | Pseudomys hermannsburgensis | |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| Scarlet-chested Parrot | Neophema splendida | |
| Southern Whiteface | Aphelocephala leucopsis | |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Spotted Harrier | Circus assimilis | |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Stripe-faced Dunnart | Sminthopsis macroura | |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Wedgesnout Ctenotus | Ctenotus brooksi | |
| White-fronted Chat | Epthianura albifrons | |

| | | |
|---|---|---|
| White-fronted Chat | Epthianura albifrons | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Woma | Aspidites ramsayi | 123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion |
| | | 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones |
| | | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |
| Yellow-bellied Sheathtail-bat | Saccolaimus flaviventris | 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) |

## Threatened species Manually Added

None added

## Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

| Common Name | Scientific Name | Justification in the BAM-C |
|---|---|---|

# BAM Candidate Species Report

## Proposal Details

| | | |
|---|---|---|
| Assessment Id<br>00048619/BAAS23027/25/00054788 | Proposal Name<br>The Plains Wind Farm Haul Route | BAM data last updated *<br>05/08/2025 |
| Assessor Name<br>Claire Hewitt | Report Created<br>07/08/2025 | BAM Data version *<br>Current classification (live - default) (82) |
| Assessor Number<br>BAAS20009 | Assessment Type<br>Major Projects | BAM Case Status<br>Finalised |
| Assessment Revision<br>2 | BOS entry trigger | Date Finalised<br>07/08/2025 |

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## List of Species Requiring Survey

| Name | Presence | Survey Months |
|---|---|---|
| ***Acacia notabilis***<br>Mallee Golden Wattle | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Acacia rivalis***<br>Creek Wattle | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Amytornis modestus obscurior***<br>Thick-billed Grasswren (north-west NSW subspecies) | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |

| | | |
|---|---|---|
| ***Antaresia stimsoni***<br>Stimson's Python | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Ardeotis australis***<br>Australian Bustard | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Atriplex infrequens***<br>A saltbush | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Convolvulus tedmoorei***<br>Bindweed | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Ctenophorus mirrityana***<br>Barrier Range Dragon | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Diplodactylus platyurus***<br>Eastern Fat-tailed Gecko | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |

| | | |
|---|---|---|
| ***Eleocharis obicis***<br>Spike-Rush | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Indigofera longibractea***<br>Showy Indigo | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Lucasium stenodactylum***<br>Crowned Gecko | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☐ Sep ☐ Oct ☑ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Swainsona flavicarinata***<br>Yellow-Keeled Swainsona | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Swainsona murrayana***<br>Slender Darling Pea | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Swainsona viridis***<br>Creeping Darling Pea | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr<br>☐ May ☐ Jun ☐ Jul ☐ Aug<br>☑ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |

# BAM Candidate Species Report

## Threatened species Manually Added

None added

## Threatened species assessed as not on site

Refer to BAR for detailed justification

| Common name | Scientific name | Justification in the BAM-C |
|---|---|---|
| Black-breasted Buzzard | Hamirostra melanosternon | Habitat constraints |
| Little Eagle | Hieraaetus morphnoides | Habitat constraints |
| Pink Cockatoo | Lophochroa leadbeateri | Habitat constraints |

# BAM Credit Summary Report

## Proposal Details

Assessment Id
00048619/BAAS23027/25/00054788

Proposal Name
The Plains Wind Farm Haul Route

BAM data last updated *
05/08/2025

Assessor Name
Claire Hewitt

Report Created
07/08/2025

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Current classification (live - default) (82)

Assessor Number
BAAS20009

BAM Case Status
Finalised

Date Finalised
07/08/2025

Assessment Revision
2

BOS entry trigger

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

| Zone | Vegetation zone name | TEC name | Current Vegetation integrity score | Change in Vegetation integrity (loss / gain) | Area (ha) | Sensitivity to loss (Justification) | Species sensitivity to gain class | BC Act Listing status | EPBC Act listing status | Biodiversity risk weighting | Potential SAII | Ecosystem credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bluebush shrubland on stony rises and downs in the arid and semi-arid zones** | | | | | | | | | | | | |
| 2 | 155_Low | Not a TEC | 36.8 | 36.8 | 0.69 | PCT Cleared - 50% | High Sensitivity to Gain | | | 1.75 | | 11 |
| | | | | | | | | | | | **Subtotal** | **11** |
| **Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion** | | | | | | | | | | | | |
| 1 | 123_Moderate | Not a TEC | 60.7 | 60.7 | 0.29 | PCT Cleared - 17% | High Sensitivity to Gain | | | 1.50 | | 7 |
| | | | | | | | | | | | **Subtotal** | **7** |
| **Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)** | | | | | | | | | | | | |
| 3 | 158_Moderate | Not a TEC | 61.5 | 61.5 | 0.22 | PCT Cleared - 88% | High Sensitivity to Gain | | | 2.00 | | 7 |
| | | | | | | | | | | | **Subtotal** | **7** |
| | | | | | | | | | | | **Total** | **25** |

## Species credits for threatened species

| Vegetation zone name | Habitat condition (Vegetation Integrity) | Change in habitat condition | Area (ha)/Count (no. individuals) | Sensitivity to loss (Justification) | Sensitivity to gain (Justification) | BC Act Listing status | EPBC Act listing status | Potential SAII | Species credits |
|---|---|---|---|---|---|---|---|---|---|

# BAM Biodiversity Credit Report (Like for like)

## Proposal Details

Assessment Id
00048619/BAAS23027/25/00054788

Proposal Name
The Plains Wind Farm Haul Route

BAM data last updated *
05/08/2025

Assessor Name
Claire Hewitt

Assessor Number
BAAS20009

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
07/08/2025

BAM Case Status
Finalised

Assessment Revision
2

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
07/08/2025

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Potential Serious and Irreversible Impacts

| Name of threatened ecological community | Listing status | Name of Plant Community Type/ID |
|---|---|---|
| **Nil** | | |

| Species |
|---|
| **Nil** |

## Additional Information for Approval

# BAM Biodiversity Credit Report (Like for like)

## PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

| PCT |
|---|
| No Changes |

Predicted Threatened Species Not On Site

| Name |
|---|
| No Changes |

## Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

| Name of Plant Community Type/ID | Name of threatened ecological community | Area of impact | HBT Cr | No HBT Cr | Total credits to be retired |
|---|---|---|---|---|---|
| 123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion | Not a TEC | 0.3 | 0 | 7 | 7 |
| 155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones | Not a TEC | 0.7 | 0 | 11 | 11 |
| 158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW) | Not a TEC | 0.2 | 0 | 7 | 7 |

# BAM Biodiversity Credit Report (Like for like)

**123-Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Stony Desert Mulga Shrublands<br>This includes PCT's: 60, 68, 120, 121, 123, 127, 130, 132, 138, 169, 194, 359 | Stony Desert Mulga Shrublands <50% | 123_Moderate | No | 7 | Barrier Range,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

**155-Bluebush shrubland on stony rises and downs in the arid and semi-arid zones**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Gibber Chenopod Shrublands<br>This includes PCT's: 155, 156 | Gibber Chenopod Shrublands >=50% and <70% | 155_Low | No | 11 | Barrier Range,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

# BAM Biodiversity Credit Report (Like for like)

**158-Old Man Saltbush - mixed chenopod shrubland of the semi-arid hot (persistently dry) and arid climate zones (north-western NSW)**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| Riverine Chenopod Shrublands<br>This includes PCT's: 158, 159, 195 | Riverine Chenopod Shrublands >=70% and <90% | 158_Moderate | No | 7 | Barrier Range,<br>or<br>Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

## Species Credit Summary

No Species Credit Data

## Credit Retirement Options

Like-for-like credit retirement options

# APPENDIX I BIRD AND BAT ADAPTIVE MANAGEMENT PLAN

# The Plains Wind Farm

## Bird and Bat Adaptive Management Plan

PREPARED FOR

Engie Australia Pty Ltd

DATE
15 April 2025
15 April 2025

REFERENCE
0667692

## DOCUMENT DETAILS

| | |
|---|---|
| DOCUMENT TITLE | The Plains Wind Farm |
| DOCUMENT SUBTITLE | Bird and Bat Adaptive Management Plan |
| PROJECT NUMBER | 0667692 |
| Date | 15 April 2025 |
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| Author | Rob Ashworth, Claire Hewitt |
| Client name | Engie Australia Pty Ltd |

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| Final | 1.0 | R. Ashworth | C. Hewitt | M. Davey | 15 April 2025 | |
| | | | | | | |

SIGNATURE PAGE

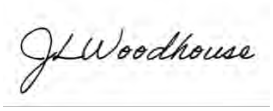
# The Plains Wind Farm

## Bird and Bat Adaptive Management Plan

0667692

**Robert Ashworth**
Ecologist

**Claire Hewitt**
Senior Ecologist / BAM Accredited Assessor (BAAS20009)



**Joanne Woodhouse**
Consulting Director, Project Manager

**Mark Davey**
Partner

Environmental Resources Management
Australia Pty Ltd
Level 14, 207 Kent St
Sydney NSW 2000

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## ACRONYMS AND ABBREVIATIONS

| Acronyms | Description |
|---|---|
| ALA | Atlas of Living Australia |
| BACI | Before-After-Control-Impact |
| BBAMP | Bird and Bat Adaptive Management Plan |
| CRM | Collision Risk Modelling |
| BAM | Biodiversity Assessment Method |
| BC Act | *Biodiversity Conservation Act 2016* (NSW) |
| BCS | NSW Biodiversity, Conservation and Science Directorate |
| BDAR | Biodiversity Development Assessment Report |
| BUS | Bird Utilisation Survey |
| $^{o}$C | Degrees Celsius |
| CASA | Civil Aviation Safety Authority |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| Cwth | Commonwealth |
| Cwth DCCEEW | Commonwealth Department of Climate Change, Energy, the Environment and Water |
| Cwth DEWHA | Commonwealth Department of the Environment, Water, Heritage and the Arts |
| Cwth DoE | Commonwealth Department of the Environment |
| Cwth DSEWPC | Commonwealth Department of Sustainability, Environment, Water, Population and Communities |
| EAAF | East Asian-Australasian Flyway |
| EP&A Act | *Environmental Planning & Assessment Act 1979* (NSW) |
| EPBC Act | *Environmental Protection and Biodiversity Conservation Act 1999* (Cwth) |
| Ha | Hectare |
| IBRA | Interim Biogeographic Regionalisation for Australia |
| Km | Kilometre |
| kV | Kilovolt |
| LGA | Local Government Area |
| m | Metre |
| Met mast | Meteorological mast |

| Acronyms | Description |
|---|---|
| mm | Millimetre |
| MNES | Matters of National Environmental Significance |
| MW | Megawatt |
| NSW | New South Wales |
| NSW DCCEEW | NSW Department of Climate Change, Energy, the Environment and Water |
| NSW DEC | NSW Department of Environment and Conservation |
| PCT | Plant Community Type |
| PMST | Protected Matters Search Tool (Cwth) |
| PVA | Population viability analysis |
| RFI | Request for Information |
| RSA | Rotor Swept Area |
| SPRAT | Species Profile and Threats Database (Cwth) |
| SSD | State Significant Development |
| TEC | Threatened Ecological Community |
| TSSC | Threatened Species Scientific Committee |
| WTG | Wind Turbine Generator |

# 1. OBJECTIVES AND CONSENT CONDITIONS

Engie Australia Pty Ltd ('Engie' or 'Applicant') proposes to construct, operate, maintain and decommission The Plains Wind Farm (the Project) within the rural locality of Hay, New South Wales (NSW). The Applicant is seeking development approval under Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) (State Significant Development or SSD) requiring preparation of a Biodiversity Development Assessment Report (BDAR) as the Project is deemed to have a significant impact on biodiversity values (pursuant to s7.14 of the *Biodiversity Conservation Act 2016* (BC Act)).

The objectives of this Bird and Bat Adaptive Management Plan (BBAMP) are to minimise and manage potential impacts to birds and bats resulting from operation of the wind turbine generators (WTGs) associated with the Project. More details are provided in Section 1.3.

This BBAMP is proposed to be implemented over the life of the Project (planning, construction, operation and decommissioning), commensurate to the level of potential risk to birds and bats resulting from the Project.

## 1.1 BACKGROUND

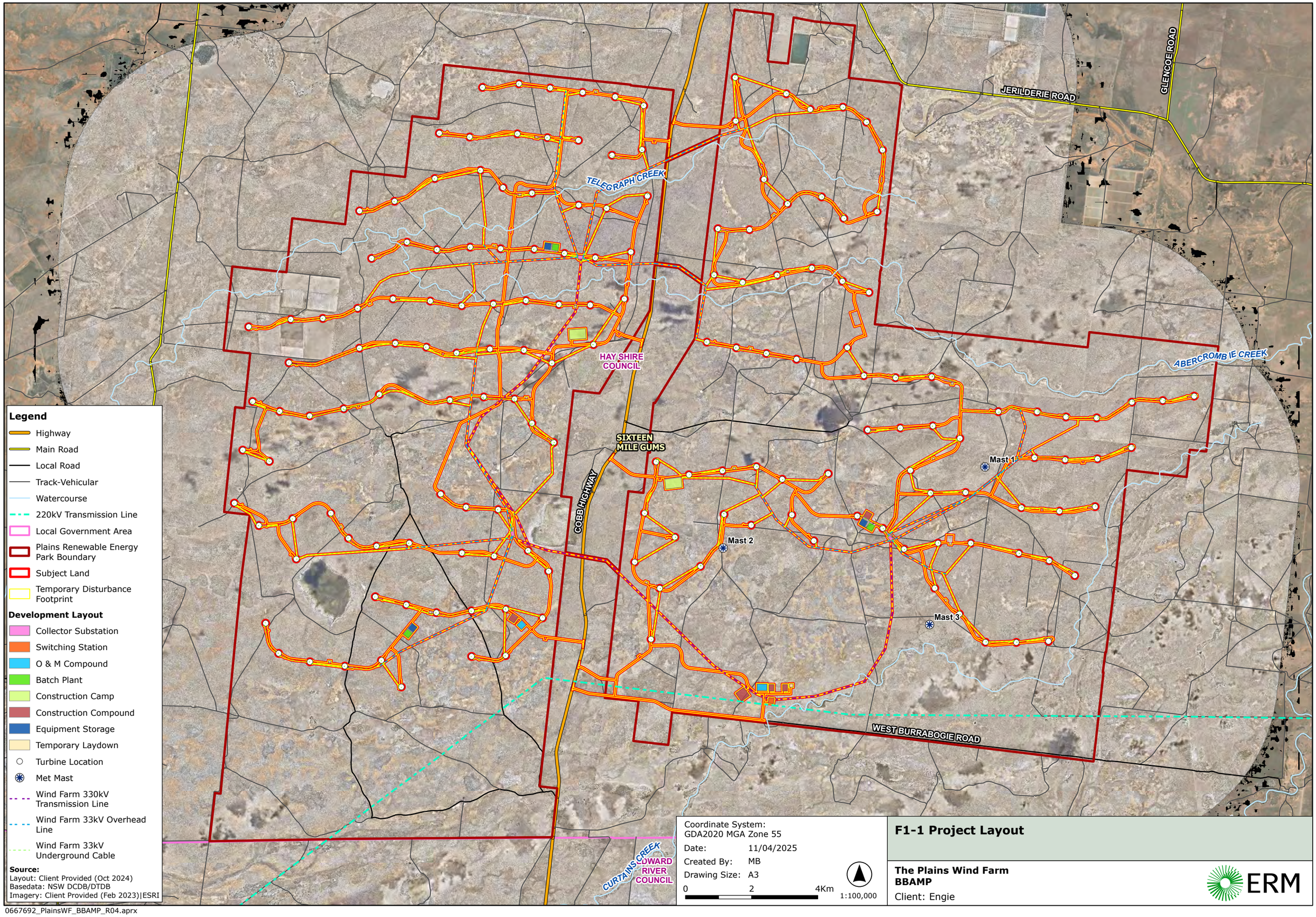
The Project involves the construction, operation, maintenance and, where relevant, decommissioning of:

- 171 WTGs, with each having a hub height of up to 180 metres (m) and tip height of up to 270 m, and a total maximum capacity of up to 1,230 megawatts (MW);
- Up to 10 permanent meteorological (met) masts;
- Electrical reticulation network; and
- On-site and off-site supporting infrastructure.

The Project will connect to either an existing 220 kV transmission line or the 330 kV Project EnergyConnect (under construction), both owned by Transgrid and located along the southern boundary of the Project.

The Project is in the Riverina Murray region of New South Wales (NSW), within the Hay Shire local government area (LGA), 15 kilometres (km) (by road) south of the town of Hay. The Project is situated on Mungadal Station and neighbouring properties to the east and west of the Cobb Highway.

The Project is a linear development comprising an indicative Development Footprint of 1,887.08 ha. This Development Footprint incorporates the area of both permanent (347.16 ha) and temporary (1,539.84 ha) impacts associated with the Project. The Subject Land represents the Development Footprint, with a 100 m buffer applied to the wind turbine locations and is 2,079.22 ha. Impacts have been calculated and assessment undertaken for the entire Subject Land to allow for micro-siting of Project infrastructure within this area. The Subject Land represents the maximum expected impacts associated with the construction and operation of the Project and is presented in **Figure 1-1**.




**F1-1 Project Layout**

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

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The Project will involve the construction and operation of up to 171 WTGs. The WTG model has yet to be confirmed. Each WTG consists typically of composite metals and individual flanged sections which are bolted together. The WTGs consist of a concrete foundation, tower, nacelle, rotor hub and blades. The Project layout for which approval is sought is shown in **Figure 1-1** with the project components outlined in **Table 1-1.**

TABLE 1-1 PROJECT COMPONENTS

| Component | Specification |
|---|---|
| **Wind Turbine Generators** | |
| Foundations | The exact size and type of tower foundation will be based on subsurface soil conditions and the results of geotechnical surveys undertaken during the detailed design phase, prior to commencement of construction. |
| Tower | Each WTG tower is assembled onsite and anchored to a concrete foundation. The towers include an internal ladder and service personnel lift and support the WTG nacelle, rotor hub and blades. |
| Hardstands | The total area of the hardstand during construction will be approximately 3.6 ha, subject to the topography of the surrounding land, and will include a minimum of 10 m bushfire Asset Protection Zone (APZ) around the perimeter of the hardstand area. A portion of the hardstand will be maintained during Project operations to allow for maintenance and future decommissioning of the WTGs. There may be an opportunity to revegetate the assembly portions of the hardstand to allow grazing activities to resume in these areas, if not required for Project operations. |
| Nacelle | The nacelle is the housing that sits on the top of the turbine tower and accommodates the generator, gearbox, transformer, control systems, and pitch and yaw drives. The nacelle structure consists of a cast iron base frame and a rear girder structure. The base frame is the foundation for the drive train and transmits forces from the rotor to the tower through the yaw system. The bottom surface is machined and connected to the yaw bearing and the yaw gears are bolted to the base frame. The crane girders are attached to the rear structure. |
| Rotor Hub and Blades | The rotor includes the three blades and the hub which connects the blades to the gearbox. Blade length of up to 90 m, rotor hub height up to 180 m and tip height up to 270 m. |
| **Electrical Reticulation and Grid Connection** | |
| Substation | At least one 330 kV main substation and up to three 132 kV collector substations will be constructed to transform the 33 kV received from the internal electrical reticulation network to the 330 kV transmission voltage. The main substation would occupy a maximum expected area of 2.7 ha and each collector substation an area of 1.5 ha. |

| Component | Specification |
|---|---|
| Medium Voltage Reticulation | The internal electrical reticulation network, which connects the WTGs to the collector substations, will comprise approximately 215.5 km of underground and 58.8 km of overhead 33 kV cables. WTGs are connected in strings, which are then connected to the onsite substations. Where possible the cabling will be in underground trenches running parallel to access tracks. Where deviation from the access track is required due to geotechnical or other constraints, or to reduce overall cable length, these deviations will be positioned to minimise impact to ecological and heritage areas of high significance.<br>The trenching for underground electrical cabling will be approximately 0.6 m wide per circuit by 1.0 m deep, located within a works area of approximately 5 m to accommodate the mobile plant and stockpiling of spoil and bedding sand. Trenches will be progressively backfilled during the construction works. |
| High Voltage Transmission Line | A 330 kV single or double circuit, three phase, twin conductor bundles overhead transmission line connection. The construction of approximately 27 km of a new 330 kV overhead transmission line will be required to connect the collector substations to the main substation, and then another 85 m (approximately) to connect to the switchyard.<br>The 330 kV overhead transmission line is approximately 50 m high, with single circuit lattice steel towers, spaced approximately 500 m apart, subject to the final design. The transmission line will include a 60 m wide easement with unformed access tracks up to 4 m wide (equivalent to a farm track) to facilitate operational access by TransGrid (for maintenance, repair and hazard reduction). |
| Switchyard | A switchyard for physical electrical components, including required earth works, will be located within the main substation and will connect the Project to the existing transmission line and/ or Project EnergyConnect (currently under construction). |
| **Temporary Infrastructure** | |
| Accommodation Compound | Two accommodation compounds will be provided to accommodate the construction workforce. One compound will be located to the north, and one to the south, on the western portion of the Subject Land, with a total area of approximately 15 ha each. |
| Concrete batching plants and onsite borrow pits, laydown and storage areas | A construction compound, including storage areas, material stockpile, and a temporary power supply for Project construction will be available.<br>Temporary rock crushing facilities and concrete batching plants are proposed to process excavated material for the WTGs foundations, electrical infrastructure, internal access roads, substation and switchyard. Up to five temporary concrete batching plants and rock-crushing facilities will be determined closer to construction. The area required for the plant and storage of materials is estimated to be approximately 48.2 ha in total, located within the indicative Development Footprint.<br>There are also two O & M buildings; one in the west approximately 4 ha and one in the east approximately 6 ha in area. |

| Component | Specification |
|---|---|
| **Other components** | |
| Internal Access Tracks | Access to the east and west portions of the Subject Land during construction and operations is proposed via five access points off Cobb Highway and two off West Burrabogie Road. There is also one dedicated emergency access location off Cobb Highway.<br>The ongoing maintenance of the Project will be accessed through the construction of new private access tracks. The internal access tracks will be connected to existing public roads.<br>Where practicable, the internal access road network will be aligned along the route of existing farm tracks to reduce impacts to biodiversity and to provide upgraded access for ongoing agricultural activities.<br>The internal access tracks will be up to 6 m trafficable width, with localised widening on curves and where required to support transportation of the over-dimensional component vehicles. The internal access tracks will be constructed with dirt, sand, gravel or sealed pavement, with the final design based on materials in proximity to the site. |
| Meteorological (met) Monitoring Masts | Three permanent met masts will be installed in proximity to WTGs and will have a maximum height of 150 m above ground level. Each met mast each will include sensors and a concrete foundation and will be designed and constructed to the appropriate aviation safety specifications. |

| Component | Specification |
|---|---|
| Micro-siting | The layout presented in this BDAR may require refinement based on detailed geotechnical investigations and selection of the final WTG model. As such, the Applicant requires the ability to microsite Project infrastructure. This will allow the design to be adjusted, for example, to avoid unnecessary excavation, vegetation clearing, or to benefit constructability, plant and equipment access. To allow the Applicant to make general design refinements without the need to modify the application, the EIS has assessed impacts for an area that includes temporary and permanent Project infrastructure with a 100 m micro-siting buffer applied around WTGs (the Subject Land). |
| Lighting | During the exhibition phase of the Project, Civil Aviation Safety Authority (CASA) provided a recommendation that obstacle lighting with a 200 candela intensity be installed on the nacelle of turbines. This aviation obstacle lighting is oriented upward to enhance visibility to aircraft only. Lighting to the substation and within the construction compound are limited to low-level lighting for security, night time maintenance and emergency purposes. All lighting will be designed, managed and operated in accordance with 'AS/NZS 4282:2023 Control of Obtrusive Effects of Outdoor Lighting' (Standards Australia Ltd., 2023). 'The National Light Pollution Guidelines for Wildlife' (Cwth DCCEEW, 2023h) may also be considered during the detailed design phase for night lighting considerations. |
| Landscaping | The landscape strategy for the Project will include vegetation planting in specific locations at non-associated dwellings, which will provide a visual buffer and assist in fragmenting views to turbines. Other landscaping will comprise planting of native trees, shrubs and groundcovers, designed to be low-maintenance and which will further enhance the natural habitat associated with the existing environment. |

Additional infrastructure will be constructed and utilised within the Subject Land including geotechnical, visual enhancement plantings, fencing, creek crossings, water management, sediment and erosion control structures and access roads. Upon completion of construction works, all temporary facilities will be removed and rehabilitated.

The Project will operate as a stand-alone operation; however, it may also utilise various access tracks, the substation, the switchyard, the operations and management compound, the electrical reticulation network and other infrastructure associated with The Plains Solar Farm (upon its positive determination), as described and assessed in a separate SSD Application.

## 1.2 LEGISLATION AND POLICY REQUIREMENTS

The NSW Planning Secretary's Environmental Assessment Requirements (SEARs) (SSD-50629707), issued on 16 December 2022, stated that, in relation to biodiversity, the Environmental Impact Statement (EIS) must:

- *An assessment of the impacts of the development on birds and bats, including blade strike, low air pressure zones at the blade tips (barotrauma), alteration to movement patterns, and cumulative impacts of other wind farms in the vicinity; and*
- *if an offset is required, details of the measures proposed to address the offset obligation.*

Assessment of biodiversity values must be done in accordance with the BC Act, the Biodiversity Assessment Method (BAM) and documented in a BDAR. The original BDAR for the Project was submitted in May 2024 (ERM, 2024). The BDAR supported The Plains Wind Farm EIS, submitted in May 2024 by the Applicant and on public exhibition from 8 May to 4 June 2024. Following public and government agency submissions in relation to biodiversity, an Amedned BDAR has been prepared by ERM on behalf of the Applicant to address these submissions. The NSW Biodiversity, Conservation and Science Directorate (BCS) requested that a separate BBAMP be prepared and appended to the BDAR. This report – Appendix I of the Amended BDAR – addresses the BCS request.

The development of this BBAMP has been guided by the following documents:

- NSW Department of Climate Change, Energy, the Environment and Water's (NSW DCCEEW) *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide* (working draft) (NSW DCCEEW, 2024a)
- Commonwealth Department of Climate Change, Energy, the Environment and Water's (Cwth DCCEEW) *Onshore Wind Farm Guidance – Best practice approaches when seeking approval under Australia's national environmental law* (draft) (Cwth DCCEEW, 2024d).

The *Wind Farms - turbine strike assessment and adpative impact management: Biodiversity Assessment Method Guide* (working draft) (NSW DCCEEW, 2024a) stipulates that a BBAMP is used to:

- *Quantify impacts during the operational phase of a wind farm.*
- *Evaluate pre-operational predictions (e.g. flight path, turbine risk, impact).*
- *Enable proponents to respond with appropriate mitigation, adaptive management and / or compensatory measures* (NSW DCCEEW, 2024a).

The *Onshore Wind Farm Guidance – Best practice approaches when seeking approval under Australia's national environmental law* (draft) (Cwth DCCEEW, 2024d) stipulates that a BBAMP provides a framework to demonstrate that:

- *You are taking all practicable steps to avoid and mitigate your proposed wind farm's impact on listed threatened and migratory bird and bat species (sic).*
- *You ensure that the steps that are proposed will meet our expectations (sic).*
- *The proposed impact risk reduction measures will occur over the life of a wind farm project (planning, construction, operation and decommissioning), as each phase has specific requirements that are needed to ensure effective management.*

In addition, the BBAMP must be prepared by a suitably qualified ecologist and in accordance with the department's *Environmental Management Plan Guidelines* (Cwth DCCEEW, 2024d).

## 1.3 BIRD AND BAT ADAPTIVE MANAGEMENT PLAN OVERVIEW

### 1.3.1 BBAMP OBJECTIVES

The objectives of this BBAMP are to minimise and manage the impact of operation of the WTGs associated with the Project on birds and bats that occur within the vicinity of the Project.

Specifically, this BBAMP:

- Details potential mitigation measures and implementation strategies to minimise impacts to birds and bats;
- Establishes an adaptive management framework for managing and mitigating impacts on birds and bats;
- Outlines a monitoring program to understand the impact of the Project on at-risk birds and bats;
- Documents an agreed decision-making framework that identifies operational-phase impact triggers leading to a management response;
- Identifies any additional measures that can be used to manage impacts based on the outcomes of ongoing monitoring; and
- Aims to offset mortality impacts to listed threatened species, where applicable, as further described in Section 9.

This BBAMP intends to enable the implementation of a long-term approach to the mitigation and management of potential impacts that the Project may inflict on resident aerial threatened and migratory species, as well as nomadic species, raptors and other aerial protected species. Monitoring will be specified to identify any potential changes to the species' utilisation of the Subject Land and the surrounding landscape over time.

### 1.3.2 BBAMP AIMS

This BBAMP aims to achieve the following environmental outcomes:

- An improved understanding of the risk of turbine collision and barotrauma impacts on listed bird and bat species;
- An improved understanding of whether and how Subject Land usage changes as a result of wind farm construction and operation;
- An improved monitoring approach for the timely identification of turbine collisions and collection and analysis of data; and
- An improved approach to the timely and regular validation and update to the Collision Risk Modelling using monitoring data, and a robust adaptive management approach; and
- Development of management and corrective actions to minimise the risk of turbine collision and other impacts on threatened bird and bat species.

In line with the *Onshore Wind Farm Guidance* (Cwth DCCEEW, 2024d), specific mortality thresholds for individual species have been outlined in Section 6. Specific objectives include the implementation of mitigation measures to ensure designated impact thresholds on a species are not exceeded. If thresholds are reached, corrective actions will be implemented.

The BBAMP aims to be adaptive in response to the outcomes of monitoring and the detection of species' triggers that could result in significant impacts on avian species from WTG collisions. This adaptive management framework will involve consultation with the NSW DCCEEW and Cwth DCCEEW on the appropriate species' mortality triggers and management response(s).

### 1.3.3 REQUIREMENTS OF THE BBAMP

The specific requirements of the BBAMP, outlined in Appendix A.2 of *Wind Farms - turbine strike assessment and adpative impact management: Biodiversity Assessment Method Guide* (working draft) (NSW DCCEEW, 2024a) and the SEARs (SSD-50629707, issued on 16 December 2022) are presented in Table 1-2, together with how this BBAMP responds to these requirements.

TABLE 1-2 REQUIREMENTS OF THE BBAMP

| Description | Details | BBAMP Section |
|---|---|---|
| Introduction | Purpose and objectives of the BBAMP.<br>Summary of the results of the Amended BDAR and how they relate to the BBAMP, including a summary of the baseline survey, risk assessment and any identified ongoing commitments. | Section 1.3<br>Section 2 |
| Species Risk Assessment | Predictions of the likelihood of impact and the rate of impact per turbine per year on aerial species resident in, or likely to fly over, the Subject Land.<br>Predictions of the consequences of impacts for the persistence of bioregional populations.<br>Predictions of the likely zone of disturbance around wind turbines for aerial species resident in, or likely to fly over, the Subject Land. (*Note that significant habitat features are mapped in the BDAR*).<br>Predictions of the likelihood and nature of indirect impacts on aerial species resident in, or likely to fly over, the Subject Land, with a particular focus on barotrauma.<br>Predictions of avoidance of WTGs by migratory species in relation to the Subject Land.<br>Cumulative impact risk assessment. | Section 3 |
| Species-specific impact thresholds | Description and justification for species-specific impact thresholds for at-risk target species considered to be at very high risk of turbine strike.<br>Description and justification of the adaptive management actions to be implemented in response to exceeding an impact threshold. | Sections 3, 4 and 6 |
| Monitoring program | A description of the monitoring program. | Section 4 |

| Description | Details | BBAMP Section |
|---|---|---|
| Carcass search method, carcass persistence trials and detectability trials | Description of the carcass search method. | Section 5 |
| Turbine strike notifications | Description of the approach for turbine strike notification. | Section 6 |
| Annual reporting | Description of the approach to BBAMP reporting. | Section 7 |
| BBAMP review and operational turbine risk assessment | Description of the approach and protocols for BBAMP review and updates, including a proposed resubmission period.<br>Description of the approach to ongoing turbine risk assessment. | Section 8 |
| Offsetting and Compensatory Measures | Description of the proposed offset measures.<br>Details of potential compensatory measures in the event of failure of the adaptive management and mitigation measures. | Section 9 |

## 1.4 SITE DESCRIPTION

The Project is situated on Mungadal Station and neighbouring properties to the east and west of the Cobb Highway in the Riverina Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion and the Murrumbidgee IBRA subregion (NSW Government, 2025). Refer to **Figure 1-2**.

The Project area extends across approximately 46,432.59 ha, over 271 freehold land parcels (and 6 parcels of Crown Land/ 'Road Casement'), in the Hay Shire LGA and adjacent to the Edward River LGA. The Project area is located on land predominately used for agricultural activities. It is located about 15 km (by road) south of the Hay town centre and 6.6 km (by road) north of the Booroorban village, via the Cobb Highway.

The Riverina IBRA Bioregion is characterised by extensive riverine floodplains and is often dominated by chenopod shrublands and grasslands. The climate is semi-arid with low, winter-dominant rainfall, hot summers and cool winters. Large portions of the land within the Subject Land have been disturbed and are characterised by native and modified grasslands and chenopod shrublands, grazed by livestock (Cwth DCCEEW, 2025a).

Stands of woodland vegetation in the Project area (but not the Subject Land) provide important refuge, foraging, and nesting habitat for fauna in an otherwise open landscape. Areas of black box (*Eucalyptus largiflorens*) and river red gum (*Eucalyptus camaldulensis*) were observed to contain high abundance of mature hollow-bearing trees. However, these areas have been excluded from the Subject Land through revision of the Project design.

### 1.4.1 SUBJECT LAND

The Subject Land is land to which the BAM is applied and includes the area of direct impacts and any additional areas where the proposal is likely to have indirect impacts, for example, around proposed turbine locations. The Subject Land represents the indicative Development Footprint, with a 100 m buffer applied to the wind turbine locations and is 2,079.22 ha.

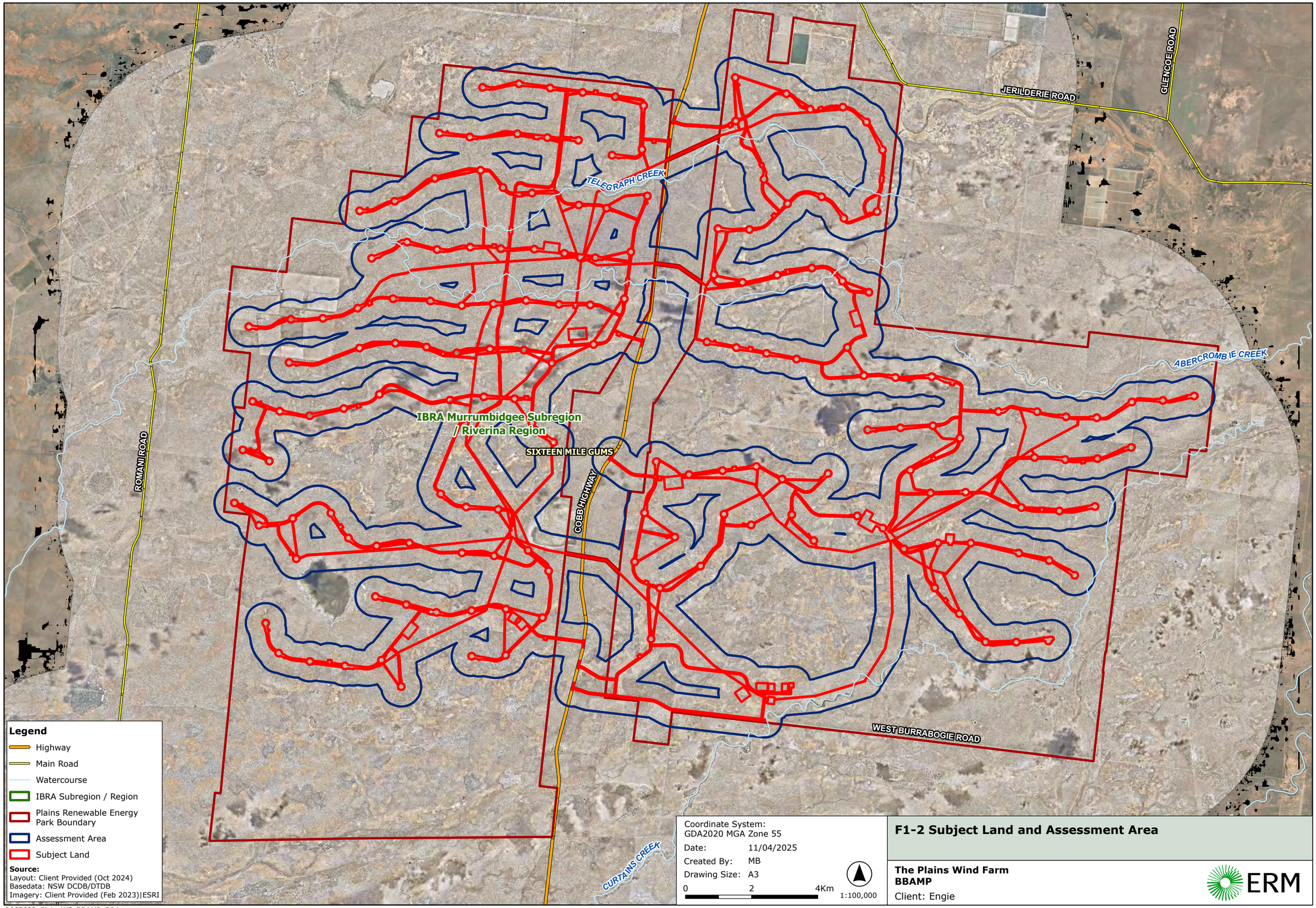
The dominant vegetation type across the Subject Land has been identified as PCT 164 - Cotton Bush open shrubland of the semi-arid (warm) zone, which covers 1,878.08 ha or 90 per cent (%) of the Subject Land. The second most dominant community identified is PCT 44 - Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion; this PCT constitutes 2.6% of the Subject Land.

### 1.4.2 ASSESSMENT AREA

The Assessment Area for the Project is all land within a 500 m radius of the Subject Land. The Assessment Area comprises areas of agricultural land, part of West Burrabogie Road, and the Cobb Highway. The Assessment Area is situated approximately 20 km west of the Oolambeyan National Park. The Assessment Area does not extend into residential or commercial areas. Refer to **Figure 1-2**.

### 1.4.3 DEVELOPMENT FOOTPRINT

The Development Footprint comprises an area of 1,887.08 ha and is nested within the Subject Land. This Development Footprint incorporates areas of temporary and permanent direct impacts for the Project. Impacts within the Amended BDAR have been calculated for the Subject Land, not the Development Footprint, to allow for micro-siting flexibility. Refer to **Figure 1-1**.




# F1-2 Subject Land and Assessment Area

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

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# 2. BDAR SUMMARY INFORMATION

## 2.1 DESKTOP ASSESSMENT

### 2.1.1 SURVEY GUIDELINES

Prior to implementing bird and bat utilisation surveys (BBUS) within the Subject Land, survey effort was planned to determine the appropriate survey methodology and data sources.

Survey design, including targeted surveys for listed threatened and migratory species with the potential to occur in the Subject Land, was developed based on the following sources and survey guidelines:

- NSW Department of Planning Industry and Environment's (DPIE) *Biodiversity Assessment Method* (NSW DPIE, 2020);
- *NSW BioNet Atlas* (NSW DCCEEW, 2024b);
- *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide* (working draft) (NSW DCCEEW, 2024a);
- Commonwealth Department of the Environment's (Cwth DoE) *Draft referral guidelines for 14 birds listed as migratory under the EPBC Act* (Cwth DoE, 2015a);
- *Onshore Wind Farm Guidance – Best practice approaches when seeking approval under Australia's national environmental law* (draft) (Cwth DCCEEW, 2024d);
- NSW Department of Environment and Conservation's (DEC) *Threatened Species Survey and Assessment: Guidelines for Developments and Activities Working Draft* (NSW DEC, 2004);
- *Survey guidelines for Australia's threatened birds* (Cwth DEWHA, 2010b).
- NSW Department of Planning, Industry and Environment's (NSW DPIE) *'Species credit' threatened bats and their habitats* (NSW DPIE, 2021);
- Commonwealth Department of the Environment, Water, Heritage and the Arts' (Cwth DEWHA) *Survey guidelines for Australia's threatened bats* (Cwth DEWHA, 2010a); and
- *Wind Farms and Birds: Interim Standards for Risk Assessment* (Brett Lane & Associates, 2005);
- *Best Practice Guidelines – For Implementation of Wind Energy Projects in Australia* (Clean Energy Council, 2018); and
- *National Wind Farm Development Guidelines* - Draft (Environment Protection and Heritage Council, 2010).

### 2.1.2 BIODIVERSITY VALUES (AVIAN)

Prior to field survey effort, a number of desktop sources were reviewed to identify the avian biodiversity values that may occur within the Subject Land. In addition to the guidelines and sources described in Section 2.1.1, desktop analyses were used to guide the development of field survey sampling techniques, followed by the implementation of a field survey program to collect data to describe on-ground conditions. The information from the desktop sources and field surveys were used to assess and document the likelihood of occurrence, potential occurrence and known occurrence of avian species within the Subject Land. The desktop sources used in the assessment are presented in **Table 2-1.**

## TABLE 2-1 DESKTOP SOURCES

| Information Source | Name | Data Description |
|---|---|---|
| Cwth DCCEEW (2025b) | Protected Matters Search Tool (PMST) | The PMST search tool provides predictive results of Matters of National Environmental Significance (MNES) based on mapping of known and potential species distributions, habitat, ecological communities and wetlands under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The outputs are based on the results of modelling and do not necessarily reflect known records of species or communities.<br>The PMST was undertaken for a 10 km buffer around the Subject Land. The result of the PMST report can be found in Appendix F of the Amended BDAR. |
| Cwth DCCEEW (2025c) | Species Profile and Threats Database (SPRAT) | SPRAT profiles and associated conservation advice documents were consulted to obtain detailed information on EPBC Act listed threatened entities and determine whether they were likely to occur within the Subject Land. |
| NSW DCCEEW (2024b) | NSW BioNet<br><br>BAM-Calculator (BAM-C) | NSW BioNet provides information on threatened entities under the BC Act and records of species' sightings. It was used to obtain detailed information on BC Act listed threatened entities and other avian species and determine whether they were likely to occur within the Subject Land. NSW BioNet records were analysed within a 10 km buffer around the Subject Land.<br>The BAM-C was used for the Amended BDAR to produce a list of threatened entities associated with PCTs within the Subject Land (ecosystem species) and candidate threatened species (species credit species) that may occur within the Subject Land. Refer to Section 5 of the Amended BDAR. |
| Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2025) | Atlas of Living Australia (ALA) | The ALA database (supported by CSIRO) contains records accessed through an interactive spatial portal. The database was used to obtain detailed information on EPBC Act and BC Act listed threatened entities and other avian species and determine whether they were likely to occur within the Subject Land.<br>ALA records were analysed within a 10 km buffer around the Subject Land. |

### 2.1.3 MIGRATORY FLIGHTPATHS

The Project is known to occur broadly within the East Asian-Australasian Flyway (EAAF) that connects the breeding and non-breeding areas of 37 listed migratory shorebirds (Hansen, et al., 2016). Those species known to utilise the EAAF are typically associated with coastal and intertidal habitats with most individuals present in Australia occurring along coastlines (Garnett & Baker, 2021). Some species of migratory shorebirds are known to occur within inland Australia, particularly during periods of seasonal inundation; however, these events are stochastic and species movement and presence is considered highly variable (Nebel, Porter, & Kingsford, 2008). Several large ephemeral wetlands are present within the Project area that have the potential to provide non-breeding habitat for migratory shorebirds during periods of inundation. Incidental observations of the sharp-tailed sandpiper (*Calidris acuminata*), listed as vulnerable and migratory under the EPBC Act, were made in February 2022 and September 2024. Numerous observations of other wetland and shorebird species, not listed as threatened species, have also been made throughout seasonal surveys. These birds include the Australian pelican (*Pelecanus conspicillatus*), the red-kneed dotterel (*Erythrogonys cinctus*), and royal spoonbill (*Platalea regia*). Specific impacts to relevant migratory species are discussed in **Section 3.3**; however, it is likely that migratory species will occasionally interact with the Subject Land along seasonal migratory pathways when suitable conditions are present.

## 2.2 AVIAN SITE ASSESSMENT

### 2.2.1 OVERVIEW

A summary of the survey effort in relation to avian species, undertaken within the Subject Land between October 2021 and December 2024, is presented in **Table 2-2**. The location of avian surveys is presented in Error! Reference source not found..

TABLE 2-2 SUMMARY OF AVIAN SURVEY EFFORT

| Dates | Target | Techniques | Survey |
|---|---|---|---|
| 26 October – 12 November 2021 (Spring 2021) | Habitat assessment (including targeted avian area searches) | Assessment of habitat features present relating to avian species (nests, hollows and roosting habitat requirements etc.). | 43 hours at 21 sites undertaken by two to four ecologists across the Project area. |
| | Bird Surveys | Bird Utilisation Surveys (BUS)<br>Opportunistic roaming bird surveys between survey areas. | 28 BUS completed across Project area |
| | Targeted Fauna Surveys | Nocturnal driven transects and spotlighting for Plains-wanderer (*Pedionomus torquatus*) and other nocturnal, ground-dwelling birds.<br>Nocturnal call playback and spotlighting for the bush stone-curlew (*Burhinus grallarius*). | Within Project area |

| Dates | Target | Techniques | Survey |
|---|---|---|---|
| 14 – 25 February 2022<br>(Summer 2022) | Habitat assessment (including targeted avian area searches) | Assessment of habitat features present relating to avian species (nests, hollows and roosting habitat requirements etc.). | Incidental recording of habitat features across Project area |
| | Bird Surveys | Bird Utilisation Surveys (BUS)<br>Opportunistic roaming bird surveys between survey areas. | 26 BUS completed |
| | Targeted Fauna Surveys | Diurnal driven transects for Australian bustard (*Ardeotis australis*). | 26.5 person hours<br>Opportunistic observations while traversing Subject Land |
| | Bat Surveys | Bat acoustic detector deployment. | 8 Anabat Swift detectors deployed in Project area<br>1,012 detection hours |
| 16 – 20 May 2022<br>(Autumn 2022) | Habitat assessment (including targeted threatened species surveys) | Assessment of habitat features present relating to avian species (nests, hollows and roosting habitat requirements etc.). | Incidental recording of habitat features across Project area |
| | Bird Surveys | Bird Utilisation Surveys (BUS)<br>Opportunistic roaming bird surveys between survey areas. | 29 BUS completed |
| 8 – 18 August 2022<br>(Winter 2022) | Habitat assessment (including targeted threatened species surveys) | Assessment of habitat features present relating to bird and bat species (nests and roosting habitat requirements). | Incidental recording of habitat features |
| | Bird Surveys | Bird Utilisation Surveys (BUS)<br>Opportunistic roaming bird surveys between survey areas. | 28 BUS Completed |
| | Targeted Fauna Surveys | Nocturnal call playback and spotlighting for the bush stone-curlew (*Burhinus grallarius*). | Six survey locations |

| Dates | Target | Techniques | Survey |
|---|---|---|---|
| 21 February – 3 March 2023 (Summer 2023) | Habitat assessment (including targeted threatened species surveys) | Assessment of habitat features present relating to bird and bat species (nests and roosting habitat requirements). | Incidental recording of habitat features |
| | Bat Surveys | Bat acoustic detector deployment. | 6 Anabat Swift detectors deployed in Project area. Approximately 690 detection hours. |
| | Targeted Fauna Surveys | Diurnal driven transects for Australian bustard (*Ardeotis australis*). | 15 person hours Opportunistic observation while traversing Subject Land |
| 23 March – 13 May 2023 (Autumn 2023) | Bat Surveys | Bat acoustic detector deployment. | 1 Anabat Swift detector deployed on a met mast in the Project area for 51 recording nights (dusk to dawn) |
| 13 – 16 November 2023 (Spring 2023) | Bird Surveys | Bird Utilisation Surveys (BUS) Opportunistic roaming bird surveys between survey areas. | 59 BUS Completed |
| | Bird Surveys | Opportunistic roaming bird surveys between survey areas. | Opportunistic observations while traversing Subject Land |
| 19 – 23 February 2024 (Summer 2024) | Bird Surveys | Bird Utilisation Surveys (BUS) Opportunistic roaming bird surveys between survey areas. | 83 BUS Completed |
| June 2024 (Autumn / Winter 2024) | Bird Surveys | Bird Utilisation Surveys (BUS) Opportunistic roaming bird surveys between survey areas. | 39 BUS Completed |
| | Bat Surveys | Bat acoustic detector deployment | 1 Chorus detector deployed on a met mast in the Project area for approximately 90 recording nights (dusk to dawn) |

| Dates | Target | Techniques | Survey |
|---|---|---|---|
| 5 – 10 August 2024 (Winter 2024) | Bird Surveys | Bird Utilisation Surveys (BUS) Opportunistic roaming bird surveys between survey areas. | 71 BUS completed |
| | Targeted Fauna Surveys | Spotlighting and call playback for threatened owls in Project area. | 4 call playback sites repeated 6 times (24 survey nights) |
| 1 – 13 September 2024 (Spring 2024) | Targeted Fauna Surveys | Stick Nest Census Tree hollow census for the pink cockatoo (*Lophochroa leadbeateri*) and other hollow-dependent birds. Diurnal driven transects for Australian bustard (*Ardeotis australis*). | 79 stick nests recorded within Assessment Area Two (2) suitable hollow bearing trees identified within 200 m of the Subject Land. 419.74 ha of the Subject Land was surveyed. |
| 21 October – 1 November 2024 (Spring 2024) | Bird Surveys | Bird Utilisation Surveys (BUS) Opportunistic roaming bird surveys between survey areas. | 55 BUS completed |
| | Targeted Fauna Surveys | Targeted bird censuses for the pink cockatoo (*Lophochroa leadbeateri*) (hollow searches), and threatened raptors including the square-tailed kite (*Lophoictinia isura*) (stick nest searches). | Seven censuses conducted across four locations: T01 – one survey T03 – one survey T02 – one survey T04 – four repeat surveys |
| | Plains-wanderer (*Pedionomus torquatus*) Habitat Mapping | The Subject Land was assessed for potential areas of suitable habitat for the Plains-wanderer as per guidance in the species' Conservation Advice (Cwth TSSC, 2015), and the publication *Multi-scale habitat selection by a cryptic, critically endangered grassland bird—The Plains-wanderer (Pedionomus torquatus): Implications for habitat management and conservation* (Nugent, et al., 2022). | 179 km covered by vehicle. |

| Dates | Target | Techniques | Survey |
|---|---|---|---|
| 6 – 20 December 2024 (Summer 2024) | Bird Surveys | Opportunistic roaming bird surveys between survey areas. | Opportunistic observations while traversing Subject Land |
| | Plains-wanderer (*Pedionomus torquatus*) Habitat Assessment | Habitat suitability for the Plains-wanderer (in areas identified in Spring 2024) assessed in detail. | 50 'golf-ball' method habitat assessments were completed, in accordance with the methodology described in Nugent et al. (2022). |

### 2.2.2 WEATHER OBSERVATIONS

Weather conditions during the field survey events were appropriate for detection of target fauna. A summary of the recorded conditions on the subject land during the survey periods is provided in **Table 2-3**.

TABLE 2-3 WEATHER CONDITIONS DURING THE SURVEY PERIODS

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| **Spring 2021** | | | |
| 26/10/2021 | 3.2 | 25.9 | 0 |
| 27/10/2021 | 7.8 | 32.9 | 0 |
| 28/10/2021 | 4.4 | 31.1 | 0.2 |
| 29/10/2021 | 3.5 | 22.7 | 0 |
| 30/10/2021 | 3.5 | 20.6 | 0 |
| 01/11/2021 | 8.4 | 28.3 | 0 |
| 04/11/2021 | 4.8 | 28.7 | 4.2 |
| 05/11/2021 | 4.0 | 29.7 | 0 |
| 06/112021 | 17.2 | 33.1 | 0 |
| 07/11/2021 | 14.0 | 29.2 | 2.8 |
| 08/11/2021 | 0.5 | 26.4 | 0.2 |
| 09/11/2021 | 7.2 | 28.3 | 0 |
| 10/11/2021 | 17.4 | 24.6 | 0 |
| 11/11/2021 | 7.5 | 19.5 | 0 |
| 12/11/2021 | 10.7 | 14.6 | 24.8 |
| **Summer 2022** | | | |
| 14/02/2022 | 21.9 | 37.5 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 15/02/2022 | 20.4 | 38.9 | 0 |
| 16/02/2022 | 22.0 | 39.5 | 0 |
| 17/02/2022 | 20.7 | 30.8 | 0 |
| 18/02/2022 | 14.7 | 29.1 | 0 |
| 19/02/2022 | 11.2 | 31.5 | 0 |
| 21/02/2022 | 13.0 | 29.0 | 0 |
| 22/02/2022 | 11.8 | 34.1 | 0 |
| 23/02/2022 | 17.7 | 34.6 | 0.6 |
| 25/02/2022 | 22.6 | 34.6 | 0 |
| **Autumn 2022** | | | |
| 16/05/2022 | 5.0 | 16.9 | 7.2 |
| 17/05/2022 | 1.2 | 18.3 | 0.6 |
| 18/05/2022 | 8.0 | 19.9 | 0 |
| 19/05/2022 | 7.0 | 15.6 | 8.6 |
| 20/05/2022 | 4.9 | 18.1 | 0 |
| **Winter 2022** | | | |
| 08/08/2022 | 0.5 | 16.4 | 4.8 |
| 09/08/2022 | -1.1 | 16.3 | 0.2 |
| 10/08/2022 | -2.2 | 17.0 | 0 |
| 11/08/2022 | 7.4 | 12.4 | 0.2 |
| 12/08/2022 | 7.1 | 18.9 | 2.6 |
| 14/08/2022 | 4.1 | 17.1 | 0 |
| 15/08/2022 | 4.1 | 15.0 | 0 |
| 17/08/2022 | 1.2 | 18.3 | 0.6 |
| **Summer 2023** | | | |
| 21/02/2023 | 17.3 | 37.7 | 0 |
| 22/02/2023 | 17.9 | 34 | 0 |
| 23/02/2023 | 17.7 | 32.4 | 0 |
| 24/02/2023 | 17.4 | 34.6 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 25/02/2023 | 20 | 36.6 | 0 |
| 26/02/2023 | 17.6 | 31.1 | 0 |
| 27/02/2023 | 12.8 | 30.1 | 0 |
| 28/02/2023 | 12.4 | 31.4 | 0 |
| 01/03/2023 | 13.8 | 29 | 0 |
| 02/03/2023 | 10.6 | 30.3 | 0 |
| 03/03/2023 | 12.7 | 32.5 | 0 |
| **Autumn 2023 (data are not provided for all 51 bat acoustic recording nights)** | | | |
| 23/03/23 | 18.5 | 31.2 | 13.6 |
| 24/03/23 | 16.5 | 31.5 | 0.4 |
| 25/03/23 | 13.0 | 27.9 | 0 |
| 26/03/23 | 12.8 | 28.0 | 0 |
| 27/03/23 | 15.2 | 23.9 | 0 |
| 28/03/23 | 16.1 | 29.2 | 2.8 |
| 29/03/23 | 16.4 | 24.6 | 10.8 |
| 30/03/23 | 7.9 | 22.5 | 0 |
| 31/03/23 | 9.8 | 24.2 | 0 |
| 01/04/23 | 9.3 | 20.9 | 0 |
| 02/04/23 | 4.2 | 23.1 | 0 |
| 03/04/23 | 6.7 | 28.6 | 0 |
| 04/04/23 | 10.9 | 30.6 | 0 |
| 05/04/23 | 9.8 | 31.2 | 0 |
| 06/04/23 | 18.5 | 24.1 | 0 |
| 07/04/23 | 15.2 | 23.0 | 4.2 |
| 08/04/23 | 12.9 | 22.5 | 0.6 |
| 09/04/23 | 7.9 | 19.7 | 0 |
| 10/04/23 | 7.1 | 17.5 | 0 |
| 11/04/23 | 7.8 | 21.0 | 0 |
| 12/04/23 | 12.2 | 22.9 | 2.0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 13/04/23 | 13.0 | 23.4 | 3.8 |
| **Spring 2023** | | | |
| 13/11/2023 | 8.7 | 28.6 | 0 |
| 14/11/2023 | 12.1 | 25.3 | 0 |
| 15/11/2023 | 11.1 | 29.6 | 0.4 |
| 16/11/2023 | 11.1 | 27.7 | 0 |
| **Summer 2024** | | | |
| 19/02/2024 | 12.3 | 34.6 | 0 |
| 20/02/2024 | 15.7 | 35.7 | 0 |
| 21/02/2024 | 19.3 | 35.9 | 0 |
| 22/02/2024 | 21.2 | 40.7 | 0 |
| 23/02/2024 | 19.2 | 28.5 | 0 |
| **Autumn / Winter 2024 (June)** | | | |
| 10/06/2024 | 6.6 | 16.8 | 0 |
| 11/06/2024 | 10.7 | 15.2 | 0 |
| 12/06/2024 | 8.5 | 15.8 | 1.2 |
| 13/06/2024 | -0.1 | 10.1 | 0 |
| **Winter 2024 (August)** | | | |
| 5/08/2024 | 4.7 | 15.1 | 0 |
| 6/08/2024 | -1.1 | 16.9 | 0 |
| 7/08/2024 | 0.5 | 17.2 | 0 |
| 8/08/2024 | 2.7 | 18.4 | 0 |
| 9/08/2024 | 3.9 | 20 | 0.2 |
| 10/08/2024 | -0.1 | 20.1 | 0 |
| **Spring 2024 (September)** | | | |
| 1/09/2024 | 6.1 | 24 | 0 |
| 2/09/2024 | 11.7 | 18.4 | 0 |
| 3/09/2024 | 2.6 | 18.6 | 0 |
| 4/09/2024 | 3.9 | 23.6 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 5/09/2024 | 12 | 30.2 | 0 |
| 6/09/2024 | 15.1 | 33.1 | 0 |
| 7/09/2024 | 8.3 | 21.1 | 0.6 |
| 8/09/2024 | 5 | 22.1 | 0 |
| 9/09/2024 | 5.9 | 21.4 | 0 |
| 10/09/2024 | 1.7 | 23.1 | 0 |
| 11/09/2024 | 8.6 | 25.5 | 0 |
| 12/09/2024 | 9.6 | 19.8 | 0 |
| 13/09/2024 | 1 | 21.2 | 0 |
| **Spring 2024 (October)** | | | |
| 21/10/2024 | 7.1 | 31.4 | 0 |
| 22/10/2024 | 13.5 | 35 | 0 |
| 23/10/2024 | 16.4 | 26.7 | 0 |
| 24/10/2024 | 6.9 | 21.9 | 0 |
| 25/10/2024 | 4.2 | 21.4 | 0 |
| 26/10/2024 | 2.9 | 25.4 | 0 |
| 27/10/2024 | 10.5 | 31.9 | 0 |
| 28/10/2024 | 13 | 26.5 | 0 |
| 29/10/20214 | 7.2 | 28.3 | 0 |
| 30/10/2024 | 6.9 | 30.5 | 0 |
| 31/10/2024 | 11.4 | 27 | 0 |
| 01/11/2024 | 6.2 | 25.4 | 0 |
| **Summer 2024** | | | |
| 06/12/2024 | 22.4 | 40.2 | 0 |
| 07/12/2024 | 20.9 | 38.5 | 0 |
| 08/12/2024 | 14.4 | 29.0 | 4.4 |
| 09/12/2024 | 12.5 | 27.4 | 0 |
| 10/12/2024 | 10.9 | 32.3 | 0 |
| 11/12/2024 | 11.5 | 30.1 | 0 |

| Date | Min Temperature (°C) | Max Temperature (°C) | Rainfall (mm) |
|---|---|---|---|
| 12/12/2024 | 13.2 | 33.6 | 0 |
| 13/12/2024 | 16.1 | 35.7 | 0 |
| 14/12/2024 | 14.3 | 38.0 | 0 |
| 15/12/2024 | 16.4 | 40.2 | 0 |
| 16/12/2024 | 22.4 | 45.4 | 0 |
| 17/12/2024 | 22.3 | 32.4 | 0 |
| 18/12/2024 | 13.4 | 31.4 | 0 |
| 19/12/2024 | 15.9 | 33.1 | 0 |
| 20/12/2024 | 14.2 | 37.3 | 0 |

*Source: Bureau of Meteorology - Hay, NSW Daily Weather Observations. Online resource: http://www.bom.gov.au/climate/dwo/202504/html/IDCJDW2058.202504.shtml*

### 2.2.3 HABITAT ASSESSMENT

Initial surveys were completed to gain an understanding of the habitat within the Subject Land, as well as potential utilisation of the Subject Land by listed threatened and/or migratory species. The full methodology for bird and bat surveys and how these were implemented is discussed **Section 2.2.4** and **Section 2.2.5.**

The preliminary site characterisation survey involved six ecologists who undertook field assessments of the Subject Land from 26 October to 12 November 2021. These surveys comprised vegetation and habitat assessments across the Project area, with a particular focus on breeding habitat, targeted threatened fauna surveys including nocturnal avian driven transects, call playback and spotlighting, and BUS. The habitat assessments meant that suitable locations could be chosen for future BUS and bat acoustic detector surveys, related to species-specific habitat features, such as waterbodies for bats, riparian areas for migratory wading species and grasslands for ground-dwelling birds such as the Plains-wanderer (*Pedionomus torquatus*).

Ongoing biodiversity desktop and field verification surveys completed across the Project area identified high value biodiversity areas. As ecological surveys and vegetation community mapping were completed over time, areas of constraint were identified, mapped and largely avoided by the Project. The Project has been designed in a manner to avoid impact to the remnant woodland vegetation present across the broader Project boundary, all threatened ecological communities (TECs) associated with some woodland areas, large stick nests suitable for raptors, hollow bearing trees, wetland habitats, and has mostly avoided Important Mapped Areas for the Plains-wanderer.

Two BC Act listed TECs were confirmed within the broader Project area, being:

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions TEC; and
- Sandhill Pine Woodland in the Riverina Murray-Darling Depression and NSW South Western Slopes bioregions TEC.

In addition, the Subject Land has been designed to avoid Important Mapped Areas (known breeding habitat) for the Plains-wanderer, with the impact being restricted to 0.18 ha, compared to 1,460.56 ha mapped within the Project area.

Field assessment helped to identify other areas which could be improved for biodiversity values. For example, the Project has been designed to maximise the use of existing public and internal access tracks across the Subject Land where possible, minimising the vegetation clearance required and limiting an increase to predatory access routes and activity. The Project design will also allow for the implementation of plain wire fencing to be used as perimeter fencing in place of barbed wire fencing, to reduce potential impacts from avian entanglement.

The Project design has been revised and refined for the EIS based on detailed assessments and in response to the identification and assessment of environmental limitations, constructability requirements, and consideration of the outcomes of agency, landowner, and community consultations.

### 2.2.4 BIRD SURVEYS

A detailed summary of all bird surveys is provided in **Sections 2.2.4.1** to **2.2.4.6**.

#### 2.2.4.1 BIRD UTILISATION SURVEYS

Guidance for BUS has changed since the origination of the Project. However, all BUS have incorporated key concepts which have remained constant since 2021. These are:

- Bird surveys are in a fixed point, run for a set duration (this has varied between 20 or 30 minutes for the Project), are undertaken at different times of day and at different times in the year to capture variations in diurnal and seasonal bird activity;
- The data collected during a BUS includes the bird species present, their flying height and their direction of flight, as stipulated by the Band Model (Band, 2000);
- The search radius from the fixed observation point is at least 100 m for small birds and up to 800 m for large birds, using range finders to determine distances; and
- Fixed point observations (and opportunistic species observations undertaken during all survey periods) focused on birds most likely to be affected by wind turbines, such as raptors and birds flying within the rotor swept area (RSA) of 90 – 270 m.

Topographically, the Subject Land is flat with little to no landscape features or artificial structures to limit the detectability of birds. Therefore, accurate detection of at-risk species, such as raptors, wetland birds, threatened species and migratory species, is possible at large distances. This meant that the actual surveyable area surrounding each BUS fixed point was considered at least 2 km for larger birds. Broad habitat types for birds are also largely consistent throughout the Subject Land. While some BUS points are no longer situated within 200 m of proposed infrastructure, seasonal data collected at these points is still useful for assessing bird utilisation at a landscape scale. Therefore, data gathered from these points have been retained for assessment in this BBAMP.

Survey effort involved nine separate BUS in October 2021 (Spring), February 2022 (Summer), May 2022 (Autumn), August 2022 (Winter), November 2023 (Spring), February 2024 (Summer), June 2024 (Autumn/Winter), August 2024 (Winter) and October 2024 (Spring).

The initial four survey events across 2021 and 2022 consisted of monitoring 27 - 28 fixed observation points strategically placed throughout the Project area. Each observation point was monitored for a period of 20 minutes and during this time any bird observations were recorded, including species and abundance, flight height, distance from the observation point and flight direction.

The November 2023 and February 2024 surveys followed the *Draft BBAMP Framework 2023* (NSW DPE, 2023). Prior to survey effort, a 3 km x 3 km grid was placed over a previous design of the Subject Land and BUS survey points were placed only within quadrants of the grid containing a proposed turbine. This resulted in 16 fixed observation points. Where possible, these were numbered to align with the previous BUS points used in seasonal surveys conducted in 2021 and 2022.

The June, August and October 2024 surveys followed the *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide (working draft)* (NSW DCCEEW, 2024a). Following Project design revisions, additional BUS locations were chosen based on the same 3 km x 3 km grid applied in previous survey seasons. Where possible, previous BUS locations were resampled to ensure data analysis could be as consistent and robust as possible.

BUS were conducted over 30 minutes (November 2023 and February 2024) or 20 minutes (June, August, and October 2024) and repeated across three time periods at each survey location. These time periods were:

- Morning (sunrise to 10:00 am);
- Midday (10:00 am to 2:00 pm); and
- Afternoon (2:00 pm to sunset).

The species, type of observation (visual or aural), microhabitat of the detected species, number of individuals for each species, the distance and direction of the species from the observation point, the species' estimated height above ground level, its direction of travel and its behaviour were recorded.

Twenty-eight final BUS fixed observation points were established and used for bird utilisation assessment. Refer to **Figure 2-1** for the location of BUS. **Table 2-4** outlines all the BUS undertaken per season, the number of repeat surveys and the length of each survey.

TABLE 2-4 SAMPLING EFFORT AND METHODOLOGY FOR BUS ACROSS SURVEY SEASONS

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| Spring 2021 | BUS01, BUS03, BUS06, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS40, BUS42, BUS43, BUS47, BUS48, BUS49, BUS51 | 1 survey (AM) – BUS23, BUS26, BUS27, BUS28, BUS29, BUS30, BUS38<br>1 survey (Midday) - BUS01, BUS06, BUS09, BUS12, BUS14, BUS20, BUS22 (10:30), BUS42, BUS47<br>1 survey (PM) – BUS03, BUS11, BUS17, BUS19, BUS25, BUS34, BUS40, BUS48, BUS49, BUS51 | 20-minute survey |
| Summer 2022 | BUS01, BUS02, BUS03, BUS06, BUS09, BUS11, BUS13, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, | 1 survey (AM) – BUS03, BUS11, BUS30, BUS43, BUS48, BUS49, BUS51<br>1 survey (Midday) – BUS02, BUS06, BUS09, BUS13, BUS14, BUS22, BUS23, BUS29<br>1 survey (PM) – BUS01, BUS17, BUS19, BUS25, BUS26, BUS27, BUS28, BUS38, BUS40, BUS42, BUS20 | 20-minute survey.<br><br>Repeats (BUS20) completed on different days. |

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| | BUS28, BUS29, BUS30, BUS38, BUS40, BUS42, BUS43, BUS48, BUS49, BUS51 | | |
| Autumn 2022 | BUS01, BUS02, BUS03, BUS06, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS42, BUS43, BUS47, BUS48, BUS49. | 1 survey (AM) – BUS03, BUS34.<br>1 survey (Midday) – BUS02, BUS06, BUS09, BUS11, BUS12, BUS22, BUS27, BUS29, BUS30, BUS35, BUS47, BUS48, BUS49<br>1 survey (PM) – BUS14, BUS17, BUS19, BUS20, BUS23, BUS25, BUS26, BUS38, BUS42, BUS43<br>2 repeats for BUS28 (Midday and PM) and BUS01 (AM and Midday) | 20-minute survey.<br><br>Repeats (BUS28 and BUS01) completed on different days. |
| Winter 2022 | BUS01, BUS02, BUS03, BUS06, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS42, BUS43, BUS47, BUS48, BUS49, BUS51. | 1 survey (Midday) – BUS02, BUS06, BUS42, BUS51<br>1 survey (PM) – BUS01, BUS03, BUS09, BUS11, BUS12, BUS14, BUS17, BUS19, BUS20, BUS22, BUS23, BUS25, BUS26, BUS27, BUS28, BUS29, BUS30, BUS34, BUS35, BUS38, BUS43, BUS47, BUS48, BUS49 | 20-minute survey |
| Spring 2023 | BUS07, BUS09, BUS17, BUS18, BUS21, BUS23, BUS35, BUS36, BUS37, BUS41, BUS43, BUS47, BUS48, BUS50, BUS51 | 2 repeats (AM) - BUS17 and BUS50<br>3 repeats (AM, Midday, PM) - BUS07, BUS18, BUS35 and BUS47<br>3 repeats (Midday, PM x 2) - BUS41<br>4 repeats (Midday, PM) - BUS21, BUS23 and BUS43<br>4 repeats (AM) - BUS51<br>6 repeats (AM, Midday, PM) - BUS09, BUS36, BUS37 and BUS48. | 30-minute survey.<br><br>Repeats done on the same day. Repeats completed across the same and different days. |

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| Summer 2024 | BUS02, BUS04, BUS06, BUS08, BUS11, BUS12, BUS13, BUS14, BUS16, BUS17, BUS18, BUS19, BUS20, BUS22, BUS23, BUS32, BUS43, BUS50, | 2 repeats (AM) - BUS23<br>2 repeats (Midday)- BUS08<br>2 repeats (PM) - BUS16<br>3 repeats (1 AM, 2 Midday) - BUS06, BUS32<br>4 repeats (2 AM, 2 PM) - BUS17<br>4 repeats (2 AM, 2 Midday) – BUS18, BUS32<br>4 repeats (2 Midday, 2 PM) - BUS22, BUS50<br>5 repeats (1 AM, 2 Midday, 2 PM) - BUS14<br>5 repeats (1 AM, 2 Midday, 2 PM) - BUS11, BUS12<br>6 repeats (2 AM, 2 Midday, 2 PM) - BUS02, BUS04, BUS13, BUS19, BUS20, BUS43 | 30-minute surveys.<br><br>Repeats mostly completed across the same day. |
| Autumn / Winter 2024 | BUS05, BUS06, BUS09, BUS10, BUS12, BUS18, BUS19, BUS21, BUS24, BUS33, BUS35, BUS36, BUS37, BUS39, BUS43, BUS44, Bus45, BUS46, BUS50 | 1 survey (Midday) - BUS05<br>1 survey (AM) - BUS06, BUS19<br>1 survey (PM) - BUS12, BUS18, BUS33, BUS50<br>3 repeats (AM, Midday, PM) - BUS09, BUS10, BUS21, BUS24, BUS39, BUS44, BUS45, BUS46<br>2 repeats (Midday, PM)- BUS35<br>2 repeats (AM, Midday)- BUS36, BUS37, BUS43 | 20-minute survey. Repeats completed on different days. |
| Winter 2024 | BUS02, BUS04, BUS06, BUS09, BUS10, BUS11, BUS12, BUS13, BUS14, BUS15, BUS16, BUS17, BUS18, BUS19, BUS20, BUS21, Bus22, BUS24, BUS26, BUS27, BUS29, BUS30, BUS31, BUS34, BUS35, BUS36, BUS37, BUS43, BUS44, BUS45, BUS46 | 1 survey (AM) - BUS27, BUS36<br>1 survey (Midday) - BUS29, BUS30<br>1 survey (PM)- BUS02, BUS09, BUS11, BUS44, BUS45, BUS46<br>2 repeats (AM, Midday) – BUS06, BUS19, BUS20, BUS22, BUS34<br>2 repeats (Midday, PM) – BUS12, BUS13, BUS31<br>2 repeats (AM, PM) – BUS26<br>3 repeats (Midday, PM) – BUS04<br>3 repeats (Midday, PM) BUS35<br>3 repeats (AM, Midday, PM) – BUS10, BUS17, BUS18, BUS24, BUS37<br>4 repeats (AM, Midday, PM) – BUS14, BUS43<br>5 repeats (AM, Midday, PM) – BUS15, BUS16, BUS21. | 20-minute survey.<br><br>Repeats completed across different days. |

| Survey Season | BUS Point | Number of repeat surveys | Methodology |
|---|---|---|---|
| Spring 2024 | BUS07, BUS09, Bus10, BUS11, BUS15, BUS16, BUS17, BUS18, BUS24, BUS33, BUS36, BUS37, BUS39, BUS41, BUS43, BUS44, BUS45, BUS46, BUS47, BUS48, BUS50, BUS51 | 1 survey (AM) - BUS07, BUS10, BUS15, BUS24, BUS50<br>1 survey (Midday)- BUS18, BUS33<br>1 survey (PM)- BUS11<br>2 repeats (Midday, PM) - BUS09, BUS16<br>3 repeats (AM x 2, Midday) - BUS43<br>3 repeats (AM, Midday, PM) - BUS17, BUS36, BU37, BUS41, BUS44, BUS45, BUS46, BUS47, BUS48<br>6 repeats (AM, Midday, PM) - BUS39<br>4 repeats (AM, Midday, PM) - BUS51 | 20-minute survey Repeats completed on different days |

#### 2.2.4.2 BIRD CENSUS SURVEYS

Bird census surveys involved the systematic searching of specific habitats for 20-minutes using meandering transects and identifying birds through visual and aural observations (Cwth DEWHA, 2010b). Examples of specific habitats included woodland and riparian areas in the Project area.

#### 2.2.4.3 TARGETED BIRD SURVEYS

Targeted threatened species surveys were conducted using bird census surveys in identified suitable habitat within the Project area. Observations were made from a stationary position with birds being identified through call detection and visual observations. Surveys were conducted for 20 minutes with repeat surveys conducted, where appropriate. to ensure temporal variation in sampling time. Targeted surveys aimed to confirm species presence or investigate the likelihood of occupancy based on available habitat. Targeted surveys were conducted for threatened raptors, such as the square-tailed kite (*Lophoictinia isura*), through observations of suitably-sized stick nests, and the pink cockatoo (*Lophochroa leadbeateri*) through observations of suitably-sized hollows.

#### 2.2.4.4 WATERBODY SURVEYS

Waterbody surveys were conducted in the Project area to assess for the presence of waterbirds (particularly migratory species), and woodland bird species utilising the waterbodies. Observations were made from a stationary position, and birds were identified by call detection and visual observations.

#### 2.2.4.5 CALL PLAYBACK SURVEYS

Call playback and spotlighting surveys were conducted across the Project area in habitat suitable for nocturnal birds, such as threatened owls and the bush stone curlew (*Burhinus grallarius*). Several studies have concluded that owls and other nocturnal bird species are most likely to be detected by call playback techniques combined with spotlighting (Debus, 1995; Kavanagh, 1998). The technique involves broadcasting the species' call then listening for vocalisation from the species. At each survey location, before broadcasting the species call, there should be a listening period of 10 - 15 minutes, followed by spotlighting for 10-minutes to identify any species in the area. After the listening and spotlighting period, the species call is to be broadcast for 3 - 5 minutes, followed by a 10-minute listening period, then another spotlight search around the survey location to detect any species (NSW DEC, 2004; NSW DCCEEW, 2024b).

#### 2.2.4.6 TARGETED DRIVEN FAUNA TRANSECTS

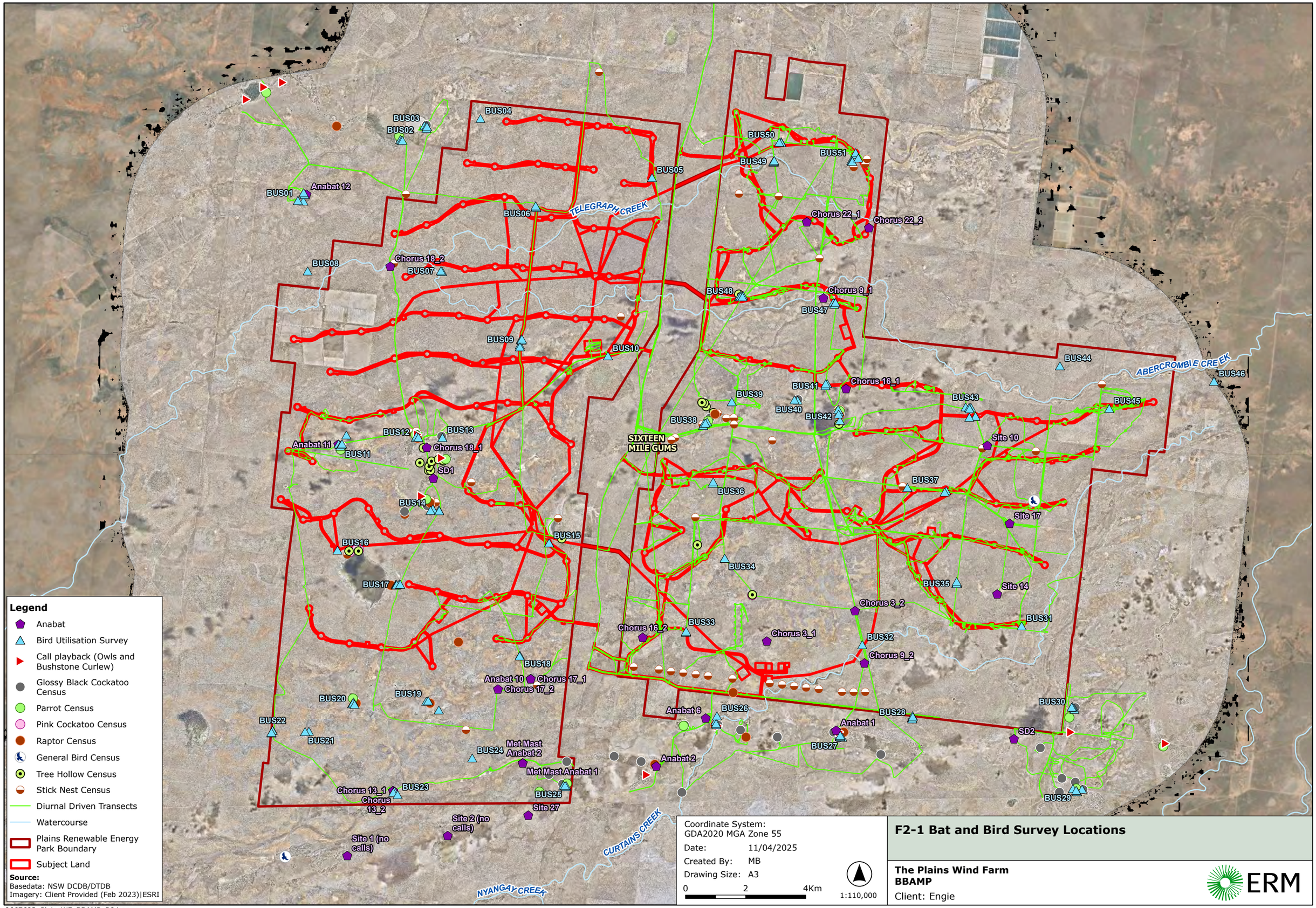
Driven transects were conducted for diurnal and nocturnal avian species due to large extent of the Project area and Subject Land. Driven transects were completed by a slow-moving vehicle (<20 km per hour) at night to look for the Plains-wanderer (*Pedionomus torquatus*) or other nocturnal, ground-dwelling birds or, during the day, to search for the Australian bustard (*Ardeotis australis*) and other diurnal birds. Opportunistic observations of all birds (i.e., raptor species flying or perched on structures) were noted during these driven transects.

### 2.2.5 BAT SURVEYS

Bat echolocation detection surveys were undertaken across three survey periods (February 2022, February - March 2023 and December 2023 - March 2024). The timing of the surveys was planned to capture peak activity and abundance of microbat species within the Subject Land. Bat echolocation detection was undertaken using Chorus detectors (Titley Electronics) and Anabat Swift detectors (Titley Electronics). Acoustic detectors were pre-programmed to commence recording 30 minutes before dusk and cease recording 30 minutes after sunrise. Survey locations were identified based on the presence of suitable habitat (woody vegetation and/or presence of water) as outlined in the *Wind Farms – turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide (working draft)* (NSW DCCEEW, 2024a).

In addition, a single bat acoustic detector was placed on a met mast with a single omni-directional microphone placed at a height of 75 m over a period of 51 nights from March to May 2023, and for three months from June to September 2024. Data collected from this 75 m microphone are intended to supplement acoustic survey data undertaken at ground level and to source bat acoustic information as close to the proposed RSA (90 – 270 m) as possible. The location of the met mast is no longer situated within the Subject Land. However, it was situated in areas representative of the dominant vegetation communities likely to be impacted by the Project.

The placement of the bat acoustic recording devices for all survey periods is provided in **Figure 2-1**.




**Legend**

- Anabat
- Bird Utilisation Survey
- Call playback (Owls and Bushstone Curlew)
- Glossy Black Cockatoo Census
- Parrot Census
- Pink Cockatoo Census
- Raptor Census
- General Bird Census
- Tree Hollow Census
- Stick Nest Census
- Diurnal Driven Transects
- Watercourse
- Plains Renewable Energy Park Boundary
- Subject Land

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55
Date: 11/04/2025
Created By: MB
Drawing Size: A3
0 2 4Km
1:110,000

# F2-1 Bat and Bird Survey Locations

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

## 2.3 RESULTS

### 2.3.1 SITE CHARACTERISTICS

The relatively homogenous landform which characterises the Subject Land (i.e., plain) and the predominantly uniform vegetation structure (i.e., scattered low chenopod shrubs and tussocky groundcover) represent the main factors in defining bird habitat and associated composition. In addition, the seasonal availability of water resources, typical of a semi-arid climate, dictates habitat suitability.

The sparse occurrence of woody vegetation (i.e., trees and/or tall shrub canopy strata) means that many avian species reliant on hollows and/or tree canopies as part of their lifecycle are likely to have a patchy distribution aligned with drainages lined with Black Box (*Eucalyptus largiflorens*) or isolated sandy rises where remnant trees may occur within the Project area. These features are not available in the Subject Land. Similarly, water dependent species are also rare to absent as the flat plain that characterises the Subject Land is generally dry with inundation being periodic and limited to lands with low relief.

Non-passerine bird species (birds not within the order Passeriformes) are most likely to benefit from the prevailing habitat characteristics of the Subject Land. Species likely to be observed include raptors, quails and allies, pigeons and doves, swifts and the emu (*Dromaius novaehollandiae*). If observed, non-passerine species reliant on microhabitats offered by areas of wetland or a tree canopy would likely be transient, such as grebes, pelicans and allies, herons and allies, ducks and allies, waders and gulls, cuckoos and kingfishers.

Smaller and/or generalist passerine species most likely to be observed in the Subject Land include crows, ravens, magpies, wrens, pipits and small, shrub-dwelling birds. The presence of anthropogenic features such as fence lines, posts and dams would provide localised favourable conditions for some smaller passerine species such as larks, robins, wagtails, thornbills and finches. Granivores, such as parrots and finches, would also benefit from the presence of areas of grassland. All birds, whether resident, migratory or nomadic, and bat species not dependent on woody vegetation, would benefit from water sources such as farm dams.

#### 2.3.1.1 RESIDENT RAPTOR HABITAT

As per Section 6.1.5 of the BAM, the likely habitat for resident raptor species has been assessed for the Subject Land. Broad habitat types suitable for raptors have been grouped based on Keith (2004) vegetation classes as presented in Table 2-5 . Woodland habitat in the surrounding locality and Project area has been observed to support resident raptor nesting sites, and relatively high levels of raptor activity. Avian activity was observed to reduce in relation to proximity of woodland patches, with a decline in abundance evident at survey sites > 300 m from a woodland patch. The highly mobile raptor species are likely to utilise remaining grassland, shrubland and non-native vegetation habitat across the site to support foraging behaviour. Woodland patches in the Project area are presented in **Figure 2-2.**

As all habitat across the Subject Land provides foraging resources for raptors and nesting within some manmade structures, such as windmills and electricity pylons, resident raptors are anticipated to inhabit the entirety of the site.

TABLE 2-5 RAPTOR HABITAT TYPES

| Broad Habitat Type | Vegetation Class (Keith 2004) | Extent within the Subject Land (ha) |
|---|---|---|

| Subject Land | | |
|---|---|---|
| Grasslands | Riverine Plain Grasslands | 54.50 |
| Shrublands | Inland Floodplain Shrublands | 32.40 |
| | Aeolian Chenopod Shrublands | 4.67 |
| | Riverine Chenopod Shrublands | 1,921.73 |
| Non-native Vegetation | Non-native Vegetation | 65.88 |

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#### 2.3.1.2 MIGRATORY SHOREBIRDS

The Onshore Wind Farm Guidance (Cwth DCCEEW, 2024d) provides directives for mitigating the impacts of the proposed development on MNES matters during construction and operation. Migratory shorebirds are of high conservation value internationally and protected under the EPBC Act. While Project design has mitigated impacts to important habitat areas for MNES matters, potential ongoing impacts to threatened and migratory species may occur through direct collision with operating WTGs.

Large ephemeral wetlands, ephemeral creeks and associated floodplains are present throughout the Project area and may provide suitable non-breeding habitat to migratory shorebirds during periods of seasonal or episodic inundation. In this BBAMP, potential habitat for migratory shorebirds has been defined as any ephemeral wetland or creek that has the potential for episodic inundation and may provide areas of exposed mud suitable for foraging. Habitat definitions are in line with the draft referral guidelines for 14 migratory birds listed under the EPBC Act (Cwth DoE, 2015a). While associated floodplains may offer ancillary foraging opportunities during seasonal inundation, these are not generally considered to provide important habitat characteristics for migratory shorebirds and so have not been considered in the specific assessment of impacts relating to WTG collision. While many migratory shorebirds are known to fly at high altitudes when undergoing long distance migrations (Senner, et al., 2018; Li, et al., 2020), internal movements between habitat features will likely occur at low altitude and increase the risk of potential collisions, particularly during climbing or descending flights. Avoidance rates of turbines by migratory shorebirds at a turbine specific scale are poorly understood with evidence that avoidance behaviour typically occurs at small scales (Schwemmer, et al., 2023).

Individuals interacting with the Subject Land are likely to be using linear flight pathways when moving between habitat features. The proposed location of WTGs may increase barriers to landscape movement that limit the species' ability to access important non-breeding habitats. To effectively mitigate the collision risk for migratory shorebirds, operational stage mitigation measures will be required for those turbines within direct linear flightpaths between suitable wetland habitats. Proposed mitigation measures have been identified to address these impacts on migratory shorebirds (and other avian species) in **Section 4**. Wetland and waterbody mapping is provided in **Figure 2-2**.

FIGURE 2-2 AVIAN HABITAT

### 2.3.2 BIRD SITE UTILISATION

A combined total of 118 species were identified through BUS and additional bird species were observed opportunistically. Observations included nine threatened bird species; one of which (the sharp-tailed sandpiper (*Calidris acuminata*)) is also listed as a migratory species under the EPBC Act. Details of threatened bird species are provided in **Section 2.3.2.1**. The relatively homogenous landscape within the Subject Land, dominated by open grassland or chenopod shrublands, supports generalist species and open grassland specialists, such as the brown songlark (*Cincloramphus cruralis*), white-winged fairy-wren (*Malurus leucopterus*) and the nankeen kestrel (*Falco cenchroides*). Open woodland of black box (*Eucalyptus largiflorens*) or river red gum (*Eucalyptus camaldulensis*) is patchily distributed in parts of the Project area (but not the Subject Land) and is associated with a greater species diversity and an abundance of woodland and hollow-dependent fauna, including the galah (*Eolophus roseicapilla),* black-faced cuckoo-shrike (*Coracina novaehollandiae*) and western gerygone (*Gerygone fusca*). Ephemeral wetlands, waterways and floodplains are present throughout the Project area and offer variable habitat quality driven by seasonal rainfall and episodic inundation. Artificial dams and irrigation / drainage channels are also present throughout the Project area and offer water sources for all birds and temporary and non-breeding habitat for water birds.

Due to the homogeneity of available habitat throughout the Subject Land, bird diversity and utilisation was only found to vary temporally with no clear changes to bird utilisation spatially. Temporal changes to bird utilisation are likely to be driven by seasonal rainfall and flooding regimes where overland flooding facilitates suitable conditions for higher landscape connectivity, foraging opportunities for nomadic and semi-migratory species, and increased prey availability for raptors. While flooding regimes are likely to be less frequent, larger ephemeral wetlands within the Project area have been observed to provide habitat and refugia to large numbers of wetland and migratory shorebirds when inundated and will likely be important drivers of bird movement across the Project area and the surrounding landscape. Note that wetland areas have been excluded from the Subject Land.

A risk assessment in relation to turbine strike on bird species within the Subject Land has been provided in **Section 3**.

All bird species identified within the Project area have been listed in Appendix B of the Amended BDAR. The raw BUS data are provided in Appendix J of the Amended BDAR.

#### 2.3.2.1 THREATENED BIRD SPECIES

Nine threatened bird species were observed during field surveys; one of which (the sharp-tailed sandpiper (*Calidris acuminata*)) is also listed as a migratory species under the EPBC Act. The locations of threatened bird species observed within the Project area are provided in **Figure 2-3**.

The nine species' site utilisation details and habitat requirements are provided below.

**Black Falcon (*Falco subniger*)**

The black falcon (*Falco subniger*) is listed as vulnerable under the BC Act. Twenty-eight individuals have been observed within the Project area through BUS and incidental observations, typically in areas characterised by low open chenopod shrubland or open grasslands. Site utilisation was variable and ranged from perching on shrubs to foraging flights up to 150 m. Breeding attempts have not been confirmed within the Subject Land; however,

suitable nesting habitat may be present within the Project area. Foraging habitat, being open shrubland and grasslands, is considered widespread throughout the Subject Land and surrounding Project area and may lead to interactions between the species and the proposed infrastructure. A minimum of three individuals of the same species flying at heights within the RSA has been determined as the statistical minimum required for inclusion within the CRM. As only a couple of observations of the black falcon have been made flying within RSA height, expected mortality estimates could not be calculated using the CRM. However, a collision risk assessment for this species is discussed in **Section 3.3.2**.

**Dusky Woodswallow (*Artemus cyanopterus*)**

The dusky woodswallow (*Artemus cyanopterus*) is listed as vulnerable under the BC Act. Only a single observation of the species has been made through site investigations. The individual was detected in February 2023 along a roadside surrounded by open chenopod shrubland. Suitable habitat, considered to be open woodland and tall shrubland, is patchily distributed throughout the Project area, and not present within the Subject Land. However, the species may forage in low shrublands and grasslands when conditions are suitable. Flight heights within the RSA have not been observed within the Subject Land and so collision mortality estimates could not be calculated. However, a collision risk assessment for this species is provided in **Section 3.3.2**.

**Grey-crowned Babbler (eastern sub-species) (*Pomatostomus temporalis temporalis*)**

The grey-crowned babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*) is listed as vulnerable under the BC Act. Six individuals were recorded flying below the canopy at BUS23 in October 2021 (refer to **Figure 2-1**), at approximately 10 m above the ground. The species were recorded on the edge of a eucalypt-dominated creek line adjacent to a cleared paddock in the Project area. This habitat is typical of the species as it prefers eucalypt woodlands on slopes and alluvial plains (NSW DCCEEW, 2024b). Woodland areas have been excluded from the Subject Land, however, eucalypt dominated woodlands are present in the Project area near creek lines and in small, discrete patches. Foraging and movement of the species is typically below or just above the canopy and with limited dispersal potential beyond the extent of the treeline. As such the species is not considered to be at risk of collision.

**Little Eagle (*Hieraaetus morphnoides*)**

The little eagle (*Hieraaetus morphnoides*) is listed as vulnerable under the BC Act. Five observations of the species have been made throughout field investigations, two of which were of confirmed active nests in the Project area (at a distance from the Subject Land). Changes to the Project design over time ensured that breeding habitat for the species was excluded from the Subject Land. However, potential foraging habitat is considered to include the entirety of the Subject Land (NSW DCCEEW, 2024b). No observations of the species have been made flying at heights considered at risk of collision and, therefore, expected mortality estimates could not be calculated using the CRM. However, a collision risk assessment for this species is provided in **Section 3.3.2**.

**Plains-wanderer (*Pedionomus torquatus*)**

The Plains-wanderer (*Pedionomus torquatus*) is listed as endangered under the BC Act and critically endangered under the EPBC Act. Five observations of the species have been made of the species across the Project area, near the Subject Land. One observation included an adult bird and chick. Observations of the species were made within habitat commonly occupied by the species, being sparse, low grasslands. The Plains-wanderer is typically limited to the ground layer for foraging and dispersal (NSW DCCEEW, 2024b), as such the species is not considered at risk of collision.

**Sharp-tailed Sandpiper (*Calidris acuminata*)**

The sharp-tailed sandpiper (*Calidris acuminata*) is listed as vulnerable and as a migratory species under the EPBC Act. Two observations have been made of the species (March 2023 and September 2024) throughout site investigations in the Project area. In both instances, the species was observed in small flocks of up to approximately 35 individuals in nitre goosefoot *(Chenopodium nitrariaceum*) dominated wetlands that featured large expanses of exposed mud. While ephemeral floodplains are present in the Project area, it is likely that only those larger in size and containing areas of open mud or short vegetation will provide suitable foraging habitat for the sharp-tailed sandpiper. The species is typically associated with coastal and intertidal wetlands and estuaries in Australia, however, inland wetlands can still provide important foraging habitat when suitably inundated and ephemeral wetlands within the Project area, when the conditions are right, are likely to be important refugia during long distance movements. Note that wetland areas have been excluded from the Subject Land through Project design. Flight heights within the RSA have not been observed for the sharp-tailed sandpiper and so collision risk estimates could not be estimated for the species. However, a collision risk assessment for this species is provided in **Section 3.3.2** and individuals may be at risk of collision during long distance movements.

**Southern Whiteface (*Aphelocephala leucopsis*)**

The southern whiteface (*Aphelocephala leucopsis*) is listed as vulnerable under the BA Act and the EPBC Act. The species was observed across 14 different BUS locations and opportunistically, with a total count of 137 individuals recorded during survey efforts. Observations of the species were recorded between 1 - 15 m above the ground, and it was frequently situated within large bushes, on fences and gates, in proximity to farm dams, eucalypt dominated creek lines, shrubland plains and small patches open woodland within the Project area. The southern whiteface's preferred habitat includes open woodlands and shrublands where there is a grassy or shrub dominated understorey (Cwth DCCEEW, 2023a). The Project area contains small patches of suitable habitat for the species, however, as the southern whiteface feeds almost exclusively on the ground and breeds in low, woody vegetation (Cwth DCCEEW, 2023a), the species is not considered at risk of collision.

**Spotted Harrier (*Circus assimilis*)**

The spotted harrier (*Circus assimilis*) is listed as vulnerable under the BC Act. Twenty-one individuals of the species have been observed incidentally and at eight BUS locations across the Project area. Individuals have been seen flying above open woodland, grassland and open shrublands present within the Project area. Individuals were observed foraging low over the ground, particularly in areas experiencing overland flooding or seasonal inundation, as

Menkhorst et al. (2019) report is typical of the species. No observations of individuals have been made flying at heights considered at risk of collision so collision mortality estimates could not be calculated. However, a collision risk assessment for this species is provided in **Section 3.3.2**.

**White Fronted Chat (*Epthianura albifrons*)**

The white fronted chat (*Epthianura albifrons*) is listed as vulnerable under the BC Act. Over 200 individuals of the species have been observed across the Project area. Recorded flight heights were between 1 – 24 m above the ground. The species was recorded in proximity to farm dams, eucalypt-dominated creek lines, shrubland plains and small patches of open woodland. Habitat typical of the species is bare or grassy ground in proximity to wetlands (NSW DCCEEW, 2024b). Due to the foraging and dispersal behaviour of the species being limited to the ground and the canopy (NSW DCCEEW, 2024b), the species is not considered to be at risk of collision.

#### 2.3.2.2 RAPTOR SITE UTILISATION

Thirteen raptor species have been observed across all survey periods in the Project area. Species include:

- Australian hobby (*Falco longipennis*);
- Black falcon (*Falco subniger*);
- Black kite (*Milvus migrans*);
- Black-shouldered kite (*Elanus axillaris*);
- Brown falcon (*Falco berigora*);
- Eastern barn-owl (*Tyto javanica*);
- Little eagle (*Hieraaetus morphnoides*);
- Nankeen kestrel (*Falco cenchroides*);
- Peregrine falcon (*Falco peregrinus*);
- Spotted harrier (*Circus assimilis*);
- Swamp harrier (*Circus approximans*)
- Wedge-tailed eagle (*Aquila audax*); and
- Whistling kite (*Haliastur sphenurus*).

Raptor presence and site utilisation was detected across the Project area with raptors being observed in most BUS and most seasons. The black kite, nankeen kestrel and wedge-tailed eagle were the most observed raptors within the Project area. The wedge-tailed eagle was the most observed raptor, with 28% of all raptor observations being of this species. Observations of the nankeen kestrel constituted 24% of all raptor observations and the black kite constituted 19% of all raptor observations.

The wedge-tailed eagle and black kite are known to fly or hover at heights within the RSA (90 – 270 m), with 132 wedge-tailed eagles observed flying within the RSA and 35 black kites. Wedge-tailed eagles are also known to fly at extremely high heights, using air thermals soar through the air to look for prey. The nankeen kestrel was commonly observed at heights of 2 – 150 m above the ground, within only seven individuals observed flying within the RSA.

Of the remaining raptor species, only the black falcon (2 individuals), brown falcon (1 individual), little eagle (2 individuals) and whistling kite (6 individuals) were observed flying within the RSA.

### 2.3.3 BAT SITE UTILISATION

Acoustic call detection surveys were conducted within the Subject Land across four sampling periods. The placement of bat acoustic detectors across all seasons is shown in Figure 2-3 Bat acoustic detector analysis reports are provided in Appendix C, D and E of the Amended BDAR. A summary is presented below.

Analysis of bat acoustic recordings was carried out by Green Tape Solutions for recordings collected in February 2022, February 2023, December 2023 – March 2024, and on the met mast from June to September 2024. Call reliability was categorised by the following:

- **Definite** – one or more calls where there is no doubt about the identification of the species;
- **Probable** – most likely to be the species named, low probability of confusion with species that use similar calls; and
- **Possible** – call is comparable with the named species, with a moderate to high probability of confusion with species of similar calls.

Lachlan McRae Fauna Services conduced the analysis of the bat acoustic device placed on the met mast between March and May 2023. Call reliability was categorised by the following:

- **Certain** – no doubt about the identification of the species. This rating is typically reserved for species that do not overlap in characteristic frequency and/or call shape with other species;
- **High** – small chance of confusion with another species. This rating is typically given if there are other species that overlap in characteristic frequency and call shape;
- **Moderate** – moderate chance of confusion with another species; and
- **Species Group** – call could more or less equally belong to one of two or more species. Occurs more frequently when calls contain only a few pulses, are of poor quality, and/or if recordings are in zero-crossing as opposed to full-spectrum.

#### 2.3.3.1 BAT CALL ANALYSIS RESULTS - FEBRUARY 2022

Microbat calls were sampled using eight Anabat Swift detectors (Titley Scientific), deployed for 10 nights (Anabat 1, Anabat 2, Anabat 6, Anabat 10, Anabat 11, Anabat 12, SD1 and SD2). Passive monitoring was undertaken from 13 to 24 February 2022 with data analysed using Anabat Insight (Titley Scientific). Monitoring commenced at dusk (approximately 1800 hours) and continued until dawn (approximately 0530 hours). Ultrasonic call monitoring surveys on anabat devices were conducted using full-spectrum fitted with omnidirectional ultrasonic microphones.

The full echolocation analyses for the anabats deployed during February 2022 can be found in Appendix C of the Amended BDAR. A total of 13 bat species were recorded in the Project area, shown in **Table 2-6**. One threatened species, the yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*), listed as vulnerable under the BC Act, was confirmed to occur with a 'definite' call confidence recorded at two bat acoustic detection devices (SD1 and SD2). The southern myotis (*Myotis macropus*), listed as vulnerable under the BC Act, had 'possible' detections in data from all bat acoustic detection devices. In addition, there were possible recordings at SD1 and

Anabat 6 of a *Nyctophilus* sp. The Corben's long-eared bat (*Nyctophilus corbeni*) is listed as vulnerable under the BC Act and EPBC Act, and the Eastern Long-eared Bat (*Nyctophilus bifax*) is listed as vulnerable under the BC Act. However, this *Nyctophilus* sp. could not be confirmed, and recordings were not made within the Subject Land (refer to **Figure 2-1**).

TABLE 2-6 BAT ACOUSTIC DETECTION RESULTS - FEBRUARY 2022

| Scientific Name | Common Name | BC Act | EPBC Act | SD1 | SD2 | Anabat 1 | Anabat 2 | Anabat 6 | Anabat 10 | Anabat 11 | Anabat 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Austronomus australis* | White-striped free-tailed bat | - | - | Definite | Definite | | | | | | |
| *Chalinolobus gouldii* | Gould's wattled bat | - | - | Definite | Definite | Definite | | Definite | | Definite | Definite |
| *Chalinolobus morio* | Chocolate wattled bat | - | - | Definite | Definite | | | Definite | | Definite | |
| *Myotis macropus* | Southern myotis | V | - | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |
| *Nyctophilus* sp. | - | V (*N. corbeni, N. bifax*) | V (*N. corbeni*) | Possible | | | | Possible | | | |
| *Ozimops planiceps* | South-eastern free-tailed bat | - | - | Probable | Probable | | | | | Definite | |
| *Ozimops ridei* | Eastern tree-tailed bat | - | - | Probable | Definite | | | Definite | | Definite | |
| *Saccolaimus flaviventris* | Yellow-bellied sheath-tailed bat | V | - | Definite | Definite | | | | | | |
| *Scotorepens balstoni* | Inland broad-nosed bat | - | - | Definite | Definite | | | Definite | | | Probable |
| *Scotorepens greyi* | Little broad-nosed bat | - | - | Definite | Definite | | | Definite | | | Probable |
| *Vespadelus darlingtoni* | Large forest bat | - | - | Probable | Definite | | Definite | | | | Definite |
| *Vespadelus regulus* | Southern forest bat | - | - | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |
| *Vespadelus vulturnus* | Little forest bat | - | - | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |

*V = vulnerable; empty cells are where species was not detected.*

#### 2.3.3.2 BAT CALL ANALYSIS RESULTS - FEBRUARY TO MARCH 2023

Microbat calls were analysed using Anabat Insight following passive acoustic monitoring using six Anabat Swift Detectors (Titley Scientific) between February and March 2023. Three devices were deployed for nine nights (Site 10, Site 14 and Site 17), three devices were deployed for 10 nights (Site 1, Site 2 and Site 27). Two devices (Site 1 and Site 2) did not record any bat calls.

Monitoring commenced at dusk (approximately 1800 hours) and continued until dawn (approximately 0530 hours). Ultrasonic call monitoring surveys on anabat detectors were conducted using full-spectrum fitted with omnidirectional ultrasonic microphones. A full bat acoustic detection analysis report can be found in Appendix D of the Amended BDAR.

A total of 45,403 sequence files were analysed but noise in 28% of these recordings meant that bat detection was not possible. Twelve bat species were detected from the usable recordings. These are listed in Table 2-7. The southern myotis (*Myotis macropus*), listed as vulnerable under the BC Act, had 'possible' detections in data from three of the bat acoustic detection devices (Site 10, Site 17 and Site 27).

TABLE 2-7 BAT CALL ANALYSIS RESULTS – FEBRUARY TO MARCH 2023

| Scientific Name | Common Name | BC Act | EPBC Act | Site 10 | Site 14 | Site 17 | Site 27 |
|---|---|---|---|---|---|---|---|
| *Austronomus australis* | White-striped Free-tailed Bat | - | - | Definite | | | Definite |
| *Chalinolobus gouldii* | Gould's Wattled Bat | - | - | Definite | Definite | | Definite |
| *Chalinolobus morio* | Chocolate Wattle Bat | - | - | | Probable | | Probable |
| *Myotis macropus* | Southern Myotis | V | - | Possible | | Possible | Possible |
| *Nyctophilus geoffroyi* | Lesser Long-eared Bat | - | - | Possible | | Possible | Possible |
| *Nyctophilus gouldi* | Gould's Long-eared Bat | - | - | Possible | | Possible | Possible |
| *Ozimops ridei* | Eastern Free-tailed Bat | - | - | Definite | Definite | Definite | Definite |
| *Scotorepens balstoni* | Inland Broad-nosed Bat | - | - | Possible | Possible | Possible | Possible |
| *Scotorepens greyii* | Little Broad-nosed Bat | - | - | Possible | Possible | Possible | Possible |
| *Vespadelus darlingtoni* | Large Forest Bat | - | - | | Possible | | |

| Scientific Name | Common Name | BC Act | EPBC Act | Site 10 | Site 14 | Site 17 | Site 27 |
|---|---|---|---|---|---|---|---|
| *Vespadelus regulus* | Southern Forest Bat | - | - | Possible | Possible | Possible | Possible |
| *Vespadelus vulturnus* | Little Forest Bat | - | - | Possible | Possible | Possible | Possible |

*V = vulnerable; empty cells are where species was not detected.*

#### 2.3.3.3 BAT CALL ANALYSIS RESULTS - DECEMBER 2023 TO MARCH 2024 AND JUNE TO SEPTEMBER 2024

Microbat calls were analysed using Anabat Insight with bat acoustic recordings from seven Chorus detectors (Titley Scientific) placed near to the ground from December to March 2024, and one Chorus detector placed on the met mast from June to September 2024. The seven Chorus detectors deployed from December 2023 - March 2024 were placed in two locations, as follows:

**Location 1:**

- One device deployed over seven nights (Chorus 22);
- Six devices deployed over five nights (Chorus 3, Chorus 9, Chorus 13, Chorus 16, Chorus 17 and Chorus 18).

**Location 2:**

- One device deployed over 17 nights (Chorus 13);
- Four devices deployed over 18 nights (Chorus 3, Chorus 9, Chorus 16 and Chorus 22);
- Two devices deployed over 19 nights (Chorus 17 and Chorus 18).

The one Chorus detectors deployed from June to September 2024 was placed in one location – a met mast in the Project area, as follows:

**Met mast:**

- A single device was attached to the met mast with an omnidirectional microphone set to a height of 75m.

A full bat acoustic detection analysis report can be found in Appendix E of the Amended BDAR. Note that the dates provided for the met mast recording are incorrect and there are coordinate errors in the report. The correct locations of the call detection devices are presented in **Figure 2-1.**

A total of 91,171 sequence files were analysed but noise in 23% of these recordings meant that bat detection was not possible. Thirteen individual specie were detected, as presented in Table 2-8. The southern myotis (*Myotis macropus*), listed as vulnerable under the BC Act, had 'probable' detections in data from five of the bat acoustic detection devices (Chorus 9, 13, 16, 17 and 18).

TABLE 2-8 BAT CALL ANALYSIS RESULTS - DECEMBER 2023 TO MARCH 2024 AND JUNE TO SEPTEMBER 2024

| Species | Common name | BC Act | EPBC Act | December 2023 – March 2024 | | | | | | | June to September 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chorus 3 | Chorus 9 | Chorus 13 | Chorus 16 | Chorus 17 | Chorus 18 | Chorus 22 | Met Mast |
| *Austronomus australis* | White-striped freetail bat | - | - | Definite | Definite | Definite | Definite | Definite | Definite | Definite | Definite |
| *Chalinolobus gouldii* | Gould's wattled bat | - | - | Definite | Definite | Definite | Definite | Definite | | Definite | Definite |
| *Chalinolobus morio* | Chocolate wattled bat | - | - | | Definite | | Definite | | | Definite | Definite |
| *Myotis macropus* | Southern myotis | V | - | | Probable | Probable | Probable | Probable | Probable | | |
| *Nyctophilus geoffroyi* | Lesser long-eared bat | - | - | | Possible | Probable | Probable | Probable | Probable | | |
| *Nyctophilus gouldi* | Gould's long-eared bat | - | - | | Possible | Probable | Probable | Probable | Probable | | |
| *Ozimops planiceps* | South-eastern freetail bat | - | - | Probable | Probable | Probable | Probable | | Probable | Probable | Probable |
| *Ozimops ridei* | Eastern freetail bat | - | - | Probable | Definite | Definite | Definite | Definite | Definite | Definite | Definite |
| *Scotorepens balstoni* | Inland broad-nosed bat | - | - | Probable | Probable | Probable | Probable | Definite | Probable | Probable | Probable |
| *Scotorepens greyii* | Little broad-nosed bat | - | - | Possible | Possible | Probable | Definite | Probable | Possible | Possible | Definite |

| Species | Common name | BC Act | EPBC Act | December 2023 – March 2024 | | | | | | | June to September 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chorus 3 | Chorus 9 | Chorus 13 | Chorus 16 | Chorus 17 | Chorus 18 | Chorus 22 | Met Mast |
| *Vespadelus darlingtoni* | Large forest bat | - | - | Probable | Definite | Probable | Probable | Probable | Definite | Definite | Probable |
| *Vespadelus regulus* | Southern forest bat | - | - | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |
| *Vespadelus vulturnus* | Little forest bat | - | - | Possible | Possible | Possible | Possible | Possible | Possible | Possible | Possible |

*V = vulnerable; empty cells are where species was not detected.*

#### 2.3.3.4 BAT CALL ANALYSIS RESULTS – MARCH T0 MAY 2023

Microbat calls were sampled following passive monitoring using a single Anabat Swift detector (Titley Scientific) for a total of 51 recording nights between March 2023 and May 2023, placed on the met mast in the Project area (refer to **Figure 2-1**). A total of approximately 29,000 files were analysed, containing 466 usable bat calls. Six bat species were detected, as presented in **Table 2-9**. No threatened species were recorded during this acoustic recording period. The full acoustic analysis report can be found in Appendix D of the Amended BDAR.

TABLE 2-9 SUMMARY OF BAT CALL ANALYSIS - MARCH TO MAY 2023

| Scientific Name | Common Name | BC Act | EPBC Act | ID Confidence |
|---|---|---|---|---|
| *Austronomus australis* | White-striped free-tailed bat | - | - | Certain |
| *Ozimops planiceps* | South-east free-tailed bat | - | - | High |
| *Chalinolobus gouldii* | Gould's wattled bat | - | - | High |
| *Ozimops ridei* or *Ozimops petersi* | Ride's free-tailed bat or Inland free-tailed bat | - | - | High |
| *Scotorepens balstoni* | Inland broad-nosed bat | - | - | Moderate |
| *Vespadelus vulturnus* | Little forest bat | - | - | High |
| *Chalinolobus morio* | Chocolate wattled bat | - | - | High |

#### 2.3.3.5 MICROBAT SPECIES DETECTED

Wattled bats, such as the Gould's wattled bat (*Chalinolobus gouldii*) and the chocolate wattled bat (*Chalinolobus morio*), can generally be found in a wide range of habitats, including forests and woodlands, and typically roost in tree hollows. These species prefer a diet of moths and beetles but will eat other insects if available (Churchill, 2008).

Free-tailed bats, such as those recorded (Ride's free-tailed bat (*Ozimops ridei*), Inland free-tailed bat (*Ozimops petersi*), South-east free-tailed bat (*Ozimops planiceps*) and White-striped free-tailed bat (*Austronomus australis*)) are high-and-fast flying insectivorous species that roost in large tree hollows or houses. Their habitat selection is primarily based on food abundance. The species' habitat recorded within the Project area includes woodlands and agricultural lands (Hall, Lumsden, & Parnaby, 2008).

Broad-nosed bat species - the Inland broad-nosed bat (*Scotorepens balstoni*) and the little broad-nosed bat (*Scotorepens greyii*) - were detected within the Project area. This insectivorous group of species is found in arid grasslands, woodlands, swamps and a diverse range of other habitats. They may roost in fence post hollows in arid zones and walls of buildings in wetter areas (Hall, Lumsden, & Parnaby, 2008).

The yellow-bellied sheathtail bat (*Saccolaimus flaviventris*) has a dietary preference for beetles and is found in nearly all habitats, utilising large tree hollows for roosting (Armstrong, 2017).

The forest bats, *Vespadelus* spp., recorded within the Project area are considered insectivores. The large forest bat (*Vespadelus darlingtoni*) inhabits a wide range of habitats, including woodlands and will roost in buildings and caves. The Southern forest bat (*Vespadelus regulus)* inhabits shrublands, low shrub woodland and mixed temperate woodland and roosts in tree hollows and sometimes buildings. The little forest bat (*Vespadelus vulturnus*) occupies open eucalypt woodlands and acacia and cypress shrublands, salt marshes and tree-lined watercourses. It roosts in dead trees and hollows (Baker & Gynther, 2023).

Long-eared bats, such as those recorded – the lesser long-eared bat (*Nyctophilus geoffroyi*), Gould's long-eared bat (*Nyctophilus gouldi*) and another *Nyctophilus* sp. - are insectivorous species that roost in large tree hollows and under bark. The species are commonly observed at night swooping to eat insects (Baker & Gynther, 2023).

A detailed discussion on the expected collision risk relating to microbats is provided in Section 3.3. Proposed mitigation measures aimed at minimising the impacts of the Project on microbats are outlined in Section 4.

TELEGRAPH CREEK

ABERCROMBIE CREEK

CURTAINS CREEK

**Legend**

**Threatened Bat Species***

- Southern Myotis, Yellow-bellied Sheath-tailed Bat, Nyctophilus sp
- Southern Myotis, Yellow-bellied Sheath-tailed Bat
- Southern Myotis

**Threatened Bird Species**

- Black Falcon
- Dusky Woodswallow
- Grey-crowned Babbler
- Little Eagle
- Plains-wanderer
- Sharp-tailed Sandpiper
- Southern Whiteface
- Spotted Harrier
- White-fronted Chat
- Watercourse
- Subject Land
- Plains Renewable Energy Park Boundary

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

*** Acoustic Detection Only**

Coordinate System:
GDA2020 MGA Zone 55

Date: 15/04/2025

Created By: MB

Drawing Size: A3

0 1.5 3Km

1:100,000

# F2-3 Threatened Bird and Bat Species within the Plains Renewable Energy Park

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

0667692_PlainsWF_BBAMP_R05.aprx

# 3. COLLISION RISK ASSESSMENT AND MODELLING

## 3.1 BACKGROUND

*Onshore Wind Farm Guidance* (Cwth DCCEEW, 2024d) details the need to undertake risk assessments for birds and bats following utilisation surveys within the Subject Land. The risk assessment outlined in this section has considered the likelihood and consequences of different events relating to the lifespan of the Project, including collision with WTGs and the impacts of construction and operation on avian species.

The aforementioned document also recommends Before-After-Control-Impact (BACI) design principles for all surveys where the Subject Land is determined to support significant avian species and populations. The aim of the BACI design is to compare environmental variables before and after a human activity, and the area affected by the development (impact) and an unaffected area (control) (Stewart-Oaten, Murdoch, & Parker, 1986). In the case of the Project, BACI design would compare control and impact areas, before and after the construction of the windfarm, to determine if there are any avian impacts as a result of the development. The BBUS and other avian surveys described in **Section 2** which are situated in the Subject Land provide the 'before' surveys in the Subject Land, and the BBUS situated in the Project area, in areas which will not be directly impacted by development, are the control areas. Refer to **Figure 2-1**.

Collision Risk Modelling was undertaken in accordance with the Band CRM Method (Band, Madders, & Whitfield, 2007) for any raptor species, threatened and migratory species recorded in the Subject Land and assessed as having a potential collision risk. This was possible as BACI designed surveys collected sufficient data to undertake Band CRM Method analysis, particularly as over 24 months of survey effort has been undertaken (Cwth DCCEEW, 2024d; NSW DCCEEW, 2024a). The CRM can be found in **Section 3.5**.

## 3.2 TURBINE PRELIMINARY RISK RATING

A total of 171 WTG have been proposed across the Subject Land. The current layout, shown in **Figure 1-1**, has been refined following ecological investigations to ensure the suitable avoidance of areas of high ecological value and habitat quality. More detail is provided in the Amended BDAR. Risk factors associated with the current turbine layout can be categorised by the proximity of turbines to important habitat features, such as woodlands, important wetlands and riparian corridors. A preliminary risk matrix (

Table 3-1) has been developed for this BBAMP to assess turbine-specific risk in relation to available habitat features.

For the purposes of this BBAMP, the distance that potential habitat occurs away from turbines has been used as a surrogate to differentiate the risk of collision with turbines for birds and bats, and barotrauma for bats. To address variations in habitat preferences among avian species which are at risk of impacts from turbines, a combination of important habitat features has been used for this risk assessment. Native woodland vegetation is avoided by the Subject Land; this provides important breeding and foraging habitat for potential at-risk species of birds and bats. Woodland vegetation is predominantly Black Box (*Eucalyptus largiflorens* woodland (PCT 13) and is patchily distributed throughout the Project area. Refer to **Figure 3-1.**

Ephemeral wetlands and creek lines are present within the Project area; these have the potential to provide habitat for wetland, nomadic and migratory species during periods of seasonal inundation. To account for changes in the risk level of turbine collision during periods of inundation, ephemeral wetlands and creek lines have been mapped as areas of important habitat for this preliminary turbine risk assessment. Mapped wetlands and creek lines included in this risk assessment include Telegraph Creek, Abercrombie Creek and Curtains Creek and large ephemeral wetlands confirmed by ground-truthing surveys. Refer to **Figure 3-1**.

The limitations of this approach do not consider artificial waterbodies (such as agricultural dams), habitat in non-native vegetation, floodplains associated with ephemeral waterways, and specific features which may attract avian species, such as electricity transmission infrastructure which may be utilised by nesting raptors. The turbine risk assessment also didn’t consider the cumulative risk on avian species due to multiple turbines being located within a certain area.

Table 3-1 outlines how the different turbine risk categories have been defined, and contextual information is provided below.

A 200 m distance from native woodland and/or wetland habitat has been used to identify turbines which pose a **Very High** risk of impacts to avian species. This distance correlates with a rotor diameter of 200 m, or a radius of 100 m which incorporates the blade length and the nacelle. To account for the risk of barotrauma to bats and an increase in collision risk around wetlands, an additional conservative buffer of 100 m has been applied, providing a total distance of very high risk of impacts to 200 m. Within 200 m, highly mobile avian species which fly within the RSA will be at risk of impacts from WTGs, but also species which typically move within or between wetlands will have a higher risk of collision and/or barotrauma.

A 500 m distance from native woodland vegetation and wetlands has been used to identify turbines which pose a **High** risk of impacts to avian species. This distance aligns with guidance for survey distances for bird species as it captures birds which may fly over the Assessment Area occasionally (Scottish Natural Heritage, 2009). These distances also allow for raptors and species known to exhibit soaring behaviours across the Project area to be effectively assessed.

Turbines between 500 m and 1000 m away from native woodland vegetation or wetlands have been assessed as posing a **Moderate** risk of impacts to avian species and turbines greater than 1000 m away from woodland vegetation and wetlands have been assessed as posing a **Low** risk of impacts. Although there are still risks within these distances to highly mobile avian species which may fly within the RSA and regularly cross the Subject Land to reach different habitats, it has been assumed that avian activity will generally decrease as distance from important habitat increases.

TABLE 3-1 TURBINE PRELIMINARY RISK MATRIX

| Risk | Description |
|---|---|
| **Very High** | *Very High* risk based on any of the following being located within **200 m** of the proposed turbine location:<br>• Resident threatened species habitat or non-threatened raptor species habitat;<br>• Migratory or nomadic species habitual flight path; or<br>• Landscape feature(s) likely to increase bird and/or bat activity (including distance to nearest canopy, waterbodies, riparian corridors, wetlands etc.). |
| **High** | *High* risk based on any of the following being located within **500 m** of the proposed turbine location:<br>• Resident threatened species habitat or non-threatened raptor species habitat;<br>• Migratory or nomadic species habitual flight path; or<br>• Landscape feature(s) likely to increase bird and/or bat activity (including distance to nearest canopy, waterbodies, riparian corridors, wetlands etc.). |
| **Moderate** | *Moderate* risk based on any of the following being located within **1000 m** of the proposed turbine location:<br>• Resident threatened species habitat or non-threatened raptor species habitat;<br>• Migratory or nomadic species habitual flight path; or<br>• Landscape feature(s) known or predicted to increase bird and/or bat activity (including distance to nearest canopy, waterbodies, riparian corridors, wetlands etc.). |
| **Low** | *Low* risk based on any of the following being located greater than **1000 m** away (or absent):<br>• Resident threatened species habitat or non-threatened raptor habitat;<br>• Migratory or nomadic species habitual flight path; or<br>• Landscape feature/s known or predicted to increase bird and/or bat activity (including distance to nearest canopy, waterbodies, riparian corridors, wetlands etc.). |

Using the matrix presented in

**Table** 3-1, a preliminary risk rating for each turbine has been established and presented in **Figure 3-1**. Six turbines were assessed as posing a very high risk of impacts, 27 turbines were assessed as posing a high risk, 42 turbines were assessed as posing a moderate risk, and 96 turbines were assessed as posing a low risk.

Important habitat features are isolated to small, often fragmented, patches of remnant, open eucalypt woodland dominated by black-box (*Eucalyptus largiflorens*). Following ground-truthing, these communities have been found to provide important foraging and breeding habitat for avifauna and are associated with an increase in species diversity and site utilisation. Layout refinement to prioritise the avoidance of ecological constraints have resulted in the avoidance of woodland vegetation, and no WTG are now located within 200 m of mapped woodland habitat. Those WTG situated within 500 m to 1000 m (high and moderate risk) from woodland vegetation are still expected to pose a collision risk, particularly for raptors.

All the WTGs assessed as posing a very high risk were within 200 m of mapped creek lines, particularly Abercrombie Creek and its tributaries. While this preliminary turbine risk assessment assumes risk from important habitat to be constant, the habitat value and associated risk of mapped creek lines is dependent on seasonal inundation and episodic flooding. All mapped creek lines intersecting the Subject Land have been observed to be dry during field investigations and are likely to only form water passages during or post heavy rainfall. When these conditions are not present, the distance from native woodland will determine the risk level of the turbine.

### 3.2.1 TURBINE RISK ASSESSMENT ASSUMPTIONS

The preliminary risk assessment presented above has been undertaken with the following assumptions.

The habitat value of vegetation is considered to be uniform regardless of vegetation maturity, vegetation integrity condition score in the BAM-C or extent of cover. In addition, the habitat value of mapped ephemeral wetlands is constant regardless of the presence of inundation. Potential changes to hydrology resulting from construction activities have not been assessed in this preliminary turbine risk assessment; however, they will be addressed, where required, in future updates to this draft BBAMP in line with consent conditions.

ABERCROMBIE CREEK

TELEGRAPH CREEK

SIXTEEN MILE GUMS

CURTAINS CREEK

**Legend**

- Turbine Location

**Preliminary Turbine Risk Rating**

- Very High
- High
- Medium
- Low
- Watercourse
- Wetland Habitat
- Woodland Habitat
- Woodland Habitat 200m Buffer
- Woodland Habitat 500m Buffer
- Woodland Habitat 1000m Buffer
- Subject Land
- Plains Renewable Energy Park Boundary

**Source:**
Basedata: NSW DCDB/DTDB
Imagery: Client Provided (Feb 2023)|ESRI

Coordinate System:
GDA2020 MGA Zone 55

Date: 15/04/2025
Created By: MB
Drawing Size: A3

0 1.5 3Km

1:90,000

# F3-1 Preliminary Turbine Risk Rating

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

0667692_PlainsWF_BBAMP_R05.aprx

## 3.3 BIRD AND BAT RISK ASSESSMENT

For the purposes of this BBAMP, impacts to avian species during the operation of the Project are limited to direct mortality through collision with WTGs and the indirect impacts of barotrauma. Other impacts on avian species are assessed in the Amended BDAR.

Although suitable habitat for avian species is present throughout the Subject Land, not all avian species move at heights considered to be at risk of collision with WTGs. The operation of the WTGs will pose a negligible risk to avian species which do not fly within the RSA (90 – 270 m). A literature review was undertaken to identify the following aspects of avian species' behaviour and ecology:

- Are flight heights known for avian species?
- Is the avian species known to be behaviourally restricted by the height of available vegetation?
- Is it known whether the species disperses over long distances, utilises relatively rigid territory boundaries or is behaviourally sedentary?

The results of the literature review and knowledge of whether the species is listed as threatened, migratory or is a raptor was used to delineate the level of risk that turbines pose to avian species which are known to or likely to utilise the Subject Land. Risk has been determined as a function of the consequence of turbine strike and / or barotrauma caused by turbines on a species and the likelihood that turbine strike and / or barotrauma will occur.

The consequence ratings of turbine strike and / or barotrauma on avian species are summarised in **Table 3-2**, the likelihood ratings in **Table 3-3**, and a risk matrix combining the consequences and likelihood of turbine strike are presented in

Table 3-4.

TABLE 3-2 CONSEQUENCES OF TURBINE STRIKE AND/OR BAROTRAUMA CRITERIA

| Minor | Moderate | Major | Severe |
|---|---|---|---|
| Protected (non-threatened) species<br>OR<br>Occasional individuals lost but no reduction in local or regional population viability<br>OR<br>No avian species detected. | Species listed as vulnerable under BC Act or EPBC Act<br>OR<br>Species listed as migratory under EPBC Act<br>OR<br>Moderate loss of numbers of individuals leading to minor reduction in viability of localised population of species for up to five years. | Species listed as endangered under BC Act or EPBC Act<br>OR<br>Major loss in numbers of individuals, leading to a reduction in the viability of regional or state population between five and ten years. | Species listed as critically endangered under BC Act or EPBC Act<br>OR<br>Extreme loss in numbers of individuals, leading to a reduction in regional or state population viability for a period of at least ten years. |

TABLE 3-3 LIKELIHOOD OF TURBINE STRIKE AND/OR BAROTRAUMA CRITERIA

| Likelihood | Description |
|---|---|
| Very Likely | *Very High* likelihood of turbine strike based on a combination of the following:<br>• Species known to occur within the Subject Land;<br>• High amounts of species-specific critical breeding and/or foraging habitat known to be present within the Subject Land and likely to impacted by the Project;<br>• Flying heights of species are known to occur within the RSA and species exhibits flight characteristics more susceptible to collision (soaring, circling at height etc.);<br>• The Project is located within known avian migratory or habitual flight pathways;<br>• Landscape feature(s) likely to increase avian activity are present within the Subject Land (including woody canopy, waterbodies, riparian corridors, wetlands etc.). |
| Likely | *High* likelihood of turbine strike based on a combination of the following:<br>• Species likely to occur within the Subject Land based on an analysis of recent (≤ 10 years old) records within 10 km;<br>• Moderate amounts of suitable breeding or foraging habitat present within the Subject Land and likely to be impacted by the Project;<br>• Flying heights of species may occur within the RSA and species exhibits flight characteristics more susceptible to collision (soaring, circling at height etc.);<br>• Landscape feature(s) likely to increase avian activity are present within the Subject Land (including woody canopy, waterbodies, riparian corridors, wetlands etc.). |
| Moderately Likely | *Moderate* likelihood of turbine strike based on a combination of following:<br>• Species has the potential to occur within the Subject Land based on an analysis of records > 10 years old within 10 km;<br>• Low amounts of suitable breeding or foraging habitat present within the Subject Land and likely to be impacted by the Project; |

| Likelihood | Description |
|---|---|
| | • Species occasionally flies at heights within the RSA;<br>• Landscape feature(s) likely to increase avian activity are present within the Subject Land (including woody canopy, waterbodies, riparian corridors, wetlands etc.), but only in small areas. |
| Less Likely | *Low* likelihood of turbine strike based on a combination of the following:<br>• Species not detected or is considered unlikely to occur based on based on an analysis of records within 10 km of the Subject Land;<br>• No suitable breeding or foraging habitat is present within the Subject Land;<br>• Species is very unlikely to fly at heights within the RSA;<br>• Landscape feature(s) likely to increase avian activity are not present within the Subject Land (including woody canopy, waterbodies, riparian corridors, wetlands etc.). |

TABLE 3-4 RISK MATRIX OF LIKELIHOOD AND CONSEQUENCE TURBINE STRIKE AND/OR BAROTRAUMA CRITERIA

| **Likelihood Criteria** | **Consequence criteria** | | | |
|---|---|---|---|---|
| | Severe | Major | Moderate | Minor |
| Very Likely | Very High | Very High | Very High | High |
| Likely | Very High | High | High | Moderate |
| Moderately Likely | Very High | High | Moderate | Low |
| Less Likely | High | Moderate | Low | Low |

### 3.3.1 BIRD AND BAT RISK ASSESSMENT ASSUMPTIONS

The species assessed for risk of collision with turbines and / or barotrauma are based on a combination of the following:

- All ecosystem species predicted to occur by the BAM-C and listed candidate species;
- EPBC Act listed threatened and migratory species which are subject to risk of turbine collision and / or barotrauma and are known or likely to occur within the Subject Land; and
- Raptors and other species known or likely to fly within the RSA within the Subject Land (refer to Appendix J of the Amended BDAR).

Note that NSW BioNet (NSW DCCEEW, 2024b) and ALA avian records within 10 km of the Subject Land were analysed for this risk assessment. Threatened or migratory avian species recorded as occurring within 10 km of the Subject Land and likely to use the Subject Land based on habitat requirements, but not recorded during survey efforts, were included in the risk assessment.

### 3.3.2 COLLISION AND/OR BAROTRAUMA RISK ASSESSMENT OF RESIDENT THREATENED, RESIDENT RAPTOR, NOMADIC AND MIGRATORY AVIAN SPECIES

The risk assessment of resident threatened, resident raptor, migratory and nomadic avian species has been undertaken in **Table 3-5.**

The results of the risk assessment can be summarised as follows:

- The risk assessment outcome for four species was considered **very high** risk. This included the Black falcon (*Falco subniger*), curlew sandpiper (*Calidris ferruginea*), little eagle (*Hieraaetus morphnoides*) and the plains-wanderer (*Pedionomus torquatus*).
- The risk assessment outcome for eighteen species was considered **high** risk. This included the Australasian bittern (*Botaurus poiciloptilus*), common greenshank (*Tringa nebularia*), grey falcon (*Falco hypoleucos*), pink cockatoo (*Lophochroa leadbeateri*), sharp-tailed sandpiper (*Calidris acuminata*), spotted harrier (*Circus assimilis*), swift parrot (*Lathamus discolor*), white-throated needletail (*Hirundapus caudacutus*), Australian pelican (*Pelicanus conspicillatus*), southern myotis (*Myotis macropus*), yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*), black kite (*Milvus migrans*), brown falcon (*Falco berigora*), nankeen kestrel (*Falco cenchroides*), Australian magpie (*Gymnorhina tibicen*), straw-

necked ibis (*Threskiornis spinicollis*), wedge-tailed eagle (*Aquila audax*) and the fork-tailed swift (*Apus pacificus*).

- The risk assessment outcome for 70 species was considered **moderate** risk.
- The risk assessment outcome for 18 species was considered **low** risk.

A search of the Project Matters Search Tool (PMST) has identified the Malleefowl (*Leipoa ocellata*) as being of potential concern. The species is considered unlikely to occur with the nearest records located approximately 110 km west of the Project area and an absence of suitable habitat. As such the species has been excluded from further assessment in this draft BBAMP.

TABLE 3-5 BIRD AND BAT RISK ASSESSMENT

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| **Threatened Birds** | | | | | | |
| *Botaurus poiciloptilus* Australasian Bittern | E | E | Moderately Likely | Major | High | The Australasian bittern is a large wetland bird typically found in fresh water wetlands throughout south-eastern Australia (Cwth TSSC, 2019). Wetlands dominated by sedges, rushes, or reeds are considered critical habitat for the species however Australian rice fields also provide extensive areas of habitat (Herring, Robinson, Zander, & Garnett, 2019). Previously thought to be largely sedentary, recent tracking studies have shown extensive movements between wetlands in southern Australia (Bitterns in Rice Project, 2016). No detections have been made of the species following seasonal surveys conducted to date. The Project is within the species' known distribution. No records of the species are known within the Subject Land, with the nearest records located 14 km north in the town of Hay (2006), and 25 km south along the Cobb Highway (2023). The Project contains numerous ephemeral waterways and wetlands dominated by canegrass (*Eragrostis australasica*) and agricultural dams that may provide suitable habitat for the species. The species' presence within the Subject Land is likely to be sporadic and driven by seasonal inundation. While flight heights for the species are poorly understood it is likely that individuals may fly within or above the RSA when undergoing long distance movements. Collisions are considered moderately likely based on the presence of suitable habitat and potential flight heights within the RSA. The species is listed as endangered under both EPBC and BC Acts and mortalities have the potential to cause a major reduction in |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| | | | | | | regional populations. The species has been assessed as having a **high** risk of collision. |
| *Ardeotis australis* Australian Bustard | - | E | Less Likely | Major | Moderate | The Australian bustard is a large, heavy, ground-dwelling bird typically found on dry plains, grasslands and open woodlands. The Australian bustard is known to rarely fly, instead dispersing on foot when disturbed (Abbot, 2008). Juveniles are completely flightless and rely on camouflage. While the Australian bustard is known to fly, spatial movement is considered to be largely intra-regional with inter-continental movement considered uncommon (Ziembicki & Woinarski, 2007). While suitable habitat is present within the Subject Land, no detections have been made during targeted fauna transects nor opportunistic observations. Recent records of the species are sparse throughout the region and none are present within the Subject Land. Recent records exist approximately 22 km east of the Subject Land in the Oolambeyan National Park and along the Sturt Highway, approximately 35 km north-east and north-west of the Subject Land. While a mortality is likely to lead to a major reduction in the regional population, it is considered less likely to occur. The species has been assessed as having a **moderate** risk of collision. |
| *Rostratula australis* Australian Painted Snipe | E | E | Less Likely | Major | Moderate | The Australian painted snipe is an endemic shorebird found throughout Australia and typically inhabits shallow, brackish or freshwater terrestrial wetlands supporting a mosaic of low, patchy vegetation including lignum and canegrass (Garnett & Baker, 2021). Ephemeral wetlands and waterways within the Subject Land may provide suitable foraging habitat for the species, however, this will be driven by the |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| | | | | | | presence of episodic inundation. No observations of the species have been made following seasonal surveys from 2021 to the present day. No recent records (20 years) are present within the Subject Land; however, three records (2011-2015) are present within Hay, north of the Subject Land. A scarcity of records in southern Australia since 2015 suggest that breeding has rarely occurred there in recent years (Garnett & Baker, 2021). Due to a small national population size, mortalities are considered to result in a major reduction in regional populations. As species' presence is driven by the presence of suitable environmental conditions and the species is increasingly rarer in southern Australia, it is considered less likely that a collision even will occur. The species has been assessed as having a **moderate** risk of collision. |
| *Falco subniger* Black Falcon | - | V | Very Likely | Moderate | Very High | The black falcon is the largest of Australian falcons and occurs in low densities throughout inland, arid and semi-arid areas (Morcombe, M., 2000). The black falcon is typically found along tree-lined water courses or isolated woodlands, with nesting often occurring in the abandoned stick nests of other species. Foraging often occurs at height with prey largely consisting of birds, reptiles, small mammals and occasionally carrion. The species is known to occur within the Subject Land and has been observed flying at heights considered within the RSA over grasslands and open shrublands. While less abundant than the brown falcon, the species is considered very likely to collide with WTGs. As a listed vulnerable species under the BC Act, a mortality has |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | the potential to lead to a moderate reduction in regional populations. The species has been assessed to have a **very high** risk of collision. |
| *Oxyura australis* Blue-billed Duck | - | V | Less Likely | Moderate | Low | The blue-billed duck is a small duck species endemic to temperate regions of Australia (Marchant & Higgins, 1990). An almost entirely aquatic species, suitable habitat constitutes open lakes or dams with deep freshwater swamps preferred during the breeding season (Marchant & Higgins, 1990). As natural wetlands and swamps are almost exclusively ephemeral in the Project area, suitable habitat is likely to be restricted to large agricultural dams with emergent aquatic vegetation. While some dams are present these are not likely to be considered important habitat and may only provide temporary refugia during long distance movements. Due to the absence of important habitat, a collision event is considered less likely to occur. As a listed vulnerable species under the BC Act, a mortality is likely to lead to a moderate reduction in regional populations. The species has been assessed as having a **low** risk of collision. |
| *Neophema chrysostoma* Blue-winged Parrot | V | V | Moderately Likely | Moderate | Moderate | The blue-winged parrot is a slender parrot inhabiting a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands, often near wetlands (Cwth DCCEEW, 2023f). Recent records of the species are sparse throughout the region and none are present within the Subject Land. Recent records exist approximately 10 km south, along the Sturt Highway. Potentially suitable woodland habitat is present within the broader Project area and may support the species during seasonal movements. As a listed vulnerable species under the EPBC |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | and BC Act, a mortality is likely to lead to a moderate impact to regional populations. While no detections have been made within the Project area, it is considered moderately likely that a collision event will occur due to the presence of low amounts of suitable habitat in the Project area. The species has been assessed as having a **moderate** risk of collision. |
| *Burhinus grallarius* Bush Stone-curlew | - | E | Less Likely | Major | Moderate | Bush stone-curlew are nocturnal, ground-dwelling birds preferring open forests and grassy woodlands (Murialdo, Kleisner, Wolfenden, & Old, 2015). Although capable of flight, the species rarely does so unless threatened and rarely, if ever, at heights considered to be at risk of collision. Potential habitat is restricted to remnant black box (*Eucalyptus largiflorens*) woodland patchily distributed in the Project area, with proposed infrastructure located at least 200 m away. Targeted surveys, including call playback, spotlighting and diurnal flushing transects, have returned no positive detections. No recent records are present within the Subject Land, with the closest records located adjacent to the Mid Western highway approximately 16 km north. Due to an absence of records and detections during targeted surveys, it is considered less likely that a collision event will occur. As a listed endangered species under the BC Act, a collision is likely to result in a major reduction in regional populations. The species has been assessed as having a **low** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Grus rubicunda* Brolga | - | V | Less Likely | Moderate | Low | The brolga is a large wetland bird found throughout eastern Australia. In southern Australia, brolgas breed in shallow, seasonally inundated freshwater wetlands dominated by a diversity of herbs and sedges (Veltheim, Cook, McCarthy, Palmer, & Hill, 2022). During non-breeding or 'flocking' season, brolgas tend to roost communally on deep freshwater marshes and permanent fresh or saline wetlands (Department of Sustainability and Environment, 2012). Ephemeral wetlands and waterways present within the Project area and may provide suitable breeding habitat during periods of heavy inundation. However, due to the absence of large, deep and permanent wetlands within the Subject Land, it is unlikely that suitable non-breeding habitat is present. Brolgas have not been detected following seasonal surveys conducted since 2021, including following periods of heavy rainfall, and recent records are sparse within the surrounding landscape. The closest records are approximately 13 km north in the town of Hay and are adjacent to the Murrumbidgee River. The brolga is listed as vulnerable under the BC Act and while is likely to be locally rare, mortalities may lead to moderate reductions in regional populations. Considering the lack of consistently suitable habitat, it is considered unlikely that individuals will interact with the Project and so a collision is less likely to occur. The species has been assessed as having a **low** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Climacteris picumnus victoriae* Brown Treecreeper (south-eastern) | V | V | Less Likely | Moderate | Low | The brown treecreeper is the largest treecreeper endemic to eastern Australia, inhabiting woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Brown treecreepers primarily forage both on the ground and in mature live and dead trees (Cwth DCCEEW, 2023c). The species was detected in Winter 2022; however, records are now no longer within the Project area. Other recent records of the species are sparse throughout the region, and none are present within the Subject Land. Recent records exist approximately 9 km towards the Southwest Woodland Nature Reserve. The species is generally considered to be restricted to suitable vegetation for both foraging and movement. As suitable woodland is at least 200 m from WTGs, the species is considered less likely to collide with WTGs. As a listed vulnerable species under the EPBC Act and BC Act, a mortality has the potential to result in a moderate reduction in regional populations. The species has been assessed to have a **low** risk of collision. |
| *Tringa nebularia* Common greenshank | E, Ma, Mi | E | Moderately Likely | Major | High | The common greenshank is a large shorebird, widespread in coastal regions, occurring in all types of wetlands and has the widest distribution of any shorebird in Australia. In NSW the species is widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling-Baaka River drainage basin. The common greenshank forages at the edge of wetlands, in soft mud on mudflats, in channels, or within shallows around the edge of waterbodies. While suitable habitat is known to occur within the Project |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | area, suitability is reliant on the presence of seasonal and episodic inundation. Some agricultural dams may also support the species; however, many do not have the preferred fringing and emergent vegetation. No observations of the species have been made during field investigations to date and no recent records are known to occur within 10 km of the Project area, with the closest occurring approximately 21 km south of the Project area. While no detections have been made, the species is considered moderately likely to collide with WTGs due to the proximity of suitable non-breeding habitat. As a listed migratory and endangered species under the EPBC Act and endangered under the BC Act, a mortality has the potential to result in a major reduction in population numbers. The species has been assessed as having a **high** risk of collision with WTGs. |
| *Calidris ferruginea* Curlew Sandpiper | CE, Ma, Mi | CE | Moderately Likely | Severe | Very High | The curlew sandpiper is a migratory shorebird most commonly found in the far southeast and northwest of Australia. They are observed in many coastal sites and may also be seen inland in suitable wetland habitats. In NSW the curlew sandpiper is widespread east of the Great Divide and is sometimes found in freshwater wetlands in the Murray-Darling Basin (Cwth DCCEEW, 2023b).<br>No observations of the species have been made during field investigations to date and no recent records are known to occur within 10 km of the Subject Land. While no detections have been made, the species is considered moderately likely to combine with WTG due to the proximity of suitable non-breeding habitat. As a listed migratory and critically endangered species under the EPBC Act and critically |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | | | | | | endangered under the BC Act, a mortality has the potential to result in a severe reduction in population. The species has been assessed as having a **very high** risk of collision with WTGs. |
| *Stagonopleura guttata* Diamond Firetail | V | V | Moderately Likely | Moderate | Moderate | The diamond firetail is found on the south-east mainland of Australia from south-east Queensland to Eyre Peninsula, South Australia and about 300 km inland from the sea. Diamond firetails inhabit eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover (Cwth DCCEEW, 2023g). Foraging occurs at ground level for seeds, vegetative matter and invertebrates, however flight heights within the RSA may occur during broader landscape movements. Nesting occurs within shrubby understorey with preferential selection for beneath raptor nests or within mistletoe (Cooney & Watson, 2005). Scattered records are present within 10 km of the Subject Land, found mainly to the south-east. With scattered records and suitable habitat with the Project area, a collision is considered moderately likely to occur. As a listed vulnerable species under the EPBC Act and BC Act, a collision has the potential to moderately impact on regional populations. The species has been assessed as having a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Artamus cyanopterus cyanopterus* Dusky Woodswallow | - | V | Moderately Likely | Moderate | Moderate | The dusky woodswallow is a medium sized bird found throughout southern and eastern Australia. In NSW the species primarily inhabits open eucalypt woodland forests and woodlands, as well as disturbed agricultural lands. The dusky woodswallow primarily forages for insects which it does within or above the canopy and is known to reach heights consistent with the RSA. Remnant woodlands are patchily distributed throughout the Project area which are likely to provide suitable habitat. A single observation made in 2022 during survey efforts is present within to the south of the Subject Land. Scattered records are also present within 10 km of the Subject Land. With scattered records and potentially suitable habitat within the Project area, a collision is moderately likely to occur. As a listed vulnerable species under the BC Act, a collision has the potential to moderately impact regional populations. The species has been assessed as having a **moderate** risk of collision. |
| *Stagonopleura guttata* Freckled Duck | - | V | Less Likely | Moderate | Low | The freckled duck is found primarily in southern Australia and typically breeds in large temporary swamps created by seasonal inundation. The freckled duck prefers permanent freshwater swamps and creeks with a high density of fringing vegetation, including Lignum, *Typha* sp. and tea-tree, however, it breeds in large temporary swamps typically within the Bulloo and Lake Ayre Basins, and Murray-Darlin system (NSW DCCEEW, 2024b). Large ephemeral swamps are present within the Project area and may provide suitable breeding habitat for the freckled duck during periods of high inundation. Some agricultural dams may be of a suitable size to provide non-breeding habitat; however, many do |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | not have the preferred fringing and emergent vegetation. No observations of the species have been made during field investigations to date and no recent records are known to occur within 10 km of the Subject Land. Records from 2015 are present along the Murrumbidgee River approximately 14 km north of the Subject Land. Due to a low number of recent records and the infrequent presence of suitable breeding conditions, it is less likely that a collision event will occur. As a listed vulnerable species under the BC Act, a collision event may result in a moderate reduction in regional population. The species has been assessed as having a **low** risk of collision. |
| *Pachycephala inornate* Gilbert's Whistler | - | V | Less Likely | Moderate | Low | The Gilbert's whistler is a an arid shrubland specialist that is known to forage predominantly on or near the ground, in shrub thickets, or the canopy of low growing trees. In woodlands the species is considered to prefer habitat with a high density of understorey shrubs (NSW DCCEEW, 2024b). Large-scale movement is generally believed to be limited, with breeding pairs likely to hold and defend territories all year round. While remnant patches of black box (*Eucalyptus largiflorens*) and river red gum (*E. camaldulensis*) woodland are patchily distributed in the locality, understoreys are typically sparse or dominated by lignum and largely lack the dense shrub layer that is considered typical habitat for the species. No observations of the species have been made following field investigations conducted to date and the closest records are located approximately 35 km northeast of the Subject Land. Due to the lack of preferred habitat, it is less likely that a collision event will occur. As a listed vulnerable species under the BC Act, a collision has |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | the potential to lead to a moderate reduction to regional populations. The species has been assessed as having a **low** risk of collision. |
| *Falco hypoleucos* Grey Falcon | V | V | Likely | Moderate | High | Grey falcons are generally confined to arid and semi-arid areas of Australia (Garnett & Baker, 2021). Foraging habitat is variable and ranges from timbered lowland plans to tussock grasslands with breeding occurring largely in the tallest trees along watercourses (Cwth TSSC, 2020). Foraging habitat within the Subject Land is widespread and dominated by low open shrublands and tussock grasslands. black box (*Eucalyptus largiflorens*) and river red gum (*E. camaldulensis*) woodland along ephemeral watercourses in the surrounding area may also provide suitable breeding habitat. No observations of the species have been made following site investigations conducted to date, with the most recent record (2008) approximately 5 km north of the Subject Land. The species is considered to be present in low densities throughout its range (Cwth TSSC, 2020), however, as a precautionary approach the species is considered to be likely to collide with WTGs as some suitable foraging habitat is within the Project area. As a low density species, listed as vulnerable under EPBC Act and BC Act, a collision has the potential to result in a moderate reduction in regional populations. The species has been assessed as having a **high** risk of collision. |
| *Pomatostomus temporalis temporalis* | - | V | Less Likely | Moderate | Low | Foraging and dispersal habitat for the grey-crowned babbler is defined as open forests and woodlands with an open shrub cover. The species is known to form territorial groups with long distance dispersal limited (Morcombe, M., 2000). Flight heights are largely restricted to canopy |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| Grey-crowned Babbler (eastern subspecies | | | | | | heights of vegetation and potentially suitable habitat is largely restricted to black box (*Eucalyptus largiflorens*) woodland patchily distributed throughout the Project area. Observations of the species have been made south of the Project area during survey efforts, within wooded riparian areas. Due to the absence of suitable habitat in close proximity to proposed infrastructure and the species' known flight behaviour, the species is considered less likely to collide with WTGs. As a listed vulnerable species under the BC Act, a collision has the potential to lead to a moderate reduction in regional populations. The species has been assessed as having a **low** risk of collision. |
| *Gallinago hardwickii* Latham's Snipe | V, Ma, Mi | V | Moderately Likely | Moderate | Moderate | The Latham's snipe is a migratory, non-breeding bird in south-eastern Australia. It typically feeds in soft mudflats or shallow water at night, early morning or evening. They shelter during the day in small wetlands including urban water bodies, saltmarshes, as well as creek edges, where there is adequate shallow flooded or inundated substrate (Cwth DCCEEW, 2024b). No observations of the species have been made following field investigations and the most recent record (2022) is located approximately 25 km south of the Subject Land. Suitable ephemeral wetlands are present throughout the broader Project area, however, habitat suitability will be dependent on episodic inundation following high seasonal rainfall. Due to the presence of suitable habitat near the Subject Land, the species is considered moderately likely to collide with WTGs. As a vulnerable species under the EPBC Act and the BC Act, a collision does have the potential to lead to a moderate |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | reduction in regional populations. The species has been assessed as having a **moderate** risk of collision |
| *Hieraaetus morphnoides* Little Eagle (Breeding) | - | V | Very Likely | Moderate | Very High | The little eagle has a broad range throughout mainland Australia and can be found in a variety of ecosystems, except for the heavily forested parts of the Great Dividing Range (NSW DCCEEW, 2024b). It typically occurs in open woodland, grassland and arid regions particularly within close proximity to open woodland and riparian zones suitable for breeding. While hunting, the little eagle is known to soar at heights of 100 m or more in search prey and will typically take prey on the ground or from trees and shrubs in open woodlands. Nesting often occurs in large woodland patches and riparian zones and nest site selection is likely to be influenced by the availability of prey and presence of suitably sized trees (ACT Government, 2025).The species is known to be present within the Project area, following detections over numerous survey periods. Potential foraging habitat is present in Subject Land. Breeding was confirmed within the Project area during September 2024, with chicks observed in a nest approximately 850 m from the nearest proposed turbine and, therefore, a collision event is considered very likely to occur. As a listed vulnerable species under the BC Act, a mortality has the potential to lead to a moderate reduction in regional populations. As a result, this species has been assessed as having a **very high** risk rating. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Anseranas semipalmata* Magpie Goose | - | V | Less Likely | Moderate | Low | The magpie goose is a large water bird that is considered relatively common in northern Australia; however, it has largely disappeared from southern Australia (NSW DCCEEW, 2024b). Suitable habitat is largely shallow wetlands, less than 1 m deep, with dense growth of rushes or sedges. The species is also known to forage on flooded grasslands and floodplains (NSW DCCEEW, 2024b). Large agricultural dams are present within the Subject Land, however, generally do not contain emergent reeds and rushes. During periods of seasonal inundation, suitable foraging habitat may be present in the numerous ephemeral wetlands in the Project area, however, these is unlikely to provide suitable breeding habitat. No observations of the species have been made following field investigations and the most recent record (2022) is located approximately 25 km south of the Subject Land. Due to the general absence of the species in southern Australia and the seasonality of suitable habitat, it is considered less likely for the species to collide with proposed WTGs. As a vulnerable species under the BC Act a collision does have the potential to lead to a moderate reduction in regional populations. The species has been assessed as having a **low** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Grantiella picta* Painted Honeyeater | V | V | Less Likely | Moderate | Low | The painted honeyeater is endemic to mainland Australia, being found mainly in NSW on the inland slopes of the Great Dividing Range. The species is found in dry open forests and woodlands, and is strongly associated with mistletoe. They are migratory to nomadic, generally moving north-west into semi-arid regions of the interior in winter and returning southward in spring or summer (Cwth DCCEEW, 2025c; NSW DCCEEW, 2024b). No observations of the species have been made within 10 km of the Subject Land nor through surveys, and no suitable habitat occurs within the Subject Land. While flight heights are not known for the species, it is likely that they do not typically exceed that of the canopy and so the species is unlikely to be flying at heights at risk of collision. The species has been assessed as having a **low** risk of collision. |
| *Certhionyx variegatus* Pied Honeyeater | - | V | Less Likely | Moderate | Low | The pied honeyeater is a nomadic species found in arid and semi-arid ecosystems categorised by shrublands and woodlands, particularly those dominated by *Eremophila, Grevillea* and Mulga (Higgins, Peter, & Steele, 2001). Potential habitat within the Project area is restricted to remnant black box (*Eucalyptus largiflorens*) woodlands. While flights above the canopy have been described for the species, suitable habitat is largely located more than 200 m away from proposed WTGs and so flights are not likely to lead to an increase in collision risk. No observations have been made following field investigations to date and the closest recent records are located approximately 14-20 km north and south of the Subject Land. Due to limited suitable habitat, it is considered less likely that a collision event will occur. As a listed |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | vulnerable species under the BC Act, a mortality has the potential to result in a moderate impact to regional populations. The species has been assessed as having a **low** risk of collision. |
| *Lophochroa leadbeateri* Pink Cockatoo | E | V | Moderately Likely | Major | High | The pink cockatoo is found across arid and semi-arid inland Australia inhabiting a wide range of treed and tree-less habitats, always within close proximity to water sources (NSW DCCEEW, 2024b). Foraging usually occurs on the ground or low shrubs for fruits and seeds of both exotic and native species, particularly chenopods (NSW DCCEEW, 2024b). Pink cockatoos are obligate hollow-nesters and require woodland habitat containing suitably sized tree hollows. Unlike other threatened cockatoos, pink cockatoos do not like nesting close to other breeding pairs and require a minimum distance of at least 1 km between breeding pairs (Cwth DCCEEW, 2023d; NSW DCCEEW, 2024b). Suitably sized tree hollows are known to be present within the Project area, particularly in black box (*Eucalyptus largiflorens*) woodland in the west, but not in the Subject Land. Potential foraging habitat is present in chenopod shrublands in the Subject Land. No observations of the species have been made within the Subject Land to date. NSW BioNet species records are not present within the surrounding landscape (NSW DCCEEW, 2024b) and only scattered records are present from the ALA (CSIRO, 2025). The most recent (2023) is located approximately 10 km south of the Subject Land. Despite the paucity of records within the region and the lack of observation during field assessments, the species may interact with the Project and is capable of flying at heights at risk of collision. Therefore, it is considered moderately likely to collide with |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | WTGs. As a listed endangered species under the EPBC Act and vulnerable under the BC Act, a mortality is likely to lead to a major impact on regional populations. The species has been assessed as having a **high** risk of collision. |
| *Pedionomus torquatus* Plains-wanderer | CE | E | Moderately Likely | Severe | Very High | The Plains-wanderer is ground-dwelling bird that is known to rarely fly beyond two to three meters in height. The species inhabits sparse grasslands with approximately 50% bare ground and most vegetation being less than 5cm in height (Cwth TSSC, 2015). Foraging and nesting in patches with tall, dense grasses also suggests a need for a habitat mosaic (Antos & Schultz, 2020). Suitable habitat is present throughout the Subject Land. Records of the Plains-wanderer were detected within the Project area during seasonal surveys. Flight heights are poorly understood and so the species is considered moderately likely to collide with WTGs as a precautionary approach. As a critically endangered species under the EPBC Act and endangered under the BC Act, a mortality of a single individual would have a severe impact on the national population of the species. The species has been assessed as having a **very high** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Pyrrholaemus brunneus* Redthroat | - | V | Less Likely | Moderate | Low | The redthroat is a mostly ground dwelling bird occurring mostly in arid and semi-arid regions containing acacia and chenopod shrublands. Observations of foraging behaviour identified that foraging heights rarely exceeded 1 m and never exceeded heights of 3 m (NSW DCCEEW, 2024b). Suitable habitat is likely to be present in chenopod shrublands throughout the Subject Land. No observations of the species have been made following field assessments conducted to date and the closest recent records are located approximately 80 km north-west of the Subject Land. The redthroat is considered less likely to collide with WTG due to the absence of local records and the species' known flight behaviours. As a listed vulnerable species under the BC Act, a mortality has the potential to lead to a moderate reduction in regional populations. The species has been assessed as having a **low** risk of collision. |
| *Calidris acuminata* Sharp-tailed Sandpiper | V, M | - | Likely | Moderate | High | The sharp-tailed sandpiper is a migratory shorebird with a global distribution. Breeding occurs in northern Siberia. During the non-breeding season, it is estimated that approximately 91% of the East Asian-Australasian Flyway population resides in Australia and New Zealand (Cwth DCCEEW, 2024a). The species forages in fresh and hypersaline environments, feeding on the edge of mudflats and wetlands. The species has been observed within the Project area foraging within ephemeral wetlands. While suitable habitat is known to occur within the Project area, suitability is reliant on the presence of seasonal and episodic inundation. The species is considered an occasional visitor of inland areas with much of the Australian population |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | occurring in coastal areas (Cwth DCCEEW, 2024a). The species is considered likely to collide with WTGs. As a listed vulnerable and migratory species under the EPBC Act, mortalities have the potential to lead to a moderate reduction in the population. The species has been assessed to have a **high** risk of collision. |
| *Melanodryas cucullata cucullata* South-eastern Hooded Robin | E | E | Less Likely | Major | Moderate | The south-eastern hooded robin is widespread across Australia. The species is found from Brisbane to Adelaide and throughout much of inland NSW, inhabiting dry eucalypt and acacia woodlands and shrublands with an open understorey, some grassy areas and a complex ground layer. They avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered open areas. While they can occur in patches as small as 2.9 ha, in agricultural landscapes they prefer larger patches greater than 10 ha with moderately deep to deep soils. The hooded robin is a largely sedentary species typically seen in pairs or small groups. The south-eastern hooded robin tends to forage on insects and small lizards taken from the ground, hunting for invertebrates by 'perch and pounce' in grassy clearings where rocks and fallen timber litter the ground (Cwth DCCEEW, 2023e). Foraging typically occurs at ground level or a few metres above ground in vegetation and is not considered to exceed that of the canopy (Antos, Bennett, & White, 2008). No observations have been made following field investigations to date and the closet recent records are located approximately 50 km south of the Subject Land. Potential habitat is restricted to remnant black box (*Eucalyptus* largiflorens) woodlands patchily distributed within the Project area. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | Proposed infrastructure is beyond 200 m of these remnant woodlands. As a listed endangered species under the EPBC Act and BC Act, a collision has the potential to have a major impact on regional populations. However, due to flight and foraging patterns considered less likely to be at heights at risk of collision, this species has been assessed overall as **moderate** risk of collision. |
| *Aphelocephala leucopsis* Southern Whiteface | V | V | Moderately Likely | Moderate | Moderate | The southern whiteface occurs across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. The species lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs or both. The southern whiteface forages almost exclusively on the ground, favouring habitats with low tree densities and an herbaceous understorey litter cover (Cwth DCCEEW, 2023a). The species is known to occur within the Subject Land following multiple detections of the species across the broader Project area. While the species is considered unlikely to fly at heights within the RSA, the species may be at risk during broader landscape movement and so is moderately likely to collide with WTGs. As a vulnerable species under the EPBC Act and BC Act, a mortality event has the potential to result in a moderate reduction in regional populations. The species has been assessed to have a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Circus assimilis* Spotted Harrier | - | V | Likely | Moderate | High | The spotted harrier typically inhabits open wooded country in tropical and temperate Australia, particularly in arid and semi-arid areas. Breeding habitat is characterised by open or remnant woodland with nests rarely being built in isolated trees. The spotted harrier is a diurnal species feeding primarily on ground active birds, mammals, and reptiles and hunting behaviour is characterised by quartering, or systematic searching, of the landscape low to the ground (NSW DCCEEW, 2024b). Although no observations of the spotted harrier were made flying at heights considered at risk of turbine collision, the species is known to be present and suitable foraging and nesting habitat is present throughout the Project area. Despite no observations within the RSA and hunting strategies typically remaining low to the ground, it is likely that individuals may occasionally reach heights considered at risk of collision. As a listed vulnerable species under the BC Act, a mortality event has the potential to result in a moderate impact to regional populations. The species has been assessed as having a **high** risk of collision. |
| *Lophoictinia isura* Square-tailed Kite | - | V | Moderately Likely | Moderate | Moderate | The square-tailed kite is a medium-sized raptor found throughout much of Australia, particularly in coastal and subcoastal areas. In NSW, scattered records suggest that the species is present further inland, however, it is largely restricted to major river systems and areas of reliable water (NSW DCCEEW, 2024b). It is a specialist hunter of passerine birds, particularly nestlings and honeyeaters, and typically takes prey from the outer foliage of the canopy (NSW DCCEEW, 2024b). While some woodland habitat is present within the Project |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | area, it is unlikely to be of sufficient size or connectivity to provide adequate foraging habitat. Breeding habitat is also unlikely to be present, however, it is possible that individuals may interact with the Project during periods of seasonal inundation and overland flooding. The species has not been observed following field investigations and historic records are largely associated with major watercourses, the closest of which is approximately 30 km south. Due to suitable habitat only occasionally being present, it is considered moderately likely that a collision event will occur. As a listed vulnerable species under the BC Act, a mortality has the potential to cause a moderate impact to regional populations. The species has been assessed to have a **low** risk of collision. |
| *Polytelis swainsonii* Superb Parrot | V | V | Moderately Likely | Moderate | Moderate | The Superb parrot is found throughout eastern inland NSW. In the Riverina, the superb parrot nests in loose colonies in large, living or dead trees with many hollow branches, typically near a watercourse. On the inland slopes, they use at least six species of eucalypt, but have a particular reliance on Blakely's red gum (*E. blakelyi).* After breeding they use a variety of woodland types and other habitat types, including artificial habitats such as crops and recreation reserves. They typically feed on the ground, where they take a variety of native and introduced seeds, but also in shrubs and trees on seeds and blossom (Cwth TSSC, 2016). No observations have been made following field investigations to date and the closet recent records are located approximately 25 km to the east (within the Oolambeyan National Park) and 30 km south of the Subject Land. Woodland habitat within the broader Project area has |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | the potential to support the species and thus the species is considered moderately likely to collide with WTGs. As a listed vulnerable species under the EPBC and BC Acts, a mortality has the potential to lead to a moderate reduction in regional populations. The species has been assessed as having a **moderate** risk of collision. |
| *Lathamus discolor* Swift Parrot | CE | E | Less Likely | Severe | High | Swift parrots are migratory birds, endemic to south-eastern Australia. They breed in Tasmania and are found mainly in southern and central Victoria and eastern New South Wales in winter. Swift parrots are found in dry sclerophyll forests and woodlands, suburban parks and gardens, and flowering fruit trees. They only breed in Tasmania and migrate to mainland Australia in autumn and winter (NSW DCCEEW, 2024b). In south-eastern Australia, they occur in areas where eucalypts flower profusely or where there are lerp infestations. They will return to certain foraging sites on a cyclical basis pending food availability. As swift parrots are highly mobile, they traverse over unsuitable habitats between suitable foraging, roosting and breeding habitat, meaning there may be occasional flights over wind farms, (Smales I. , 2005). While there have been many recorded collisions of swift parrots with human made structures such as windows, fences and cars, there has been no recorded evidence of collisions with wind turbines (Smales I. , 2005). Experts suggest that swift parrots can avoid collisions with structures if situated at a substantial distance away from foraging resources (so they can gain enough height to safely pass over the object). While there is a lack of understanding of the height at which swift parrots will fly, other parrots in south-eastern Australia are |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | expected to fly within the RSA (Smales & Muir, 2005). No records of the species have been made within the Subject Land following seasonal surveys conducted to date. The closest records is approximately 80 km south in the town of Deniliquin. Suitable habitat is not considered to occur within the Subject Land and therefore it considered less likely that a collision will occur. As a listed critically endangered species under the EPBC Act and endangered species under the BC Act, a single mortality has the potential to result in a severe impact on regional populations. The species has been assessed to have a **high** risk of collision. |
| *Haliaeetus leucogaster* White-bellied Sea-eagle | - | V | Moderately Likely | Moderate | Moderate | The white-bellied sea-eagle is a large raptor distributed along the coastline of mainland Australia and Tasmania. It also extends inland along some of the larger waterways, especially in eastern Australia. The species is found in coastal habitats and around terrestrial wetlands, characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea). Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and even urban areas. Recent records exist within the locality approximately 10 km northwest of the Project area along the Murrumbidgee River. Habitat suitability is likely to be dependent on heavy seasonal rainfall and episodic flooding. Ephemeral wetlands present within the broader Project area are likely to provide suitable habitat following heavy rainfall. The species is considered moderately likely to collide with WTGs. As a listed vulnerable species under the BC Act, a mortality has |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | the potential to result in a moderate reduction in regional population. The species has been assessed to have a **moderate** risk of collision. |
| *Epthianura albifrons* White-fronted Chat | - | V | Moderately Likely | Moderate | Moderate | The white-fronted chat is a small ground-feeding, insectivorous passerine typically occurring in open country, particularly salt-marshes and other wetlands (Jenner, French, Oxenham, & Major, 2016). The species is found throughout the southern half of Australia in temperate and arid climates (NSW DCCEEW, 2024b). The species is known to be present within the Subject Land and has been regularly observed, particularly when seasonal inundation is present. Despite regular observations, no individuals have been observed flying at heights considered to be at risk of collision. Due to the species' known site utilisation and flight behaviour, it is considered moderately likely that a collision event will occur. As a listed vulnerable species under the BC Act, it is likely that a collision event may lead to a moderate reduction in regional populations. The species has been assessed to have a **moderate** risk of collision. |
| *Hirundapus caudacutus* White-throated needletail | V, M | - | Likely | Moderate | High | The white-throated needle-tail is a migratory species with a global distribution. Breeding in Siberia, the species is typically present in Australia between September and April where it is almost exclusively an aerial flyover with only occasional observations made of roosting behaviour. There is evidence that this species can stop to forage within elevated eucalypt forests while in Australia. No detections of the species have been made following survey efforts to date; however, it is likely that foraging behaviour may lead to a risk of collision. Potential foraging habitat is noted to be present throughout the Subject Land |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | within proximity to WTGs. As collisions with WTG are known to have occurred in operational wind farms, it is considered likely that a collision event will occur. As a listed vulnerable species under the EPBC Act, it is possible that a collision will result in a moderate reduction in regional populations. As a result, this species has assessed to have a **high** risk of collision. |
| **Threatened Bats** | | | | | | |
| *Nyctophilus corbeni* Corben's Long-eared bat | V | V | Moderately Likely | Moderate | Moderate | The Corben's long-eared bat is found throughout a range of inland woodland vegetation types, including river red gum and black box woodlands, throughout southern central Queensland to eastern South Australia (Cwth TSSC, 2011). Roosting occurs in tree hollows with hunting occurring as slow flights through the understorey and occasionally on the ground (NSW DCCEEW, 2024b). Presence of the species is considered to be 'possible', following the potential detection of calls. It is not known to what extent the species is likely to be at risk of collision however considering the high rate of bat mortalities found at operational wind farms (Symbolix, 2020; Moloney, Lumsden, & Smales, 2019); it is considered to be moderately likely to collide with WTGs. As a listed vulnerable species under the BC Act and EPBC Act, mortalities have the potential to result in a moderate impact to regional populations. The species has been assessed as having a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Myotis Macropus* Southern Myotis | - | V | Likely | Moderate | High | The southern myotis is typically found within 100 km of the coast from Australia's north-west to western Victoria. The species is known to occur in inland areas in proximity to major rivers and waterbodies (NSW DCCEEW, 2024b). The species has a unique hunting strategy that involves trawling for small fish and aquatic invertebrates over streams and pools which it catches with its feet. Roosting habitat is variable and includes artificial structures, dense foliage and hollow-bearing trees. Species presence is considered 'probable' following the analysis of acoustic calls recorded on acoustic detection devices. Although the relative flight heights of the species are not known, microbat species are known to collide with operational windfarms (Moloney, Lumsden, & Smales, 2019; Symbolix, 2020). It is not known to what extent the species is likely to be at risk of collision, however, due to the presence of agricultural dams and ephemeral wetlands in the Project area, it is considered likely. As a listed vulnerable species under the BC Act, mortalities have the potential to result in moderate impacts to regional populations. The species has been assessed as having a **high** risk of collision. |
| *Saccolaimus flaviventris* Yellow-bellied Sheath-tailed Bat | - | V | Likely | Moderate | High | The yellow-bellied sheath-tailed bat is a large and distinctive microbat species throughout northern and eastern Australia (NSW DCCEEW, 2024b). When foraging, the species flies high and fast over the canopy of forests and woodlands but is known to forage at lower heights in more open areas. Roosting occurs primarily in hollow-bearing trees, however, artificial structures such as buildings are also used on occasion (NSW DCCEEW, 2024b). The species is considered to occur |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | within the Project area following the positive detection of acoustic calls. It is not known to what extent the species flies at heights within the RSA, however, as the species is known to fly at height while hunting, it is considered likely that a collision event will occur. As a listed vulnerable species under the BC Act, mortalities have the potential to lead to a moderate impact on regional populations. The species has been assessed as having a **high** risk of collision. |
| *Chalinolobus picatus* Little Pied Bat | - | V | Moderately Likely | Moderate | Moderate | The Little Pied bat is found in inland Queensland and NSW (including on the western plains and slopes). The species inhabits dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimble box (*Eucalyptus populnea*) woodlands. The little pied bat roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings (NSW DCCEEW, 2024b). Following extensive field survey efforts throughout the Project area, no caves, outcrops or mine shafts are known to occur, however, suitable tree hollows may be present in the fringing woodland vegetation outside the Subject Land. No detections have been made within the Project area to date and the closest records are located 80 km north of the Subject Land. As a listed vulnerable species under the BC Act, mortalities have the potential to lead to a moderate impact on regional populations. The species has been assessed as having a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| **Non-threatened species known to fly within the RSA** | | | | | | |
| *Gymnorhina tibicen* Australian Magpie | - | - | Very Likely | Minor | High | The Australian magpie is a large passerine bird found throughout a variety of habitat types including grasslands, woodlands, dry forests, and disturbed agricultural areas (Morcombe, M., 2000). The species is known to occur throughout all available habitat types within the Subject Land and has been observed flying at heights at risk of collision. The species is considered very likely to collide with WTGs. As a non-listed species, collisions are expected to have a minor impact to regional populations. The species has been assessed as having a **high** risk of collision. |
| *Pelecanus conspicillatus* Australian Pelican | - | - | Likely | Moderate | High | The Australian pelican is a very large waterbird widespread throughout coastal areas and inland waterbodies of suitable size and depth (Morcombe 2003). The species is not considered to be migratory or to undertake seasonal movements, but is nomadic and spatially responds to the availability of foraging resources and suitability of habitat. The species is known to form large flocks in large bodies of water with movement between coastal and inland areas known to occur during episodic flooding (Johnston, Waterman, & Manning, 2015). Large flocks (approximately 50 individuals) have been observed within the Project area, occurring on large dams and flooded ephemeral wetlands. Flight heights within the RSA have also been observed. Species presence is expected to be seasonal and dependent on suitable conditions, however, the Australian pelican is considered likely to collide with WTG. While the species is not currently listed, due to the large seasonal movements known for the species, mortalities have the potential to |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | impact national populations and may have a moderate impact. The species has been assessed to have a **high** risk of collision. |
| *Milvus migrans* Black Kite | - | - | Very Likely | Minor | High | The black kite is a medium sized raptor with a global distribution. The species is known to be present throughout most habitat types in Australia and will forage aerially as well as feed on carrion. Large flocks of black kites are known to occur when conditions are suitable or food resources are abundant (Morcombe, M., 2000). In the Subject Land the species has been observed across all available habitat types and is regularly seen flying at heights considered at risk of collision. The species is considered very likely to collide with WTGs. As a non-listed and highly abundant species, a mortality is likely to have a minor impact on regional populations. The species has been assessed to have a **high** risk of collision. |
| *Falco berigora* Brown Falcon | - | - | Very Likely | Minor | High | The brown falcon is a medium-sized raptor found throughout virtually all habitat types across Australia. The species is locally common within its range and preferred habitat consists of open grassland and agricultural areas. The species is common throughout the Project area and is regularly observed flying at heights considered within the RSA. Due to their abundance within the Project area and their known foraging behaviour, it is considered very likely that the species will collide with WTGs. As a non-listed and locally abundant species, a mortality is likely to have a minor impact on regional populations. The species has been assessed to have a **high** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Ardea intermedia* Intermediate Egret | Ma | - | Likely | Minor | Moderate | Intermediate egrets are found in suitable habits in the east of Australia. Suitable habitat includes a wide variety of wetlands, including man-made wetlands such as rice fields and sewage ponds (Menkhorst, Clarke, Davies, Marsack, & Franklin, 2019). Wo individuals of the species were observed flying within the RSA during field investigations and suitable habitat may occur within the Project area following inundation of wetlands following heavy rain. The species is likely to only to occur in low numbers when suitable habitat is present in the Project area and is considered likely to collide with wind turbines during dispersal. As a non-listed species, a mortality is likely to have a minor impact on regional populations. The species has been assessed to have a **moderate** risk of collision. |
| *Falco cenchroides* Nankeen Kestrel | - | - | Very Likely | Minor | High | The nankeen kestrel is a small raptor occurring largely in open grasslands, woodlands and agricultural areas throughout mainland Australia (Morcombe, M., 2000). Prey species are diverse and include insects, small mammals, lizards and small birds. Prey is located from a perched position or by hovering short distances above the ground (Birdlife Australia, n.d.). The species is locally common and has been observed throughout all habitat types occurring within the Subject Land. While most observations occur below the RSA, the species has been observed to fly at heights considered at risk of collision. It is unknown to what degree the species will avoid turbines while foraging, however, hovering may increase the risk of collision and so the species is considered very likely to collide with WTGs. As a non-listed and locally abundant species, a mortality will likely have a minor impact on |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | regional populations. The species has been assessed to have a **high** risk of collision. |
| *Threskiornis spinicollis* Straw-necked Ibis | - | - | Very Likely | Minor | High | The straw-necked ibis is a large waterbird distributed throughout much of Australia except far inland areas. Preferred habitat varies but the species is known to occur throughout grasslands, croplands, pasturelands, agricultural dams, wetlands and swamps. The species is highly nomadic and known to move in response to the availability of suitable habitat and foraging resources. The species has been observed flying in large flocks (approximately 150 individuals) within the RSA. While species presence is likely to fluctuate in response to environmental conditions, the species is very likely to collide with WTG. As a non-listed species, a mortality is expected to have a minor impact to regional populations. The species has been assessed to have a **high** risk of collision. |
| *Aquila audax* Wedge-tailed Eagle | - | - | Very Likely | Minor | High | The wedge-tailed eagle is a very large eagle and Australia's largest living bird of prey. The species is found throughout Australia and occurs in almost all habitats (Higgins, Peter, & Steele, 2001). Nesting typically occurs in wooded areas, however, areas with minimal woody vegetation, isolated trees and artificial structures are readily used. Individual territories are extensive and dependent on the availability of prey; however, they can exceed 50 $km^2$. Foraging and hunting frequently occurs at great heights (up to and potentially exceeding 2 km) with long periods of time spent surveying territories for prey. The species is locally abundant within the Project area and patches of woodland, isolated trees, and artificial structures provide abundant |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | opportunities for nesting. As soaring and foraging behaviour increases the risk of collision, the species is considered very likely to collide with WTG infrastructure. Wedge-tailed eagles are a non-listed and locally abundant species and so mortalities are likely to have a minor impact on the population. The species has been assessed as having a **high** risk of collision. |
| *Haliastur sphenurus* Whistling Kite | - | - | Very likely | Minor | High | The whistling kite is common and widespread over mainland Australia and found over open woodland, farmland and wetlands. They are opportunistic hunter, soaring above the ground when searching for prey. Prey may be carrion or live animals (Australian Museum, 2024). The whistling kite has been observed flying within RSA height during seasonal surveys and suitable habitat occurs across the Project area. It is considered very likely that the whistling kite will collide with WTGs. As a non-listed and locally abundant species, mortalities are likely to have a minor impact on the population. The species has been assessed as having a **high** risk of collision. |
| **Non-threatened raptors known to occur within the Project area** | | | | | | |
| Black-shouldered Kite *Elanus axillaris* | - | - | Likely | Minor | Moderate | The black-shouldered kite is found throughout mainland Australia and inhabits open country with scattered trees, such as grasslands, farms and roadsides. The species is locally common and had been observed throughout all habitat types occurring within the Subject Land. While all observations occur below the RSA, it is considered likely that the species will fly at heights considered at risk of collision. As a non-listed and locally abundant species, a mortality will likely have a minor impact |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | on regional populations. The species has been assessed to have a **moderate** risk of collision. |
| Australian Hobby *Falco longipennis*<br><br>Peregrine Falcon *Falco peregrinus*<br><br>Swamp Harrier *Circus approximans* | - | - | Likely | Minor | Moderate | These raptor species have been observed throughout seasonal survey events. These species have been observed in low numbers and loss of the occasional individual is not considered to lead to a reduction in the viability of the local or regional population, however, they have the potential to fly within the RSA. They have all been assessed as having a **moderate** risk of collision. |
| Tyto javanica *Eastern barn-owl* | - | - | Less Likely | Minor | Low | The eastern barn-owl occurs across Australia is open country such as farms, heathlands and open woodlands. It is a nocturnal bird and roosts in hollows, caves or tree branches during the day (Australian Museum, 2022). The species has been observed on two occasions during seasonal surveys and there are records within 10 km of the Subject Land. However, due to hunting preferences being focused on ground-dwelling fauna, it is considered less likely to fly within RSA height. As a non-listed and locally abundant species, a mortality will likely have a minor impact on regional populations. The species has been assessed to have a **low** risk of collision |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| **Non-threatened, migratory avian species** | | | | | | |
| Fork-tailed Swift *Apus pacificus* | Mi | - | Likely | Moderate | High | The fork-tailed swift is a medium to large swift with a global distribution. The species is present within Australia during the non-breeding season (approximately October – March in NSW) only, is almost exclusively aerial, and occurs throughout a wide variety of habitat types. No detections of the species have been made following seasonal surveys; however, records are known to occur within the Project area and along the Cobb Highway. The species is considered likely to collide with WTGs. As non-threatened migratory species under the EPBC Act, a mortality event has the potential to result in a moderate impact to regional populations. The species has been assessed as having a **high** risk of collision. |
| Pectoral Sandpiper *Calidris melanotos*<br><br>Common Sandpiper *Actitis hypoleucos* | Mi | - | Moderately Likely | Moderate | Moderate | These non-threatened migratory species have not been observed following field surveys and do not have recent records within 10 km of the Project area. However, ephemeral wetlands present within the Project area have the potential to support these species during periods of episodic inundation following high rainfall. There is moderate likelihood that these species will fly within the RSA. The loss of an occasional individual is considered to lead to moderate reduction in the local or regional population viability. They have all been assessed as having a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| Yellow Wagtail<br>*Motacilla flava* | Mi | - | Less Likely | Moderate | Low | The yellow wagtail is a migratory species with a global distribution that is present in Australia in the winter and is found near wetlands in open country (Morcombe, M., 2000). The species is considered rare and typically associated with coastal areas when in Australia and so a collision event is considered less likely to occur. A mortality is expected to have a moderate impact on the population and so the species has been assessed to have a **low** risk of collision. |
| **Non-threatened resident, nomadic avian species** | | | | | | |
| *Corvus coroinoides*<br>Australian Raven<br>-<br>- | | | Likely | Minor | Moderate | The Australian raven is found throughout a variety of habitat types including grasslands, woodlands, dry forests, and disturbed agricultural areas (Morcombe, M., 2000). The species is known to occur throughout all available habitat types within the Subject Land and has been observed flying at heights near the RSA. The species is considered likely to collide with WTGs. As a non-listed species, collisions are expected to have a minor impact on regional populations. The species has been assessed as having a **moderate** risk of collision. |
| Galah<br>*Eolophus roseicapilla*<br>-<br>- | | | Likely | Minor | Moderate | The Galah is found throughout a variety of habitat types in Australia including woodlands, grasslands, roadside and agricultural areas often in large flocks. Galahs feed on seeds mostly from the ground and have been observed throughout the Subject Land. The species has been observed flying near RSA height and is considered likely to be at risk of collision with WTGs. As a non-listed species, a mortality is expected to have a minor impact on regional populations. The species has been assessed to have a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| *Petrochelidon ariel*<br>Fairy Martin<br>-<br>- | | | Likely | Minor | Moderate | The fairy martin is a small and common bird found throughout Australia. The species is insectivorous and predominantly feeds aerially, often in flocks, and is known to reach large heights while doing so (Morcombe, M., 2000). The species has been observed throughout all habitat types present within the Project area, and has been observed flying near RSA height. It is considered likely to be at risk of collision. As a non-listed species that is locally abundant, a collision would likely lead to a minor impact on regional populations. The species has been assessed to have a **moderate** risk of collision. |
| *Corvus mellori*<br>Little Raven | | | Likely | Minor | Moderate | The little raven is found throughout a variety of habitat types including grasslands, woodlands, dry forests, and disturbed agricultural areas (Morcombe, M., 2000). The species is known to occur throughout all available habitat types within the Subject Land and has been observed flying near RSA heights. It is considered likely to be at risk of collision. As a non-listed species, collisions are expected to have a minor impact on regional populations. The species has been assessed as having a **moderate** risk of collision. |
| *Artamus personatus*<br>Masked Woodswallow | | | Likely | Minor | Moderate | The masked woodswallow is a common and highly nomadic species found throughout Australia. The species typically inhabits open forests, woodland, heath, roadsides and farmland largely in arid and semi-arid zones (Morcombe, M., 2000). The species has been observed throughout a variety of habitat types within the Subject Land but typically occurs within proximity to woodland or scattered trees and shrubs. Flight heights near the RSA have been observed within the Project area. The species is considered likely to collide with WTGs. As a |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| | | | | | | non-listed and locally abundant species, a mortality is likely to have a minor impact on regional populations. The species has been assessed to have a **moderate** risk of collision. |
| *Platalea flavipes*<br>Yellow-billed Spoonbill | | | Likely | Minor | Moderate | The yellow spoonbill is a large wetland bird found throughout much of Australia and inhabits shallow swamps of fresh or brackish water, brackish pastures, and small pools and dams (Morcombe, M., 2000). The species has been observed within the Project area foraging along dam edges and throughout flooded grasslands and ephemeral wetlands. Flight heights near the RSA have also been observed. Presence within the Subject Land is likely to be driven by the presence of inundation and episodic flooding and movement between wetlands may increase risk of collision. The species is considered likely to collide with WTGs. As a non-listed species, a mortality is not expected to negatively impact on regional populations. The species has been assessed to have a **moderate** risk of collision. |
| • Black-tailed Native Hen (*Tribonyx ventralis*)<br>• Black-faced Cuckoo-shrike *(Coracina novaehollandiae)*<br>• Crested Pigeon (*Ocyphaps lophotes*)<br>• Grey Butcherbird (*Cracticus torquatus*)<br>• Grey Shrike-thrush *(Colluricincla harmonica)* | | | Less likely | Minor | Low | These non-threatened, resident and nomadic species have been observed through surveys. It is considered less likely that they will fly within RSA height due to habitat requirements. In addition, loss of the occasional individual is not considered to lead to a reduction in the local or regional population viability. They have all been assessed as having a **low** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
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| | EPBC Act | BC Act | | | | |
| • Ground Cuckoo-shrike (*Coracina maxima*)<br>• Olive-backed Oriole (*Oriolus sagittatus*)<br>• Zebra Finch *(Taeniopygia guttata)* | | | | | | |
| • Australasian Grebe (*Tachybaptus novaehollandiae*),<br>• Australasian Shoveler (*Anas rhynchotis*)<br>• Australian Ringneck (*Barnadius zonarius var. barnardi*)<br>• Australian White Ibis (*Threskiornis moluccus*)<br>• Australian Wood Duck (*Chenonetta jubata*)<br>• Banded Lapwing (*Vanellus tricolor*)<br>• Black-eared Cuckoo (*Chrysococcyx osculans*)<br>• Black-faced woodswallow (*Artamus cinereus*)<br>• Black-fronted Dotterel (*Elseyornis melanops*) | | | Likely | Minor | Moderate | These non-threatened, resident and nomadic species have been observed through surveys. It is considered likely that they may fly within the RSA on occasion but loss of the occasional individual is not considered to lead to a reduction in the local or regional population viability. They have all been assessed as having a **moderate** risk of collision. |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| • Black-winged stilt (*Himantopus himantopus*)<br>• Black Swan (*Cygnus atratus*)<br>• Bluebonnet (*Northiella haematogaster*)<br>• Brown Songlark (*Cincloramphus cruralis*)<br>• Budgerigar (*Melopsittacus undulatus*)<br>• Cockatiel (*Nymphicus hollandicus*)<br>• Crimson Rosella (*Platycercus elegans*)<br>• Eastern Rosella (*Platycercus eximius*)<br>• Fan-tailed Cuckoo (*Cacomantis flabellifromis*)<br>• Great Egret (*Ardea alba*)<br>• Grey Fantail (*Rhipidura albiscapa*)<br>• Grey Teal (*Anas gracilis*)<br>• Hardhead (*Aythya australis*)<br>• Hoary-headed Grebe (*Poliocephalus poliocephalus*)<br>• Horsfield's Bronze-Cuckoo (*Chalcites basalis*) | | | | | | |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| • Horsfield's Bushlark (*Mirafra javanica*)<br>• Inland Dotterel (*Peltohyas australis*)<br>• Little Black Cormorant (*Phalacrocorax sulcirostris*)<br>• Pacific Black Duck (*Anas superciliosa*)<br>• Pallid Cuckoo (*Cacomantis pallidus*)<br>• Pied Cormorant (*Phalacrocorax varius*)<br>• Pink-eared Duck (*Malacorhynchus membranaceus*)<br>• Plumed Whistling Duck (*Dendrocygna eytoni*)<br>• Rainbow bee-eater (*Merops ornatus*)<br>• Red-kneed dotterel (*Erythrogonys cinctus*)<br>• Royal Spoonbill (*Platalea regia*)<br>• Rufous songlark (*Megalurus mathewsi*)<br>• Tree Martin (*Petrochelidon nigricans*) | | | | | | |

| Species | Threatened Species Status | | Likelihood of Event | Consequence of Event | Risk Rating | Comments |
|---|---|---|---|---|---|---|
| | EPBC Act | BC Act | | | | |
| • Welcome swallow (*Hirundo neoxena*)<br>• White-backed swallow (*Cheramoeca leucosterna*)<br>• White-breasted woodswallow (*Artamus leucorynchus*)<br>• White-browed woodswallow (*Artamus superciliosus*)<br>• White-faced heron (*Egretta novaehollandiae*)<br>• White-necked heron (*Ardea pacifica*) | | | | | | |

Status listing for EPBC and BC Acts: CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory; Ma = Marine

## 3.4 HEAT MAPPING

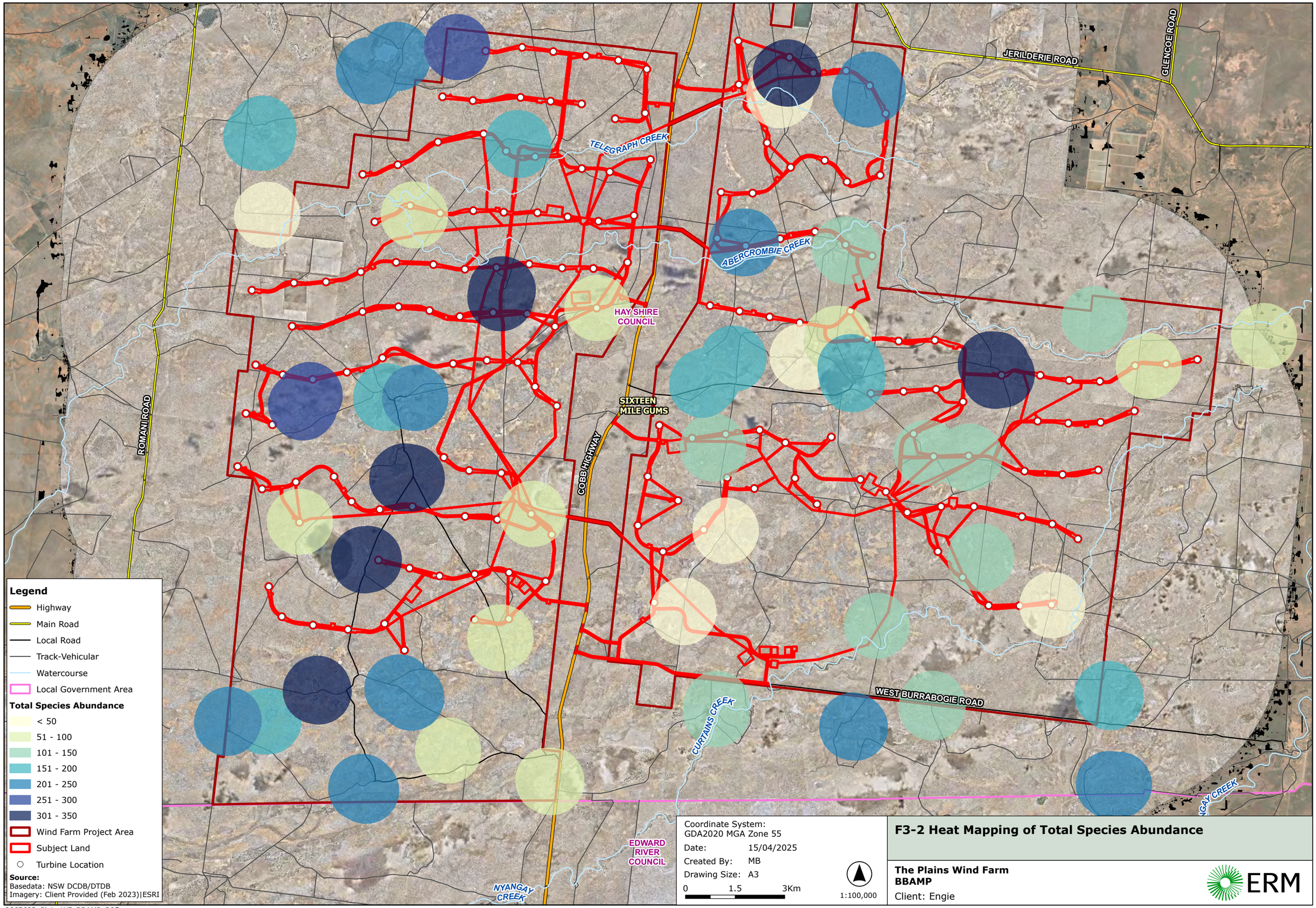
Bird abundance and site utilisation throughout the Subject Land is heavily influenced by the availability and suitability of habitat, topography and season. Where turbines are located in areas of higher site utilisation, particularly flight heights within the RSA, higher rates of collision and mortality are expected. To identify these high-risk areas, heat mapping of bird abundance has been undertaken to map areas of important bird activity across the Subject Land.

Heat mapping has been informed by bird utilisation data collected across all seasonal surveys. A 1 km radius was applied to each BUS location sampled to reflect the approximate average survey area in which an accurate species identification with a high level of confidence could be obtained. Total species abundance observed at each BUS point was then applied as a gradient to identify areas of higher utilisation. Due to the large size of the Subject Land, mapping of flight paths using a heat mapping approach is limited to sampled survey locations within proximity to indicative turbine locations. Incidental observations of potentially at-risk raptors and species observed flying at heights considered at risk of collision (within the RSA) were recorded beyond the extent of sampled BUS locations but offer important insights into site level movements for species.

### 3.4.1 HEAT MAPPING OF TOTAL SPECIES ABUNDANCE

Mapped site utilisation in relation to abundance of all species observed is presented in **Figure 3-2**. A colour gradient has been applied to the buffered BUS locations based on the total abundance of individual birds, across all detected species, from all survey periods completed by ERM. A colour gradient has been applied to represent increments of 50 birds, in other words, with darker colours signifying a higher abundance of detected birds.

Despite an abundance bias towards those BUS locations which have had more frequent surveys, observed species abundance shows largely consistent patterns across the Project area. Bird abundance in areas characterised by low and open shrubland or grassland vegetation communities were found to be low. Total bird abundance was higher in areas within close proximity to woodland or where seasonal inundation was present. The habitat value of ephemeral wetlands and floodplains is not static and is expected to undergo seasonal and temporal changes. When rainfall is high enough to establish flooding events in ephemeral wetlands and creek lines, bird movement within the PROJECT AREAis expected to be between areas of water.




# F3-2 Heat Mapping of Total Species Abundance

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

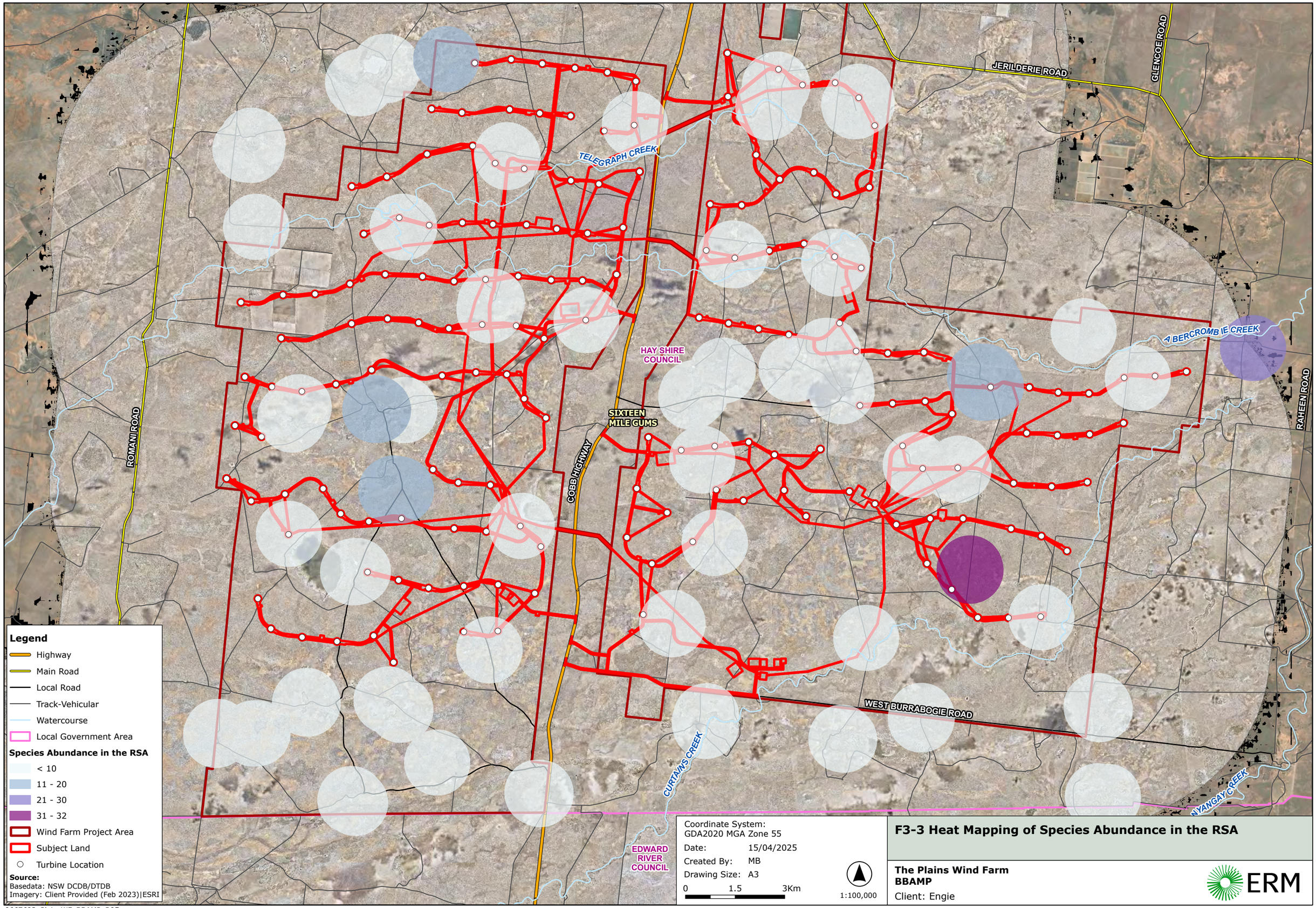
0667692_PlainsWF_BBAMP_R05.aprx

### 3.4.2 HEAT MAPPING OF ABUNDANCE WITHIN THE RSA

While total species abundance can provide meaningful insights into overall bird site utilisation, abundance data are heavily influenced by the presence of species that are not considered to be at risk of collision, particularly grassland and shrubland specialists known to be predominantly active at ground level. The heat mapping provided in **Figure 3-3** identifies the bird abundance observations utilising the RSA (90 – 270 m) across the Project area.

Of the 51 individual survey locations sampled between 2021 and 2024, 11 locations had no birds flying within the RSA, 26 locations had between one and five birds flying with the RSA, eight (8) locations had between six and 10 birds flying within the RSA, and six (6) locations had over 11 birds flying within the RSA. Bird abundance within the RSA was highest at BUS46 and BUS35 (refer to **Figure 2-1**) with 22 and 32 birds flying within the RSA respectively. Note that BUS46 no longer occurs within the Project area and BUS35 is 200 m beyond the Assessment Area.

Four BUS locations (BUS04, BUS12, BUS14, BUS43) had between 11 and 14 birds flying within the RSA. These locations have all been excluded from the Assessment Area. Proximity to important habitat features such as woodland and ephemeral wetland areas were likely to be the dominant drivers of abundance estimates at these locations. The dominant species flying within the RSA at these locations were the wedge-tailed eagle (*Aquila audax*) and the black kite (*Milvus migrans*), with the brown falcon (*Falco berigora*) and black falcon (*Falco subniger*) occurring at BUS04, the straw-necked ibis (*Threskiornis spinicollis*) at BUS12 and BUS14, and the Australian pelican (*Pelecanus conspicillatus*) also at BUS14. All these species are considered to be subject to a high risk of collision except for the black falcon, which is considered very high risk.




# F3-3 Heat Mapping of Species Abundance in the RSA

**The Plains Wind Farm**
**BBAMP**
Client: Engie

ERM

0667692_PlainsWF_BBAMP_R05.aprx

## 3.5 MATHEMATICAL COLLISION RISK MODELLING

### 3.5.1 OVERVIEW

The Band Collision Risk Model (Band, Madders, & Whitfield, 2007) has been used to predict the total number of avian collisions that may result from the development of the Project. This method of modelling requires inputs that describe species-specific biometrics, flight speeds and characteristics, and the expected amount of flight activity derived from field surveys in the Subject Land. It also requires inputs of WTG information such as blade size and pitch, hub height, rotor rotation period and the proportion of time the WTG will be operational (Band, Madders, & Whitfield, 2007).

The Band CRM uses observational BUS data to determine avian flight heights and the frequency of time of species spent in the RSA. Literature may be used to determine average flock size.

The CRM utilises two stages:

Stage 1:

- Assess the number of birds or bats colliding per annum = the number of birds or bats flying through the RSA; and

Stage 2:

- Assess the probability of the bird or bats flying through the RSA being hit by turbine blades (Band, Madders, & Whitfield, 2007).

Stage 1 relies on BBUS at selected vantage points to gather information on the frequency of bird and bat flights in the RSA (Band, Madders, & Whitfield, 2007). BUS data collated across the nine survey periods (Spring 2021; Summer, Autumn and Winter 2022; Spring 2023; and Summer, Autumn, Winter and Spring 2024) has been used for Stage 1. Note that only CRM assessment of birds is possible for the Subject Land due to the data collection methods (only presence / absence data are available for bat species).

Stage 2 requires knowledge of the characteristics of the bird and bat species, such as length, wingspan, the average flight speed, as well as the breadth and pitch of the WTG blades and its rotation speed (Band, Madders, & Whitfield, 2007).

### 3.5.2 BACKGROUND

#### 3.5.2.1 LITERATURE REVIEW

Australia has been increasingly adopting renewable energy projects, with 97 operational wind farms present in the country as of April 2025 (Open Electricity, 2025), a number which is predicted to grow exponentially in the coming years (Australian Renewable Energy Agency, 2025) in order to meet the evolving renewable energy targets.

Collision risk of turbines with avian species needs to be considered from an environmental impact perspective. The global increase in WTGs has resulted in adverse effects on many avian species, through direct fatalities as a result of the collision with WTG rotor blades, barotrauma, habitat alteration and loss, and changes to normal flight paths (Drewitt & Langston, 2006; Madders & D.P, 2006).

Collision risk is particularly important to determine and account for in proposed wind farm areas where the bird species present are at a higher risk of decline, such as threatened species. Even a few fatalities can grossly alter the maturing and reproductive rates of a

species, thus potentially resulting in regional and national declines (Drewitt & Langston, 2006; Loss, Will, & Marra, 2013). Other species that are vulnerable to collision with WTGs are high-flying, soaring birds of prey, such as raptors (Domingo & López-López, 2024). Collision-related mortality is spread unevenly among species, where a few species often account for a large proportion of collisions (Madders & D.P, 2006; De Lucas, Janss, Whitfield, & Ferrer, 2008). Collision risk will also vary by species, based on factors such as foraging behaviour, flight height, flock sizes, morphology and flight speed (Barrios & Rodriguez, 2004; De Lucas, Janss, Whitfield, & Ferrer, 2008; Drewitt & Langston, 2006). WTG collision rates will vary based on variables such as time of day and time of year (Murgatroyd, Bouten, & Amar, 2021).

Raptors are known to utilise thermal soaring (slow circle-soaring flight on thermals) which is highly dependent on weather conditions. Under conditions unsuitable for the raptor to gain altitude, WTG collision risk may be increased with the birds not tending to engage in active flight (Barrios & Rodriguez, 2004; Johnston, Cook, Humphreys, & Burton, 2014; Marques, et al., 2014). This is because the bird is soaring and not actively flapping through an airspace which may prolong the amount of time that it is present within the RSA.

CRM have been developed to assess the risk of impact to species as a result of wind farms. These models are only able to assess the risk as a result of direct mortality from WTG hits, and do not assess habitat loss and flight redirection. A study by Masden and Cook (2016) reviewed 10 models that have been used broadly to assess the probability of bird species colliding with WTGs. The methods that were assessed were divided into those based on observational flight data and those that focus primarily on collisions based on theoretical parameters in the absence of bird data.

**Table 3-6** shows a summary review of three of the more recent models assessed by Masden and Cook (2016), including the Band CRM used for collision risk modelling for the Project. **Tabel 3-6** presents the objective of each model, the required inputs and the limitations or main assumptions of the model. Not all models reviewed by Masden and Cook (2016) are included in the table below; only the ones that are commonly adopted in recent collision risk modelling.

TABLE 3-6 COMPARISON OF COLLISION RISK MODELS

| Collision Risk Model | Objective and Benefits | Limitations and Assumptions |
|---|---|---|
| Band CRM (Band, Madders, & Whitfield, 2007). | The model was developed to account for the probability of a WTG blade occupying the same space as a bird, and the time taken for the bird to pass through the rotor swept volume of the area occupied by the WTG.<br><br>It has two stages for estimating collisions per year: 1) number of birds flying through the rotor and 2) the probability of collision from a single transit of a rotor. | The bird is assumed to be a cruciform shape.<br>The thickness of the WTG blade is not included in this model.<br>This model only assumes the bird is flying parallel to the wind, i.e., perpendicular to the rotation of the WTG.<br>The model does not consider collision with the WTG tower.<br>Relies on observational data – often these are lacking or limited. |

| Collision Risk Model | Objective and Benefits | Limitations and Assumptions |
|---|---|---|
| | This model accounts for avoidance or evasive behaviour by implementing an avoidance rate, often between 95-99%.<br>Bird specific parameters are included in model, such as bird length, wingspan, height and flight type.<br>Considers bird flight behaviour, i.e. when flapping and gliding.<br>WTG parameters are considered such, as diameter, length, operational time, rotor speed and hub height. | This model does not include oblique angles to the WTG. |
| Monte Carlo Model (McAdam, 2005) | This model is based upon the original Band Model however includes stochastic modifications to account for variation in flight height and the effects of wind. | The same limitations apply as per the Band Model.<br>This model includes oblique angles but not bird orientation relative to the WTG. |
| Biosis Propriety Limited (Smales, Muir, Meredith, & Baird, 2013). | This model has been developed to provide a prediction of the number of collisions between WTGs and local or migratory birds.<br>This model acknowledges that birds won't only approach WTG at a perpendicular angle, but flights can occur from any direction.<br>The model considers the moving and stationary parts of the WTG – including the WTG tower.<br>The model considers bird and WTG parameters, as per the Band Model.<br>The model considers avoidance rates of birds. | This model does not consider when the collisions will occur, and due to the statistically small number of collisions that are concluded from the model, it is unlikely that they will be evenly distributed in time.<br>Relies on observational data – often these are lacking or limited. |

As well as the limitations noted in **Table 3-6**, the following are limitations are common in most collision risk modelling:

- Most models assume that avoidance behaviour by avian species is constant across all individuals within a species and this is unlikely;
- The number of collisions is often overestimated;
- Data collected through field assessment are often count data, based on the number of individuals of the species. The same individual may be counted more than once; however, it can only be used in the model once, assuming collision equates to mortality; and
- Species-specific behaviour, topography and wind parameters are not considered in most models.

The Band CRM Method (Band, Madders, & Whitfield, 2007) was chosen for collision risk assessment for the Project based on its ability to calculate collision estimates per year. The

Band CRM Method considers many bird and WTG model parameters which ensures that it is specific and situationally dependent.

Further to those discussed in **Table 3-6**, other limitations of the Band CRM include the following:

- Birds may be more evident and prominent in some habitats;
- Birds may be easier to identify when flying at different elevations;
- Detection rate may differ for different species;
- Plotting routes of flying birds is difficult due to parallax and can be a skill that takes time to develop;
- It can be hard to determine the position of gliding species such as raptors in relation to the landscape. However, knowledge of the species and the terrain helps to overcome this limitation; and
- The flight direction is not considered in the model. This information helps to determine site-specific higher collision risk areas. Such information is important to identify higher risk areas.

#### 3.5.2.2 PEER REVIEW

A peer review of the CRM used by ERM was undertaken by Principal Consultant Peter Wright, with 15 years' experience in environmental assessment, and Senior Consultant Sebastian Ellis, with 4 years' experience, from the ERM Europe Business Unit. Both professionals have worked on multiple projects which require the use of CRM using the Band Model, throughout the UK and Europe. A summary of this peer review is provided below in **Table 3-7**.

Overall, the peer review assessed that the Band CRM Method (Band, Madders, & Whitfield, 2007) was an adequate model to analyse the data collected through survey effort within the Subject Land. To provide a more robust and conservative estimate of collision risk, the peer review detailed a number of recommendations to improve the model output.

TABLE 3-7 CRM PEER REVIEW RECOMMENDATIONS AND IMPLEMENTATION

| Peer Review Recommendation | Implementation into CRM |
|---|---|
| Use of hypothetical data or data from a broader area than the Subject Land leads to a large amount of uncertainty and undermines confidence in the model. If a species is not recorded in the survey area but is expected to be present, further survey effort would be preferable to utilisation of data from a wider area. Bird activity is typically site specific, with topography, habitat, food/prey availability and other factors all influencing bird flight activity at any one location. Although regional datasets may provide information on bird density that can be extrapolated to a proposed wind farm site, the CRM requires additional assumptions to be made around bird occupancy (e.g., number and duration of flights at potential collision risk height) or bird flux (number of | On the guidance of the peer review model, as well as the literature review of models used throughout the world for CRM, hypothetical modelling is not an accurate way to understand the collision risk for a proposed development.<br><br>Using this recommendation, only birds that have been observed within the RSA in the Subject Land were included in the CRM. |

| Peer Review Recommendation | Implementation into CRM |
|---|---|
| regular flights through the wind farm at collision risk height). As with all models, the more assumptions made for the model inputs, the more uncertainty there is in the outputs. | |
| Reference to WTG and bird specific parameters need to be made and justified. | The parameters for the WTGs are based upon the worst-case scenarios. Bird morphology and flight speed parameters were based on literature and observational data, with all known bird parameters recorded in Table 3-10. |
| The calculation of bird occupancy across the whole site requires an equal duration of survey effort across all areas of the site (e.g., if 2 hours of survey were undertaken at 3 locations simultaneously to cover the whole site then this equates to 2 hours surveyed across the site rather than 6 hours in total). | The calculation for time spent surveying the Subject Land was based on surveys conducted by two ecologists at one time. BUS were never conducted simultaneously but were conducted one after the other during survey periods. Therefore, the total time spent surveying the Subject Land was calculated based on the accumulation of all survey minutes conducted during each BUS in the Subject Land / Project area. |
| It is recommended that a rule of 2 km visibility per vantage point survey (BUS equivalent in the UK) be used to calculate the total area surveyed. | This recommendation was provided to give a more accurate representation of the total area surveyed across the Subject Land / Project area. For each BUS point, a visibility estimate of 1 km was used. This provided a more conservative estimate than the recommended 2 km recommended. This was to account for areas with low visibility due to vegetation density, topography and weather, and human error. |
| The initial infrastructure footprint was calculated using a 100m buffer. In the UK, a 500m buffer around the infrastructure to calculate the risk envelope is typically used. | A 500 m buffer of the Subject Land has been applied – this is the Assessment Area. However, avian records have been sourced from across the Project area and public records from within 10 km of the Subject Land. This list of avian records was then assessed using the risk matrix in **Section 3.3** of the BBAMP. |
| Bird parameters used to calculate collision risk should be referenced and the input of 'flapping' bird behaviour should be applied over 'gliding' bird behaviour to give a precautionary outcome. | Bird parameters used for the CRM have been referenced for Table 3-10, and 'flapping' bird behaviour applied. |

| Peer Review Recommendation | Implementation into CRM |
|---|---|
| One of the assumptions used in the model is that each flight observed lasted 20 minutes duration. No justification is provided for using this value, and best practice would be to use actual flight durations recorded from site specific surveys. | Data recorded during BUS were bird presence within the RSA and direction of flight. The survey effort did not capture the total time that birds spent in the RSA.<br>Each BUS lasted for 20 or 30 minutes. In the absence of more accurate data, an assumption was made that observations of bird species within the RSA equated to a full 20 minutes. This provides the total maximum time the bird could have been sighted in the RSA. |
| Incorrect application of avoidance rates and 98% avoidance rates should be applied. | Avoidance rates have been implemented for 95%, 98% and 99% for each bird species to provide a range of values. |

### 3.5.3 COLLISION RISK MODEL INCLUSION CRITERIA

The following section details the modelling processes used for the CRM for the Subject Land.

The CRM included bird species assessed as having high and very high collision risk, as detailed in **Section 3.3.2**. The species that were assessed as having a low and moderate risk of collision, as determined by the risk assessment, were not considered in the CRM. Inclusion criteria are summarised in **Table 3-8**.

TABLE 3-8 COLLISION RISK MODEL INCLUSION CRITERIA**ERROR! REFERENCE SOURCE NOT FOUND.**

| Risk Category | Included in CRM |
|---|---|
| **Low** | No |
| **Moderate** | No |
| **High** | Yes (only sightings in RSA) |
| **Very High** | Yes (only sightings in RSA) |

It is important to note that while observations of threatened birds and bats have been made during field assessments in the Subject Land, no threatened species were observed flying within the RSA with a large enough sample size ($n \geq 3$) to effectively model collision risk. Threatened species which have been assessed as very high or high risk of collision, and which have not been recorded in the RSA are listed below:

Very high risk of collision

- Black falcon (*Falco subniger*);
- Curlew sandpiper (*Calidris ferruginea*);
- Little eagle (*Hieraaetus morphnoides*); and
- Plains-wanderer (*Pedionomus torquatus.*

High risk of collision

- Australasian bittern (*Botaurus poiciloptilus*);

- Common Greenshank (*Tringa nebularia*);
- Grey Falcon (*Falco hypoleucos*);
- Pink Cockatoo (*Lophochroa leadbeateri*);
- Sharp-tailed Sandpiper (*Calidris acuminata*);
- Spotted Harrier (*Circus assimilis*);
- Swift parrot (*Lathamus discolor*);
- White-throated Needletail (*Hirundapus caudacutus*);
- Southern Myotis (*Myotis macropus*); and
- Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*).

These species will be monitored during bird surveys to be undertaken during the construction and operational phases of the Project. The CRM will be updated should a sufficient sample size (n≥ 3) becomes available for any of these species, in line with the BBAMP review processes outlined in **Section 8**.

### 3.5.4 WTG PARAMETERS

**Table 3-9** details the WTG parameters for the Project. These parameters have been used in the CRM to calculate collision risk for species considered at very high and high risk of collision under different scenarios.

TABLE 3-9 WTG PARAMETERS FOR THE PROJECT

| WTG Parameters | WTG Specifications |
|---|---|
| Number of WTG | 171 |
| WTG Hub Height | 180 m |
| WTG Rotor Diameter | 180 m |
| WTG Blade Length | 90 m |
| RSA height | 90 - 270 m (lowest point and highest point) |
| Number of Blades | 3 |
| Chord Width of Blade | 4825 mm |
| Average Pitch Angle of Rotor | 7.5 degrees |
| Average Rotation Period of WTG | 6.66 seconds / rotation |

### 3.5.5 COLLISION RISK MODELLING ASSUMPTIONS AND LIMITATIONS

The application of the Band CRM Band, Madders, & Whitfield, 2007) has been undertaken for the Subject Land, using the assumptions detailed below.

#### 3.5.5.1 ASSUMED BIRD FLIGHT ACTIVITY

BUS provide site-specific data to inform bird utilisation; however, they are limited by the short sampling period length within a specific survey. For the purposes of the CRM, bird utilisation is assumed to be constant across the year regardless of the season. Average hours of daylight (the time between dawn and dusk) have been calculated using data obtained from Geoscience Australia's Geodetic Calculator (Geoscience Australia, 2025) and have been used to calculate

the proportion of time birds spent within the RSA per year. Although the times that birds are active at heights within the RSA is likely to vary depending on season, weather, and bird functional groups, it has been assumed that birds are active for 100% of available daylight hours. This assumption provides the most conservative estimate of collision risk annually.

It has also been assumed that the length of time that birds were observed within the RSA during BUS and other opportunistic surveys is 20 minutes; this equates to 8360 minutes of survey over 418 BUS. Refer to **Table 3-10.**

#### 3.5.5.2 ROTOR SWEPT AREA

The CRM assumes a rotor blade length of 90 m, and with a hub height of 180 m, this equates to a RSA of between 90 and 270 m. Refer to **Table 3-9**.

#### 3.5.5.3 SPECIES MORPHOMETRICS

To calculate the total numbers of collisions per annum for each species, species-specific morphometric data including wing length, body length and flight speed is required. As flight speeds are not well understood for Australian birds, estimates have been taken from closely related species of a similar size when estimates of flight speeds could not be found in the scientific literature. For those species for which flight speeds could be sourced, only the maximum observed flight speed was available. Birds likely to be interacting with wind turbines are expected to rarely fly at maximum speed and actual collision risk may fluctuate depending on the speed at which the bird is flying.

#### 3.5.5.4 INSUFFICIENT SAMPLE SIZE

To ensure that modelled outputs remain statistically robust, only those species with suitable sample sizes have been included in the CRM. Observations of a minimum of three individuals of the same species flying at heights within the RSA ($n \geq 3$) has been determined as the minimum required number of observations for inclusion within the CRM. A smaller sample size is not considered to provide a statistically adequate prediction of collision risk. Those species with insufficient sample sizes will still be subject to the monitoring, management and mitigation measures identified in the Amended BDAR and this BBAMP.

### 3.5.6 BIRD SPECIES PARAMETERS

**Table 3-10** provides morphometric parameters, known flight speeds, and calculated time active within the RSA of birds identified as flying within the RSA through BUS and other bird surveys. While the open landscape characteristic of the Project area allows for high bird detectability, the accuracy of species identification is expected to vary across distances in relation to species size and identifiable characteristics. To account for this, maximum distances of identification confidence have been assigned to each species and have informed the calculation of expected annual flights through the RSA. The parameters presented in **Table 3-10** informed the CRM for each species and have been collated through a literature review and field observations.

TABLE 3-10 BIRD PARAMETERS FOR THE CRM

| Species name | Wingspan (cm)* | Length (cm)* | Flight speed (m/s)* | Distance of confident identification (m) | Number of modelled sightings in the RSA during surveys | Total minutes active during survey time | Total minutes active proportional to total survey time (8360 minutes)# |
|---|---|---|---|---|---|---|---|
| Australian magpie (*Gymnorhina tibicen*) | 76 | 40 | 16.7 | 500 | 30 | 600 | 0.07 |
| Australian pelican (*Pelecanus conspicillatus*) | 250 | 150 | 15.6 | 2000 | 67^ | 1340 | 0.16 |
| Black kite (*Milvus migrans*) | 145 | 54 | 17.3 | 1000 | 36 | 720 | 0.09 |
| Nankeen kestrel (*Falco cenchroides*) | 74 | 30 | 17.4 | 1000 | 7 | 140 | 0.02 |
| Straw-necked ibis (*Threskiornis spinicollis*) | 88 | 60 | 8.3 | 1000 | 6 | 120 | 0.01 |
| Wedge-tailed eagle (*Aquila audax*) | 230 | 110 | 16.7 | 2000 | 132 | 2640 | 0.32 |
| Whistling kite (*Haliastur sphenurus*) | 146 | 55 | 30 | 1000 | 6 | 120 | 0.01 |

^ *species observations included in total (September 2024)*
*#Assume 20 minutes per survey over 418 BUS surveys in total*
**Sources used to determine bird parameters included* (Cwth DCCEEW, 2025c; NSW DCCEEW, 2024b; Hansen, et al., 2016; Menkhorst, Clarke, Davies, Marsack, & Franklin, 2019; Morcombe, M., 2000; Marchant & Higgens, Handbook of Australian, New Zealand and Antarctic Birds, 1993; Higgins, Peter, & Steele, 2001; Morcombe, 2003; Simpson & Day, 2010; Pizzey & Knight, 1997).

### 3.5.7 COLLISION RISK MODELLING RESULTS

A summary of the CRM outputs for the preliminary collision risk assessment is presented in **Table 3-11.**

For the seven species included in the model, collision risk has been calculated as the number of collisions per species per annum. In practice, it is expected that birds demonstrate a high level of avoidance of WTGs (Band et al., 2007). Avoidance rate is defined as the capacity for a bird to avoid a collision. This may take different forms – the bird may avoid the whole wind farm by flying over or around it (macro-avoidance), the bird may fly only in the airspace between or below the RSA (meso-avoidance) or the bird may fly in close proximity to a turbine but does not collide with it (micro-avoidance) (Cook et al., 2014).

Known avoidance rates are not available for all species. Further research is necessary to determine species-specific avoidance rates. Avoidance rates of 95%, 98% and 99% have been used in this BBAMP to calculate collision numbers per annum for a given species. These avoidance rates are widely used in collision risk modelling (Smales & Muir, 2005).

The CRM predicted that a maximum of two birds per year (of the species that have been modelled) may collide with the WTGs within the Subject Land. Over the lifetime of the Project (30 years) this equates to a predicted maximum mortality of 60 birds. These estimates represent the worse-case scenario for the species included in the model based on field investigations and reviewed literature.

Two species, the Intermediate Egret (*Ardea intermedia*) and the threatened Black Falcon (*Falco subniger*), were observed flying within the RSA; however, they returned insufficient sample size for inclusion within the CRM. Therefore, predicted annual mortalities for these species could not be calculated; however, this does not mean that mortalities to these species from turbine strike could not occur. On this basis, should sufficient data for these species become available, the CRM will be reviewed and updated, including adaptive management strategies as necessary.

Similarly, species assessed as having a moderate or low risk of collision that were excluded from the model may occasionally collide with turbines. Ongoing monitoring, mitigation and adaptive management activities, outlined in **Sections 4, 5** and **6**, will facilitate adjustments to assessment of risk over time, based on actual mortalities of avian species that occur due to turbine strike and / or barotrauma.

TABLE 3-11 CRM ESTIMATED COLLISION NUMBER PER ANNUM (RSA = 90 - 270 M)

| **Species Name** | **Estimated annual number of collisions** | | | **Modelled collisions over a 30-year operational Project lifespan** | | |
|---|---|---|---|---|---|---|
| | 95% | 98% | 99% | 95% | 98% | 99% |
| Australian magpie (*Gymnorhina tibicen*) | 0.59 | 0.24 | 0.12 | 17.7 | 7.2 | 3.6 |
| Australian pelican (*Pelecanus conspicillatus*) | 0.2 | 0.08 | 0.04 | 6 | 2.4 | 1.2 |
| Black kite (*Milvus migrans*) | 0.23 | 0.09 | 0.05 | 6.9 | 2.7 | 1.5 |
| Straw-necked ibis (*Threskiornis spinicollis*) | 0.5 | 0.2 | 0.1 | 15 | 6 | 3 |
| Nankeen kestrel (*Falco cenchroides*) | 0.04 | 0.02 | 0.01 | 1.2 | 0.6 | 0.3 |
| Whistling kite (*Haliastur sphenurus*) | 0.06 | 0.03 | 0.01 | 1.8 | 0.9 | 0.3 |
| Wedge-tailed eagle (*Aquila audax*) | 0.37 | 0.15 | 0.07 | 11.1 | 4.5 | 2.1 |
| **Total** | **1.99** | **0.81** | **0.4** | **59.7** | **24.3** | **12** |

## 3.6 CUMULATIVE COLLISION RISK ASSESSMENT FRAMEWORK

While the assessment of potential impacts of wind farms on bird and bat populations is well understood at the scale of a single wind farm, the potential cumulative impacts of multiple adjacent wind farms is not well understood in Australia. Cumulative impacts refer to the effects of two or more developments and can be described as:

- Additive, where the total cumulative impact is considered the sum of the individual impacts of each relevant wind farm project (Scottish Natural Heritage, 2018);
- Antagonistic, where the cumulative impacts are less than the sum of impacts of multiple individual projects (Scottish Natural Heritage, 2018); or
- Synergistic, where the cumulative impacts are greater than the sum of impacts of multiple individual projects (Foden, Rogers, & Jones, 2010).

Assessing these cumulative impacts is likely to be important for species known to occupy a wide distribution, that occur in low densities or disperse over large distances (Smales & Muir). For such species, cumulative impacts may be more severe than impacts from individual wind farm projects and may affect the suitability of species-specific management frameworks (Canter & Kamath, 1995). Sedentary species which do not typically disperse long distances are only at risk of collision when individual home ranges coincide with wind farms, with most of the population not at risk from wind farm infrastructure. For species which migrate seasonally, particularly across large distances or within narrow flyways, it is possible that large numbers of the population will pass through multiple wind farms over the course of an annual migratory cycle. Examples of these species include the orange-bellied parrot (*Neophema chrysogaster*) and the swift parrot (*Lathamus discolor*) (Reid, Baker, & Woehler, 2023) and listed migratory species.

Current approaches to cumulative collision risk models operate under key assumptions, as described by Scottish Natural Heritage (Scottish Natural Heritage, 2018).These are:

- The impacts remain constant over the life-time of the development;
- The impacts from the project are independent of changes in population size or species distribution (although this can be partially addressed through population modelling); and
- Collision risk estimates of a wind farm are independent from those collision risk estimates identified by nearby wind farms.

### 3.6.1 CUMULATIVE COLLISION RISK ASSESSMENT FRAMEWORK METHODOLOGY

To identify bird and bat populations at high risk of cumulative impacts of wind farm projects within the vicinity of The Plains Wind Farm, a cumulative collision risk assessment (CCRA) framework has been developed. This framework has been adapted from international best practice examples and *Assessing the cumulative impacts of onshore wind farms on birds – Guidance* (Scottish Natural Heritage, 2018).

The CCRA framework follows five steps which can be broadly summarised as:

- Step 1: Identify a preliminary list of potentially at-risk species based on publicly available records of bird observations and bird utilisation surveys completed across relevant wind farm projects (component projects);
- Step 2: Assess the sensitivities of avian populations to identify priority at-risk species that may be subject to cumulative impacts. Sensitivity refers to the conservation status, the

likelihood of presence based on suitable habitat, and likelihood of occurring within the RSA (based on known flight heights, potential flight paths and flyways, and bird flight behaviours);

- Step 3: Estimate the cumulative collision risk for species based on project specific annual collision estimates derived from collision risk modelling and monitoring for each component project;
- Step 4: Determine fatality thresholds for each species which constitute a significant ecological loss to the population when assessed cumulatively; and
- Step 5: Identify management and mitigation measures to be employed across all projects.

More detail on these five steps in relation to the Project is provided in the following sections.

### 3.6.2 STEP 1: DESKTOP ASSESSMENT OF POTENTIAL AT RISK SPECIES

As required by *Wind Farms - turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide* (working draft) (NSW DCCEEW, 2024a), nomadic, migratory, threatened and raptor species at risk of collision and / or barotrauma from wind turbines were assessed for the Project. The results of this assessment are presented in **Section 3.3** of the BBAMP.

Initially, desktop assessment was undertaken across a broader scale to quantitatively identify species at risk of cumulative impacts of other wind farms near the Project; however, only the Malleefowl (*Leipoa ocellata*) was returned as additional species requiring risk assessment. It was considered this species was not relevant to the Project due to a lack of suitable habitat and thus the original list of avian species was utilised (refer to Section 3.3). A summary of the risk assessment is provided in Table 3-12.

TABLE 3-12 IDENTIFIED AT RISK AVIAN SPECIES

| WTG collision and / or barotrauma risk | Species |
|---|---|
| Very high | Black Falcon (*Falco subniger*)<br>Curlew Sandpiper (*Calidris ferruginea*)<br>Little Eagle (*Hieraaetus morphnoides*)<br>Plains-wanderer (*Pedionomus torquatus*) |
| High | Australasian Bittern (*Botaurus poiciloptilus*)<br>Common Greenshank (*Tringa nebularia*)<br>Grey Falcon (*Falco hypoleucos*)<br>Pink Cockatoo (*Lophochroa leadbeateri*)<br>Sharp-tailed Sandpiper (*Calidris acuminata*)<br>Spotted Harrier (*Circus assimilis*)<br>Swift Parrot (*Lathamus discolor*)<br>White-throated Needletail (*Hirundapus caudacutus*)<br>Australian Pelican (*Pelecanus conspicillatus*)<br>Southern Myotis (*Myotis macropus*)<br>Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*)<br>Black Kite (*Milvus migrans*)<br>Brown Falcon (*Falco berigora*)<br>Nankeen Kestrel (*Falco cenchroides*)<br>Australian Magpie (*Gymnorhina tibicen*)<br>Straw-necked Ibis (*Threskiornis spinicollis*) |

| WTG collision and / or barotrauma risk | Species |
|---|---|
| | Wedge-tailed Eagle (*Aquila audax*)<br>Whistling Kite (*Haliastur sphenurus*)<br>Fork-tailed Swift (*Apus pacificus*) |
| Moderate | Australian Bustard (*Ardeotis australis*)<br>Australian Painted Snipe (*Rostratula australis*)<br>Blue-winged Parrot (*Neophema chrysostoma*)<br>Bush Stone-curlew (*Burhinus grallarius*)<br>Diamond Firetail (*Stagonopleura guttata*)<br>Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)<br>Latham's Snipe (*Gallinago hardwickii*)<br>South-eastern Hooded Robin (*Melanodryas cucullata cucullata*)<br>Southern Whiteface (*Aphelocephala leucopsis*)<br>Square-tailed Kite (*Lophoictinia isura*)<br>Superb Parrot (*Polytelis swainsonii*)<br>White-bellied Sea-eagle (*Haliaeetus leucogaster*)<br>White-fronted Chat (*Epthianura albifrons*)<br>Corben's Long-eared bat (*Nyctophilus corbeni*)<br>Little Pied Bat (*Chalinolobus picatus*)<br>Intermediate Egret (*Ardea intermedia)*<br>Black-shouldered Kite (*Elanus axillaris*)<br>Swamp Harrier (*Circus approximans*)<br>Australian Hobby (*Falco longipennis*)<br>Peregrine Falcon (*Falco peregrinus*)<br>Pectoral Sandpiper (*Calidris melanotos*)<br>Common Sandpiper (*Actitis hypoleucos*)<br>Australian Raven (*Corvus coroinoides*)<br>Little Raven (*Corvus mellori*)<br>Australasian Grebe (*Tachybaptus novaehollandiae*),<br>Australasian Shoveler (*Anas rhynchotis*)<br>Australian Ringneck (*Barnadius zonarius* var. *barnardi*)<br>Australian White Ibis (*Threskiornis moluccus*),<br>Australian Wood Duck *(Chenonetta jubata)*<br>Banded Lapwing *(Vanellus tricolor*)<br>Black-eared Cuckoo (*Chrysococcyx osculans*)<br>Black-faced woodswallow *(Artamus cinereus)*<br>Black-fronted Dotterel *(Elseyornis melanops)*<br>Black-winged stilt (*Himantopus himantopus*)<br>Black Swan (*Cygnus atratus*)<br>Bluebonnet (*Northiella haematogaster*)<br>Brown Songlark *(Cincloramphus cruralis)*<br>Budgerigar (*Melopsittacus undulatus*)<br>Cockatiel *(Nymphicus hollandicus)*<br>Crimson Rosella (*Platycercus elegans*)<br>Eastern Rosella (*Platycercus eximius*)<br>Fairy Martin (*Petrochelidon ariel*)<br>Fan-tailed Cuckoo *(Cacomantis flabellifromis)* |

| WTG collision and / or barotrauma risk | Species |
|---|---|
| | Galah (*Eolophus roseicapilla*)<br>Great Egret (*Ardea alba*)<br>Grey Fantail *(Rhipidura albiscapa),*<br>Grey Teal (*Anas gracilis)*<br>Hardhead (*Aythya australis*)<br>Hoary-headed Grebe (*Poliocephalus poliocephalus*)<br>Horsfield's Bronze-Cuckoo (*Chalcites basalis*)<br>Horsfield's Bushlark *(Mirafra javanica)*<br>Inland Dotterel *(Peltohyas australis)*<br>Little Black Cormorant *(Phalacrocorax sulcirostris)*<br>Masked Woodswallow (*Artamus personatus*)<br>Pacific Black Duck (*Anas superciliosa*)<br>Pallid Cuckoo *(Cacomantis pallidus)*<br>Pied Cormorant *(Phalacrocorax varius)*<br>Pink-eared Duck *(Malacorhynchus membranaceus)*<br>Plumed Whistling Duck (*Dendrocygna eytoni*)<br>Rainbow bee-eater *(Merops ornatus)*<br>Red-kneed dotterel *(Erythrogonys cinctus)*<br>Royal Spoonbill (*Platalea regia*)<br>Rufous songlark *(Megalurus mathewsi)*<br>Tree Martin (*Petrochelidon nigricans)*<br>Welcome Swallow *(Hirundo neoxena)*<br>White-backed swallow *(Cheramoeca leucosterna)*<br>White-breasted woodswallow *(Artamus leucorynchus)*<br>White-browed Woodswallow (*Artamus superciliosus*)<br>White-faced Heron (*Egretta novaehollandiae*)<br>White-necked Heron *(Ardea pacifica)*<br>Yellow-billed Spoonbill (*Platalea flavipes*) |
| Low | Blue-billed Duck (*Oxyura australis*)<br>Brolga (*Grus rubicunda*)<br>Brown Treecreeper (south-eastern) (*Climacteris picumnus victoriae*)<br>Freckled Duck (*Stagonopleura guttata*)<br>Gilbert's Whistler (*Pachycephala inornate*)<br>Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*)<br>Magpie Goose (*Anseranas semipalmata*)<br>Painted Honeyeater (*Grantiella picta*)<br>Pied Honeyeater (*Certhionyx variegatus*)<br>Redthroat (*Pyrrholaemus brunneus*)<br>Yellow Wagtail (*Motacilla flava*)<br>Eastern barn-owl (*Tyto javanica*)<br>Black-tailed Native Hen (*Tribonyx ventralis*)<br>Black-faced Cuckoo-shrike *(Coracina novaehollandiae)*<br>Crested Pigeon (*Ocyphaps lophotes*)<br>Grey Butcherbird (*Cracticus torquatus*)<br>Grey Shrike-thrush *(Colluricincla harmonica)*<br>Ground Cuckoo-shrike (*Coracina maxima*) |

| WTG collision and / or barotrauma risk | Species |
|---|---|
| | Olive-backed Oriole (*Oriolus sagittatus*)<br>Zebra Finch *(Taeniopygia guttata)* |

### 3.6.3 STEP 2: ASSESSMENT OF SPECIES SENSITIVITY

Risk of turbine collision and / or barotrauma is likely to be restricted to those species flying at heights in the RSA. Confirmation of bird flight heights within the RSA can be provided where positive detections have been made following BUS. For those species not detected within the Project area, or where site utilisation has not been observed within the RSA, but a potential collision risk still exists, specie's behaviour and known flight heights have been considered to identify species most at risk of collision and / or barotrauma.

Based on species' behaviour and ecology, six broad categories have been established to inform an assessment of sensitivity to the presence of WTGs. These are:

- Resident raptors which are known to maintain sedentary home ranges which may overlap with wind farms;
- Migratory shorebirds with global distributions that are present in Australia for specific time periods or to complete specific life stages;
- Migratory flyover species with global distributions that are entirely or almost entirely aerial when present in Australia;
- Bird and bat species listed as threatened under the EPBC Act and / or BC Acts with modelled distributions overlapping with the Subject Land;
- Species of wading or wetland birds that are either non-migratory, or if migratory, will only migrate throughout Australia; and
- Non-threatened nomadic or resident bird or bat species which are known to fly within the RSA and may be subject to high population losses as a result of collision with WTGs and / or barotrauma.

The species listed as very high risk or high risk in **Section 3.3.2** align with these categories. However, to assess cumulative collision risk, species' risk ratings and sensitivities are required for other wind farms near the Project. Bird and bat utilisation data and detailed risk assessments from neighbouring wind farms will be important for further refinement of the level of risk for individual avian species. The cumulative risk ratings will be subject to review and adjustments made in line with the review processes outlined in **Section 8**.

### 3.6.4 STEP 3: CUMULATIVE COLLISION RISK MODELLING

Having undertaken collision risk assessment for avian species across individual wind farms, the cumulative impacts on avian species from all wind farms within the broader locality is additive and can be estimated by summing the species-specific CRM estimates to obtain predicted fatalities per year for all sites combined (International Finance Corporation, 2017). The mathematical approach to modelling the potential cumulative impacts on bird populations follows Smales & Muir (2005).The wind farms relevant to the cumulative CRM assessment must be determined.

Modelling impacts at a single project scale provides an estimate using the probability of a collision, relying on the assumption that the bird species interacts with the wind farm. To approximate cumulative effects of multiple wind farms on the risk of strike, the assumption that the at-risk species is already interacting with the site is removed. Then, the probabilities

of interacting with a given wind farm is determined, and the risk of strike associated with that individual wind farm is incorporated into the cumulative model. The survival rate of a bird population residing or moving through a region that has multiple wind farm projects can then be modelled.

The resultant number provides the chance of survival for the specific species. A figure of one (1) indicates no individual will ever be struck and zero (0) indicates complete loss of the population

### 3.6.5 STEP 4: ECOLOGICALLY SIGNIFICANT MORTALITY THRESHOLDS

It is recognised that the cumulative impact assessment for listed threatened and migratory birds will need to consider potential impacts for birds that occur at very low numbers, meaning data may not be available to carry out collision risk modelling for each component project or cumulative modelling across multiple projects. When a mortality is detected during the operation of a project the significance of the impact should be assessed across all component projects with reference to the BAM (NSW DPIE, 2020) and *Matters of National Environmental Significance: Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (Cwth DoE, 2013) .

It is proposed that the method for assessment for identifying if an impact will exceed an ecologically significant mortality threshold will use the number of recorded mortalities of each species based on the carcass search results, as described in Section 5.

### 3.6.6 STEP 5: IDENTIFYING JOINT MITIGATION AND MONITORING ACTIONS

A BBAMP associated with each project provides adaptive management frameworks for assessing the impacts to at-risk species in the event of a localised impact trigger being met. While the identification of these steps is important for the on-site mitigation and monitoring measures of a single wind farm, adaptive management that takes into consideration the cumulative effects of all projects is required to effectively identify suitable actions in the event of a cumulative impact trigger being met.

An inter-site monitoring and adaptive management framework will identify collective thresholds and actions across all wind farm projects within a defined area. This framework would seek to compliment the project specific frameworks already developed within the BBAMPs and would likely focus on higher-risk issues across the broader population scale for affected bird and bat species. In the event that additional wind farms commence operation within the locality of the Project, the cumulative impacts on at-risk bird and bat populations may be increased. The implementation of collaborative actions between wind farms, and Applicants, is likely to be important for minimising impacts to species at the population level.

There are no wind farms currently operating in the vicinity of the proposed Project; however, the Yanco Delta Wind Farm has received development consent and nine other wind farms are at various stages of development (refer to Section 8.4 of the Amended BDAR). Cumulative collision risk should be assessed across these wind farms through an inter-site monitoring and adaptive management framework.

# 4. MITIGATION MEASURES

## 4.1 AVOID AND MINIMISE AVIAN IMPACTS

The construction and operational phase of the Project will result in direct impacts to biodiversity values (change in vegetation integrity score and habitat suitability) within the Subject Land which cannot be avoided. Direct impacts include native clearance and loss of habitat. Indirect impacts to biodiversity include, but are not limited to, negative edge effects on retained vegetation, noise, light and disturbance associated with clearing and construction, and the presence of infrastructure which may create barriers to movement.

Since studies commenced for the Project in 2021, consideration has been made of impacts to biodiversity values and adjustments made accordingly. Refer to Section 7 of the Amended BDAR. For example, the Project has been designed to maximise the use of existing public and internal access tracks across the Subject Land, avoid areas of woodland and wetland and impacts to critical breeding habitat, such as Important Mapped Areas for the Plains-wanderer (*Pedionomus torquatus*). The Project design has been revised and refined in response to the identification and assessment of environmental limitations, constructability requirements and consideration of the outcomes of agency, landowner, and community consultations.

While it is expected that avoidance rates for birds and bats will be high, the CRM provided in this BBAMP has identified an expected number of collisions for some species under different avoidance scenarios (**Section 3.5.7**).The actual avoidance rates can be revised over time through the results of ongoing monitoring (Scottish Natural Heritage, 2009). In addition, surveys of the Project area between 2021 and 2024 identified areas where avian species and suitable habitat are located and the collated data were used to determine WTGs which may be a higher risk to birds and bats (**Section 3.2**). Lastly, the avian risk assessment (**Table 3-5**) undertaken for all nomadic, migratory, threatened, resident raptor and species known to fly within the RSA provides a list of species identified as at-risk of collision with WTGs and / or barotrauma, even though some of these species could not be modelled.

WTGs are preferentially located in areas for the best wind resources; however, based on the field surveys that have been conducted and pre-clearance micro-siting surveys that will be conducted prior to commissioning, the final layout should be chosen to ensure that avian species and habitat presence has been considered and further measures implemented to avoid biodiversity impacts, such as turbine micro-siting. However, mitigation measures will be required to reduce unavoidable impacts on avian species.

## 4.2 ADAPTIVE MANAGEMENT

An adaptive management process has been established by this BBAMP, which includes the following broad elements:

- Baseline monitoring surveys – these have been undertaken as over 24 months of BBUS have been completed between 2021 and 2024;
- Pre-construction monitoring surveys – to be undertaken during the construction phase of the Project (refer to Section 8.5 of the Amended BDAR);
- Operational monitoring surveys – to be undertaken at selected WTGs throughout the operation of the Project, to estimate mortality of avian species and record avian species' utilisation of the Subject Land (refer to Section 4.3);

- Reporting – to be undertaken in the first and second year of operation and regular timeframes thereafter, as agreed with NSW DCCEEW. Reports will include mortality estimates, incident findings, effectiveness of mitigation measure and adaptive management recommendations; and
- Ongoing development and adaption of mitigation measures, based on the results of monitoring surveys and reporting, to reduce mortality and other impacts on avian species.

## 4.3 MONITORING

To minimise any potential impacts to bird and bat species, associated with operation of the WTGs, this BBAMP intends to facilitate the implementation of a long-term approach to the mitigation and management of potential impacts on at-risk avian species. Monitoring will identify any changes to species' utilisation of the Subject Land and the surrounding landscape.

Ongoing monitoring will enable the following:

- An improved understanding of the risk of turbine collision and / or barotrauma impacts on at-risk bird and bat species;
- An understanding of whether and how Subject Land avian species' usage changes as a result of wind farm construction and operation;
- A method for the timely identification of avian turbine collisions, carcass collection and analysis of data;
- Regular updates to the CRM using monitoring data and a subsequent robust adaptive management approach; and
- Development of management and corrective actions to minimise risk of turbine collision and other impacts on at-risk avian species.

Ongoing, regular monitoring is recommended during the first two years of operation and every two years thereafter (biennually).

BBUS will occur seasonally during the first two years of operation. The BBUS monitoring methods used in the first two years of operation will be consistent with techniques used during previous field surveys.

Carcass searches will take place at all very high and high risk WTGs and 33% of WTGs identified as moderate risk (refer to **Section 3.2**).

After the first two years, the frequency of BBUS and frequency and location of carcass searches will be determined based on the previous monitoring results, but every two years is recommended, subject to consultation with NSW DCCEEW.

Reporting will be undertaken annually for the first two years and then every two years thereafter, subject to consultation with NSW DCCEEW.

The operational monitoring will be based on two main approaches. The first approach is to monitor bird and bat activity to assess avian site utilisation and mortality and how it changes as a result of Project construction and operation. The second approach aims to inform adaptive management responses to avian impact triggers, which may include increased monitoring surveys and carcass searches, investigation of factors increasing risk of impacts and subsequent risk mitigation.

## 4.4 PERSONNEL AND ASSOCIATED TRAINING REQUIREMENTS

All personnel involved in the implementation of the BBAMP will be familiar with the BBAMP, the Project's policies and procedures, and other important administrative matters such as health and safety documents. The Applicant will be responsible for ensuring that suitably qualified and trained people are engaged to supervise and implement the formal monitoring program as defined in the BBAMP. Beyond the first two years of monitoring, the Applicant will be responsible for ensuring ongoing reporting of incidental finds and the engagement of relevant specialists.

Training will be provided to all personnel who will be undertaking carcass searches, species' identification and handling. Such training will be delivered by suitably qualified ecologists who are specialists in the field of bird and bat carcass retrievals. The training will include trial establishment, transect search techniques, selection of specific turbines for monitoring after the first two years, species' identification, carcass handling practices and health and safety management.

A suitably qualified ecologist will be involved in the first two years of monitoring during the operational phase of the Project to oversee and assist with the carcass search, handling and identification. To ensure the BBAMP is being implemented and monitoring routinely performed to high standards, the suitably qualified ecologist will undertake an audit after the first six months of the commencement of the implementation of the BBAMP.

The suitably qualified ecologist will be available to identify any carcasses which other personnel involved in carcass searches are unable to identify, either from frozen specimens or from photographs taken at the search area.

Training will be provided to assigned operational personnel on how to properly prepare and handle carcasses and how to randomise the placement of carcasses in trial areas. Training will be provided by the suitably qualified ecologist to operational personnel involved in the monitoring program and trials, with refresher training available if requested or deemed necessary during the first two years of the implementation period of the BBAMP.

Scavenger trials will be developed by the suitably qualified ecologist, who will supervise the searches undertaken by trained operational personnel.

The suitably qualified ecologist will undertake data analysis and prepare the 12-month interim and two-year monitoring reports, and the two-year reporting thereafter.

## 4.5 MITIGATION OF IMPACTS

This section details the mitigation measures that will be implemented to reduce impacts on at-risk avian species as a result of the Project. Impact triggers, which are described in **Section 6.1.1**, determine when additional mitigation measures should be implemented. Mitigation measures will be reviewed throughout the lifespan of the Project, and at the end of every two-year monitoring period, a suitably qualified ecologist will determine whether any adjustments to mitigation and monitoring actions should be made. The required monitoring frequency over the lifespan of the Project will be reviewed by a suitably qualified ecologist in consultation with NSW DCCEEW to establish the appropriate frequency based on collated data.

The mitigation measures summarised in **Table 4-1** have been designed to avoid significant biodiversity impacts on avian species. If changes to the mitigation measures are likely to result in a new or increased impact to any at-risk species, adaptive management approaches must be implemented, and impacts may need to be referred to the Commonwealth Government in accordance with Section 143A of the EPBC Act.

The main impact to avian species include:

- Collision of birds and bats with blades of operating WTGs;
- Injury and mortality of birds and bats caused by exposure to rapid air pressure reduction due to their proximity to turbine blades, causing barotrauma; and
- Removal or reduction of critical foraging, dispersal and breeding habitat which may occur following construction of WTGs and associated infrastructure.

Mitigation measures to reduce impacts resulting from loss of habitat are outlined in Section 8.5 in the Amended BDAR. Mitigation measures to reduce the impacts of turbine operation are presented in **Table 4-1**.

Factors which can increase the risk of impacts on at-risk species include:

- Provision of water and foraging resources which attract avian species into the vicinity of WTGs. This may result in higher rates of collision and injury/death. Nesting may occur close to WTGs;
- Lighting on WTGs and buildings causes an increase in bird and bat prey, such as insects. This may result in increased bird and bat abundance in the vicinity of the WTGs and increase collision risk; and
- High wind turbine speeds during periods of higher bat activity (dusk, dawn and seasonally).

**Table 4-1** details the mitigation measures, their intended outcomes and timing. It also details the measures of success and corrective actions that will be implemented if the mitigation measure is not fulfilling its objective. Specifically, the mitigation measures aim to minimise the impact of mortality associated with avian collisions with WTGs and / or barotrauma. The success of management actions will be measured through performance indicators related to impact triggers, monitoring and assessment outputs which are detailed further in **Section 6**. Reporting requirements are outlined in **Section 7**.

TABLE 4-1 PROPOSED MITIGATION MEASURES, TIMING, PERFORMANCE CRITERIA AND CORRECTIVE ACTIONS

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| Pre-construction surveys | Refer to Section 8.5 of the Amended BDAR<br>Pre-construction monitoring surveys to be undertaken prior to and during the construction phase of the Project. A trained ecologist must supervise any disturbance activities and prevent harm to resident fauna. | Protect resident fauna from harm. | As required by the construction schedule | No harm to resident fauna.<br>Construction manager must ensure protocols are followed by construction team and activities are supervised.<br>Construction planning must be undertaken in a timely manner to ensure a fauna ecologist / licensed fauna handler is present during construction activities. | If mortalities occur as a result of construction activities, stronger mitigation measures must be put in place to avoid further harm. |
| Construction BBUS | BBUS are recommended every season during the construction period.<br>The BBUS monitoring methods used during construction will be consistent with techniques used during previous field surveys with survey locations chosen which intersect with the Subject Land (refer to **Figure 2-1**). BUS points near turbines considered very high risk and high risk to avian species should be prioritised. | Ongoing avian site utilisation data collection.<br>Can be used to inform adaptive management and assess cumulative impacts. | Seasonally (4 times per year for the construction period). | Reporting will be undertaken annually. | Integrate adaptive management actions into BBAMP, following analysis of BBUS results. |

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| Operational BBUS | Ongoing BBUS are recommended every season during the first two years of operation and then biennially.<br>The BBUS monitoring methods used in the first two years of operation will be consistent with techniques used during previous field surveys with survey locations chosen which intersect with the Subject Land (refer to **Figure 2-1**). BUS points near turbines considered very high risk and high risk to avian species should be prioritised. | Ongoing avian site utilisation data collection.<br>Can be used to inform adaptive management and assess cumulative impacts. | Seasonally (4 times per year for 2 years and then biennially). | Reporting will be undertaken annually for the first two years and then every two years thereafter, subject to consultation with NSW DCCEEW.<br>After the first two years, the frequency of BBUS will be determined based on the previous monitoring results but every two years is recommended, subject to consultation with NSW DCCEEW. | Integrate adaptive management actions into BBAMP, following analysis of BBUS results. |
| Operational mortality monitoring | Carcass searches to be undertaken at all turbines considered very high and high risk to avian species, and 33% of moderate risk turbines.<br>Turbines to be searched in the inner (120 m radius from the WTG) and outer search area (120 – 170 m from the WTG) each month for 2 years. | Quantify avian mortalities due to direct impact with WTGs. | Operational phase – monthly searches for the first two years.<br>After first two years, the frequency of monitoring will be determined based on the previous monitoring results but every two years is recommended, subject to consultation with NSW DCCEEW. | Mortality surveys will be undertaken at all turbines identified as very high risk, high risk, and 33% of the turbines identified as moderate risk.<br>Avian mortality estimates to be made for each WTG for all avian species. Mortality estimates should consider factors such as detector efficiency and scavenger trials. | Responses to impact triggers will be reported and analysed by a suitably qualified ecologist as described in this BBAMP.<br>If operational phase surveys do not occur due to unforeseen circumstances, they will be reorganised for as soon as reasonably possible. The same action applies to reporting of mortality estimates and |

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| | | | | The locations of mortality surveys after two years will be reviewed based on the previous monitoring results.<br>Mortality survey result analysis will consider the effects of topography and operational activities (such as maintenance).<br>Scavenger and carcass detectability trials will be undertaken in accordance with the methods described in this BBAMP.<br>Mortality estimates will be undertaken and analysed as per the methods described in this BBAMP. Such estimates will be included in annual monitoring reports. | responses to impact triggers.<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened, at-risk species and / or one strike of threatened or migratory species (refer to **Section 6**). |
| Monitoring reporting | Preparation and submission of monitoring reports to NSW DCCEEW.<br>Monitoring reports to include:<br>• Turbine strike reports comprising raw strike data, strike notifications, survey methodologies, results of detection / persistence trials, | Evaluation of efficacy of management and mitigation measures in relation to impacts on avian species. | Annually in first two years of operation.<br>Every two years after first two years of operation, or as agreed with NSW DCCEEW. | Monitoring reports will be completed within three months of completion of the year's monitoring program in the first two years of operation.<br>Ongoing monitoring reporting will occur based | Where monitoring reports are not prepared as per the planned schedule due to unforeseen circumstances, the report and supporting information will be prepared and presented to NSW |

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| | environmental / meteorological conditions and associated statistical analysis;<br>• mortality estimates and carcass findings / locations;<br>• mitigation measure effectiveness;<br>• incident reporting;<br>• impact triggers;<br>• recommendations for ongoing monitoring; and<br>• species occurrence records. | | | on a outcomes of the two-year monitoring program, subject to consultation with NSW DCCEEW. | DCCEEW as soon as reasonably possible. |
| Removal of water and foraging resources which attract avian species into the vicinity of the wind turbines. | Subject to agreement with landowners, the following actions are recommended:<br>• Grain feeders to be placed at least 200 m away from WTGs.<br>• Remove avian carcasses as soon as practicable. Carcass removal to be undertaken by suitably qualified personnel, following stipulated protocols and reporting procedures.<br>• Livestock and animal carcass removal from within 200 m of WTGs by landholders, as soon as practicable.<br>• Monthly searches for carcasses in the first two years of operation, and regularly thereafter.<br>• Livestock watering points to be placed / moved at least 200 m from WTGs. | Reduce the likelihood of avian collision with WTG by reducing potential foraging resources. | During operational phase. | Carcasses / carrion removal will be undertaken as soon as possible and reported.<br>Incident reporting to provide recommended mitigation measures to reduce future risk.<br>Decreases in avian mortality over operation of the Project due to mitigation measures being implemented. | Where mortality of avian species due to the presence of foraging resources occurs, actions will be undertaken immediately to rectify the problem.<br>Regular communication and agreement with landholders is necessary.<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened at-risk species and / or one strike of threatened or migratory species (refer to **Section 6**). |

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| Removal and / or adjustment of lighting on turbines and other Project infrastructure causing an increase in avian prey. | Lighting is required for the safety of operational personnel and landholders at the entrance to each WTG, office building and substation.<br>To reduce impacts, lights can be switched off when not required.<br>Lighting faults should be fixed quickly.<br>Any necessary flashing of lights should be synchronised. | Reduce the likelihood of avian prey species being attracted to WTGs. | During operational phase. | Bird and bat mortality will be lower at unlit turbines / infrastructure. | Type and placement of lights will be reviewed in response to avian mortality rates. Light placement will be investigated to determine the most appropriate location placement.<br>Regular communication and agreement with landholders is necessary.<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened at-risk species and / or one strike of threatened or migratory species (refer to **Section 6**). |
| Wind turbine speed curtailment (Florent & Bennett, 2024) | Reducing turbine speed to 7 m / second (s) during dusk, dawn and high seasonal bat activity (October to March).<br>Speed curtailment to 7 m / second (s) during and following high rainfall events (which may lead to an increase in migratory species and avian species which utilise wetland habitats). | Reduce turbine collision by bat species and migratory shorebirds / wetland species. | During operational phase | Bat and migratory shorebird / wetland avian species mortality rates will be lower than recorded historically at other wind farms without speed curtailment. | If mortality rates are higher than expected, WTG speeds should be further reduced.<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened at-risk species and / or one strike of threatened or migratory |

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| | | | | | species (refer to **Section 6**). |
| Lifting speeds at which wind turbine commences operation | Operational speed for wind turbines to commence at wind speeds of 5 m / s. | Reduce avian collisions with WTGs. | During operational phase | Avian mortality rates will be lower than recorded historically at other wind farms without speed curtailment. | If avian mortality rates are higher than expected, WTG operational commencement speeds should be raised.<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened at-risk species and / or one strike of threatened or migratory species (refer to **Section 6**). |
| Speed curtailment of turbines considered very high and high risk turbines to migratory shorebirds | Using BBUS and carcass search data collection to better understand flight paths, and introduce speed curtailment of turbines in those flight paths. | Reduce migratory shorebird (and other species) collision when flying between wetland habitats | During operational phase | Migratory shorebird / wetland avian species mortality rates will be lower than recorded historically at other wind farms without speed curtailment. | If avian mortality rates are higher than expected, WTG operational commencement speeds should be raised.<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened at-risk species and / or one strike of threatened or migratory species (refer to **Section 6**). |

| Mitigation measure | Action | Outcome | Timing | Performance Criteria | Corrective Action |
|---|---|---|---|---|---|
| Acoustic deterrents | Broadcast sound to deter avian species from approaching WTG | Reduce avian collisions with WTGs | During operational phase | Bird and bat mortality will be lower at turbines with acoustic deterrents. | Acoustic deterrents should be trialled to determine the best placement of the acoustic deterrent device(s).<br>Impact trigger response framework initiated in the event of multiple strikes of non-threatened at-risk species and / or one strike of threatened or migratory species (refer to **Section 6**). |

# 5. CARCASS SEARCH METHOD

## 5.1 CARCASS SEARCH METHODOLOGY

As part of the monitoring program, carcass searches will be undertaken to determine the actual impact of the proposed development on birds and bats. The results of the carcass monitoring will be used to review the avian risk assessment (**Section 3.3**), to identify and determine if further monitoring of avian species is required and to update mitigation measures or adaptive management approaches.

One hundred and seventy-one WTGs are proposed for the Project. For the first two years of operation, it is recommended that all turbines with a risk rating of very high or high be surveyed monthly, in addition to 33% of turbines assessed as moderate risk.

### 5.1.1 CARCASS SEARCH AREA

All carcass searches will be undertaken by suitably qualified personnel with appropriate skills in avian identification and handling of deceased species. Searches are to occur within 120 m of WTGs for bat species and up to 170 m for bird species, which approximates the Hull and Muir Model (Hull & Muir, 2010). The model suggests that 95% of bat carcasses should be present within 74 m of a WTG and the carcasses for birds of medium to large size would be distributed up to 122 m. Some species (larger birds) may be found further out; however, 95% are expected to occur within an approximate 122 m search area from WTGs (Hull & Muir, 2010). The wider search area for the Project aligns with the size of the WTGs.

Based on the principles adopted in Hull and Muir (2010), the following search areas have been designed for avian species for the Project, with its approximate rotor tip height of up to 270 m and turbine rotor diameter of up to 180 m:

- Bats: 120 m radius around the WTG. Transects will be spaced every 6 m from the WTG;
- Small to medium sized birds: 140 m radius around the WTG. Transects will be spaced every 6 m from the WTG; and
- Medium to large sized birds (and some larger bats): 170 m radius around the WTG. Transects between 120 and 170 m from the WTG will be 12 m apart.

It should be noted that exceptions may be made as to where transects are conducted in search areas of WTGs that are difficult to access due to dense vegetation or other factors. This will include searching within access tracks and hard-stand areas only. Any exceptions should be noted for reporting purposes.

### 5.1.2 RECORDING INFORMATION AND CARCASS HANDLING PROCEDURES

The following information is to be recorded if a carcass is detected during the carcass searches:

- Position of the carcass in relation to the WTG;
- Vegetation type and area where the carcass was located, including if the species was found on an access path or on the WTG hard-stand area;
- Details of the species, including age, sex, number of individuals, the injury, estimated time of death. If the carcass is unable to be identified, it should be taken to an appropriate facility for DNA testing;

- Photos of the location and of the species. Photos can be used for identification purposes by an appropriately qualified ecologist; and
- Record date, time, current and preceding weather conditions, including wind speed, temperature, relative humidity and rainfall.

#### 5.1.2.1 CARCASS HANDLING

The carcass will need to be handled in accordance with the following procedures:

1. Carcass is to be safely removed from the site with appropriate personal safety equipment to be worn by personnel. This personal safety equipment includes thick rubber gloves, a long-sleeved shirt, a face mask and appropriate eye wear. The carcass should be placed in a plastic bag, then wrapped in newspaper and placed into a second plastic bag. The removal of the carcass from the area ensures that recounting of the same carcass does not occur at a later date.
2. Labelling of the plastic bag to ensure that the carcass is easily identifiable. Labelling includes placing a completed data sheet into the outer plastic bag with the information listed in Section 5.1.2.
3. The carcass bag should be placed into an appropriate freezer compartment until it can be examined and identified. The carcass should be kept for future examination. Frozen specimens can used for detectability trials at a later date.

It is noted that scientific licences are required for animal handling and research. The appropriate licences must be obtained to remove the carcasses from the Subject Land.

### 5.1.3 SCAVENGER TRIALS

The scavenger trial is adopted to ascertain at what rate naturally occurring scavengers remove carcasses from the Subject Land. These trials will be undertaken twice annually within the first two years of operation of the Project, with each trial undertaken across 30 days at different times of year. This will ensure that differences in vegetation condition are accounted for, for example, dense groundcover vegetation following wet and warm weather conditions and sparse, groundcover vegetation following dry, cold conditions. Different seasons may also be associated with different stocking levels of livestock across the year. Scavenger trials conducted across different seasons also accounts for different rates of seasonal scavenging (Catling, 1988; Molsher, Gifford, & McIIroy, 2000). The results of the scavenger trials can be used to determine more accurate estimations of fatality rates from WTG strike and / or barotrauma.

#### 5.1.3.1 SCAVENGER TRIAL METHODOLOGY

Scavenger trials will be undertaken in the inner search area of the WTGs selected for carcass search trials (120 m radius from the WTG). Ten or fewer carcasses will be distributed randomly within the inner search area to avoid biasing the results through scavenger swamping (Smallwood, Bell, Snyder, & Didonato, 2010).

Three different categories of carcasses will be used for the scavenger trials, ideally, carcasses found during mortality trials, but mice can be used in place of microbats. The different categories will help to ascertain the different scavenger rates in the search area.

The three categories and the number of replicates that will be used for each trial are:

- Micro-bats and small birds: maximum of five replicates/trial;
- Medium-sized birds: maximum of three replicates/trial; and

- Large sized birds/raptors: maximum of two replicates/trial.

Randomly selected turbines will be used for the scavenger trials and carcasses will be randomly placed under the turbines. The carcasses will be checked as follows:

- Each day for the first five days;
- Every two days from day six to 10;
- Every three days from day 11 to 19; then
- Every four days from day 20 until the carcass disappears or until the end of the 30-day trial period.

Project operational staff can be trained to undertake the scavenger trials by a suitably qualified ecologist.

#### 5.1.3.2 ADDITIONAL CONSIDERATIONS

Additional considerations for the scavenger trials are detailed below:

- Scavenger trials at other wind farms show almost all carcasses have been scavenged within a period of 5 - 10 days;
- GPS coordinates should be taken for all carcasses placed during the scavenger trials to avoid confusion with any naturally occurring carcasses in the search area(s);
- A mixture of carcass sizes of bird and bats (small, medium, large) should be obtained to use in scavenger trials from prior searches of the Subject Land. At-risk avian species should be selected, if possible, or a substitute of the same colour and size should be used in its place;
- Thick gloves must be worn at all times when handling bird and bat carcasses. This will ensure the safety of the involved personnel but also that human scent will not replace the scent of the carcass; the latter will alter scavenger behaviour;
- Carcasses should be placed at random within the search area. The carcass should be thrown in the air to recreate the natural landing of a carcass from impact with a wind turbine. For example, feathers or fur may become dislodged or ruffled from the impact of the simulated fall;
- Detailed observations will be taken at the search areas where carcasses have been scavenged, including the composition of the carcass and different types of scavenging behaviour (for example, feather removal, bones dispersal, pecking, tearing, partial removal of carcasses, scats and tracks); and
- The final state of the carcass will be recorded at the end of the survey period.

#### 5.1.3.3 ALTERNATIVE METHOD

An alternative to the method used above is to use motion sensor cameras that monitor scavenger activity. In this case a star picket (approximately 1 m high) will be placed in the ground approximately 4 m away from the carcass, with a camera attached. This camera will record any scavenging activity over the course of 30 days from placement. This method gathers the exact time and method of scavenging and thus eliminates any uncertainties in the results analysis. The scavenger trials will be conducted at the same locations as those identified for carcass search trials as identified in Section 5.1.

### 5.1.4 DETECTABILITY TRIALS

Detectability trials can be conducted at the same time as scavenger trials, during the first day of placing carcasses. Detectability trials aim to test the efficiency of searchers in finding the carcasses within the Subject Land. The detectability trials will be conducted four times in the first year of operation, sampling across all four seasons. This sampling effort will represent the greatest change in vegetation cover. Detectability trials will be conducted for handlers and dogs, if they are to be used for the Project, and by personnel who have been involved in the monthly carcass searches.

The detection efficiency determined from the detectability trials will be incorporated into the mortality rate analysis to account for human (and canine) detection error. This detectability analysis will be documented in the report at the end of the first and second year of the monitoring period.

Carcasses will be randomly placed in the inner search area of a turbine (120 m zone) and their location noted by a suitably qualified ecologist. The efficiency will be recorded as the number of successful finds by a searcher against the actual carcasses placed by the suitably qualified ecologist.

The three categories of carcass and the number of replicates that will be used for each trial can replicate the scavenger trials, and are:

- Micro-bats and small birds: maximum of five replicates/trial;
- Medium-sized birds: maximum of three replicates/trial; and
- Large sized birds/raptors: maximum of two replicates/trial.

If there are shortages for bird and bat carcasses for the detectability trials, appropriate substitute species should be used to represent specific target carcass categories.

### 5.1.5 RESULTS

It is proposed that a 12-month monitoring report and a final monitoring report (end of two-year monitoring period) will be prepared. Annual compliance reports will include an assessment of the monitoring programs and whether any trigger limits for at-risk species have been met. Ongoing monitoring requirements will be assessed as a component of the adaptive management framework.

The reports will include information on carcass identification and timing and the results of the trials (scavenger and detectability) so that factors influencing mortality can be determined. Mortality rates should be expressed as the number of carcasses discovered per WTG per year and any spatial-temporal variation across the Subject Land.

Data analyses will estimate the mortality rates of avian species within the Subject Land, considering standard error and variation. Appropriate software packages will be used to inform the variables required for the carcass searches, detectability and scavenger trials which will subsequently inform the survey design.

At this stage, prior to knowledge of the detailed Project design, the following software packages and statistical principles are proposed, with specific variables to be determined for the final monitoring design:

- Logistical regression (general linear modelling) to be used to determine searcher efficiency;
- The proportion of the area searched to be estimated using the Monte-Carlo Simulation method as described in Hull and Muir (2010);
- Mortality will be estimated using the Hortvitz-Thompson style estimator from Huso (Huso, 2011);
- Survival analysis (survival regression to account for interval censoring) to be calculated using Generalised Estimator (GenEst) (or similar). GenEst is used to estimate the total number of individuals that are present within an area in a given time period, when their detection probability may not be known. This program is used as counts of carcasses alone is not an accurate way to measure the true number of avian fatalities from WTG collision and / or barotrauma. This method also allows for comparisons across locations and years, taking into account the rate of detection.
    - GenEst includes tools for estimating searcher efficiency, carcass persistence, and other detection probability parameters from experimental field trials. GenEst is not an evidence of absence-type estimator and is not going to be used in circumstances where only a few carcasses are found.
    - Evidence of Absence (EoA). This program can be used to determine potential fatalities which may have occurred, with respect to the survey effort, even in the absence of a carcass being located.

Statistical analyses will assist in determining potential significant differences across different species' sizes, vegetation composition or across seasons.

Documented results will inform adaptive management on whether additional mitigation measures are necessary and whether specific turbines in the Subject Land pose higher risks to birds and bats than others. Such adaptive management will occur in consultation with NSW DCCEEW.

## 5.2 HANDLING PROTOCOL AND TRAINING: INJURED AND DECEASED SPECIES

Operational personnel involved in the search for wildlife will be appropriately trained in handling and assisting with injured or deceased wildlife. All injured or deceased wildlife found during the first two years of operation will be reported to The Plains Wind Farm's Responsible Officer. Once reported, it will be the responsibility of the Responsible Officer to organise for the retrieval and/or treatment of the individual. Such a protocol will involve defining the correct handling procedures, personal protective equipment, transportation and wildlife hospital treatment arrangements.

Bats can carry many forms of diseases including Hendra virus and Australian Bat Lyssavirus. Extra precaution and care will need to be taken when handling bat species and professionals should be called to handle injured bat species. Information sources to contact in case of an injured bat include the RSPCA ((02) 9770 7555) and the Wildlife Information, Rescue and Education Service (WIRES) (1300 094 737). Appropriate and contemporary advice on the best practice for movement of bat individuals will be provided by these organisations.

# 6. IMPACT TRIGGER, ADAPTIVE MANAGEMENT AND SIGNIFICANT IMPACTS

This section outlines the impact triggers for at-risk species and the process for assessing if collision and / or barotrauma impacts exceed a significant threshold.

Impact triggers and response requirements will be different for threatened and non-threatened avian species.

For threatened and migratory species, impact triggers are considered at two levels, as follows:

- An impact trigger, defined as a single mortality event to a threatened or migratory species that triggers an ecological investigation into the cause and significance of the event, with recommendations for adaptive management to avoid, minimise and manage the impact; and
- Assessment of the significance of the impact, with a method for estimating whether the impact exceeds a significant residual impact, as defined by the *Matters of National Environmental Significance: Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (Cwth DoE, 2013), to identify if offsets are required to compensate for biodiversity loss.

For a non-threatened (protected, locally abundant or raptor) species, the impact trigger will be a total of three or more avian carcasses of the same species which are recorded at the same WTG during a 12-month period.

The Applicant will be responsible for ensuring implementation of the BBAMP and the adaptive management approach. A suitably qualified ecologist will support decision-making and provide advice in relation to the impact significance and where consultation with government (State and Commonwealth) is required.

### 6.1.1 IMPACT TRIGGER REQUIREMENTS FOR LISTED THREATENED AND MIGRATORY SPECIES

When a single threatened and / or migratory bird or bat species is found dead or injured within the search area of a turbine (refer to **Section 5**) during the operation of the Project, or a breeding area or confirmed active nest for these species is located within 500 m of a turbine, then the impact trigger methodology described below applies.

This includes the following steps:

- Additional mortality surveys will be undertaken within five days of the carcass or injured species find by a suitably qualified ecologist;
- Other species-specific surveys may be undertaken including species-specific monitoring and targeted surveys;
- Turbine and species risk assessments and flight path mapping will be reviewed;
- Mitigation measures to reduce impacts will be intensified, e.g. speed curtailment of WTGs;
- Where data are available, a population viability analysis (PVA) will be undertaken and the collision risk model updated; and
- A report will be prepared by a suitably qualified ecologist and presented to NSW DCCEEW outlining whether additional mitigation measures and / or offsets are required. The latter will be subject to consultation with NSW DCCEEW.

Documents that will be assessed in determining impact triggers will include, but are not limited to, the following:

- *Wind Farms - turbine strike assessment and adaptive impact management. Biodiversity Assessment Method Guide* (working draft) (NSW DCCEEW, 2024a);
- *NSW BioNet Atlas* (NSW DCCEEW, 2024b);
- *Matters of National Environmental Significance: Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (Cwth DoE, 2013);
- *Draft Referral Guideline for 14 birds listed as migratory species under the EPBC Act* (Cwth DoE, 2015a); and
- Species-specific management plans and conservation advice from the *Species Profile and Threats Database* (Cwth DCCEEW, 2025c).

### 6.1.2 DECISION-MAKING FRAMEWORK

If the impact trigger requirements are met for the Project, the following decision-making framework will be followed:

1. The bird or bat carcass or injured species must be immediately reported to the Project's Responsible Officer, including information on the species type, the area where the species was found and any factors that may have contributed to a mortality or injury that are relevant. Photos must be taken of the carcass or injured species so that correct identification can be carried out.
2. A suitably qualified ecologist, engaged by the Applicant (and managed by the Responsible Officer), will undertake an analysis to determine whether the death/injury can be directly attributed to a WTG strike. Where there is conclusive evidence the mortality / injury is not related to wind farm operation, particularly WTG strike and / or barotrauma, no further action is required.
3. If the mortality or injury is related to the operation of the Project, the suitably qualified ecologist will undertake a detailed investigation to determine the specific events that caused the mortality or injury of the threatened or migratory species. This investigation will include a PVA where data is available for the species.
    a. If the evaluation undertaken by the suitably qualified ecologist (including a PVA) reveals the impact trigger has the potential to significantly impact the species, species-specific monitoring and targeted surveys will be recommended and implemented within the Subject Land. The survey effort will be undertaken over a minimum six-week period, with fortnightly monitoring. These additional surveys and monitoring exercises will need to be supervised and reported by the suitably qualified ecologist, who will document any recommendations for additional mitigation measures to manage or reduce the impact to the species, in accordance with the adaptive management framework. NSW DCCEEW will be consulted.
    b. If the evaluation undertaken by the suitably qualified ecologist can demonstrate beyond reasonable doubt that a significant impact is unlikely, using knowledge of species-specific guidelines the species' population and range, then standard mitigation measures should be implemented (refer to **Table 4-1**).

c. If the mortality or injury is confirmed by the suitably qualified ecologist as being due to the operation of the wind farm (the impact trigger), the proposed development's Responsible Officer will report the trigger to NSW DCCEEW within two business days.

4. If the impact trigger is assessed as having the potential to contribute to a significant residual impact, adaptive management will be designed to reduce and mitigate impact to the species. The additional surveys and monitoring over six weeks will inform species-specific adaptive management actions. The turbine and species risk assessments and the CRM will be revised and the BBAMP updated to include any additional or adjusted mitigation measures. Additional adaptive management actions may include:
    - Speed curtailment of WTGs considered very high or high risk;
    - Lifting the operation commencement speed of WTGs considered very high or high risk;
    - Additional acoustic deterrents to discourage foraging at particular locations;
    - Social attraction techniques (e.g., decoys and audio playback systems) to encourage species to inhabit alternative low-risk areas;
    - Removal of foraging habitat, where appropriate; and
    - Investigate alternative agricultural practices if these are found to have been a contributing factor to mortality or injury of a threatened or migratory species.
5. All evaluations and decisions regarding adaptive management and mitigation measures for the impacted species will be reported to NSW DCCEEW within 20 business days, with consultation to ensure the best course of action is applied for the Project and species. Outcomes will also be reported in the annual (for the first two years of operation) or two-yearly monitoring reports.
6. Offsets may be required where the significant residual impact to the species cannot be effectively mitigated by other measures. Offsets may be in the form of biodiversity credits or another method to compensate for biodiversity loss, such as funding research into a specific species or payment into the NSW Biodiversity Conservation Fund. Any offset proposals will need to be undertaken with NSW DCCEEW. Offset requirements may also be required for significant impacts to EPBC Act listed threatened species. Consultation will need to be undertaken with the Commonwealth Government and offsets considered and developed in accordance with the Commonwealth Department of Sustainability, Environment, Water, Population and Communities' (DSEWPC) *EPBC Act Environmental Offsets Policy* (Cwth DSEWPC, 2012).

## 6.2 NON-THREATENED (PROTECTED AND LOCALLY ABUNDANT) SPECIES

The impact trigger for non-threatened species (protected, locally abundant and raptors) in this BBAMP will be a total of three or more avian carcasses or injuries to the same species which are recorded at the same WTG during a 12-month period.

The definition of a significant impact to a non-listed threatened species is an impact that is likely to reduce the number of individuals causing a major loss in numbers of individuals, leading to a reduction in the viability of regional or state population between five and ten years. If population numbers are not known, a suitably qualified ecologist will undertake an assessment of the potential impact to a species in the IBRA subregion to determine whether the impact will exceed indicative significant impact thresholds.

### 6.2.1 DECISION-MAKING FRAMEWORK

If three or more avian carcasses or injuries to the same species are found over a 12-month period of a non-threatened species, the impact trigger requirements may be met for the Project and the following decision-making framework will be followed:

1. A suitably qualified ecologist, engaged by the Applicant (and managed by the Responsible Officer), will undertake an analysis of the mortalities and injuries to a specific species over a 12-month period and determine whether the deaths/injuries were directly attributed to WTG strike and / or barotrauma. Where there is conclusive evidence the mortality / injury is not related to wind farm operation, particularly WTG strike and / or barotrauma, no further action is required.
2. If the mortalities / injuries of the species can be attributable to wind farm operation, particularly WTG strike and / or barotrauma, a suitably qualified ecologist will undertake an analysis to determine if the mortalities / injuries have exceeded the indicative significant impact threshold for the species. This assessment will consider factors such as the distribution of the species, known population size and habitat requirements and specific threats to the species within the IBRA subregion. If the evaluation reveals the impact trigger to be a one-off event and unlikely to occur again, no further action will be required.
3. If significant impact thresholds have been exceeded, a report on the findings of the analysis will be prepared by the suitably qualified ecologist and presented to the Project's Responsible Officer and subsequently NSW DCCEEW within 20 days of the impact trigger event.
    a. If the evaluation undertaken by the suitably qualified ecologist reveals the impact trigger has the potential to significantly impact the species, species-specific monitoring and targeted surveys will be recommended and implemented within the Subject Land. The survey effort will be undertaken over a minimum six-week period, with fortnightly monitoring.
    b. Additional surveys and monitoring exercises will need to be supervised and reported by the suitably qualified ecologist, who will document any recommendations for additional mitigation measures to manage or reduce the impact to the species, in accordance with the adaptive management framework. NSW DCCEEW will be consulted.
4. If the impact trigger is assessed as having the potential to contribute to a significant residual impact, adaptive management will be designed to reduce and mitigate impact to the species. The additional surveys and monitoring over six weeks will inform species-specific adaptive management actions. The turbine and species risk assessments and the CRM will be revised and the BBAMP updated to include any additional or adjusted mitigation measures. Additional adaptive management actions may include:

- Speed curtailment of WTGs considered very high or high risk;
- Lifting the operation commencement speed of WTGs considered very high or high risk;
- Additional acoustic deterrents to discourage foraging at particular locations;
- Social attraction techniques (e.g., decoys and audio playback systems) to encourage species to inhabit alternative low-risk areas;
- Removal of foraging habitat, where appropriate; and
- Investigate alternative agricultural practices if these are found to have been a contributing factor to excessive mortality or injury of a non-threatened species (three or more avian carcasses or injuries to the same species recorded at the same WTG over a 12-month period).

5. All evaluations and decisions regarding adaptive management and mitigation measures for the impacted species will be reported to NSW DCCEEW within 20 business days, with consultation to ensure the best course of action is applied for the Project and species. Outcomes will also be reported in the annual (for the first two years of operation) or two-yearly monitoring reports.

## 6.3 SIGNIFICANT IMPACT THRESHOLDS

When an impact trigger of a threatened or non-threatened avian species is detected, the significance of impact will be assessed by a suitably qualified ecologist. To determine whether an impact trigger has exceeded an indicative significant impact threshold, the number of mortalities of each species based on the carcass search results will be quantified and assessed as to whether the number has reached or exceeded an ecologically significant proportion of a population over a defined time period (referred to as a 'significant impact threshold') (Cwth DoE, 2013).

An ecologically significant proportion of a population is defined as being 0.1% of the estimated national population size for a species (Cwth DoE, 2015a). Where this is exceeded, additional offsets may be required for the significant residual impact. For those non-listed threatened species identified as at very high or high risk of collision (refer to **Section 3.3**), significant impact thresholds will relate to the number of mortalities recorded at a single turbine across a 12-month period rather than cumulatively across the entirety of the proposed development.

A high-level review of species' population ecology has been used to establish indicative significant impact estimates which considers the number of mortality events within specific timeframes for species considered at very high or high risk of collision and / or barotrauma because of the Project. Generational time, defined as the average interval between the birth of an individual and the birth of its offspring, is approximately ten years for most species identified as very high or high risk of collision and / or barotrauma in this BBAMP. Generational times can be used as an indication of the time required for a population to replace individuals lost due to WTG impacts. The species' range and population size have also been considered. If a species occupies a range larger than NSW, the NSW population size (if known) has been used to identify the threshold for significant impact.

**Table 6-1** provides indicative significant impact thresholds for the four species considered at very high risk of WTG impacts and 18 species considered at high risk of WTG impacts (**Section 3.3.2**). Due to unknown population estimates for some species, a conservative approach has been applied. If population estimates for a species become available, the significant impact thresholds proposed by this BBAMP will be updated accordingly. Note **Table 6-1** does not consider cumulative impacts on the species.

TABLE 6-1 INDICATIVE SIGNIFICANT IMPACT THRESHOLDS

| Species | Australian Population Estimate | Indicative Significant Impact Threshold (0.1% of population) |
|---|---|---|
| **Species considered at a very high risk of WTG impacts** | | |
| Black falcon (*Falco subniger*) | 4,000 | 4 mortalities over a five-year period |
| Curlew sandpiper (*Calidris ferruginea*) | 40,100 | 40 mortalities over a ten-year period |
| Little eagle (*Hieraaetus morphnoides*) | Unknown | 2 individuals within a one-year period |
| Plains-wanderer (*Pedionomus torquatus*) | 250 | 1 mortality at any point throughout operation |
| **Species considered at a high risk of WTG impacts** | | |
| Australasian bittern (*Botaurus poiciloptilus*) | 1,000 | 1 mortality at any point throughout operation |
| Common greenshank (*Tringa nebularia*) | 23,700 | 23 mortalities over a five-year period |
| Fork-tailed swift (*Apus pacificus*) | Unknown | 2 individuals within a one-year period |
| Grey falcon (*Falco hypoleucos*) | 1,000 | 1 mortality at any point throughout operation |
| Pink cockatoo (*Lophochroa leadbeateri*) | 15,000 | 15 mortalities within a five-year period |
| Sharp-tailed sandpiper (*Calidris acuminata*) | 71,000 | 71 mortalities over a ten-year period |
| Spotted harrier (*Circus assimilis*) | Unknown | 2 individuals within a one-year period |
| Swift parrot (*Lathamus discolor*) | 750 | 1 mortality at any point throughout operation |
| White-throated needletail (*Hirundapus caudacutus*) | 41,000 | 41 mortalities over a ten-year period |
| Southern myotis (*Myotis macropus*) | Unknown | 2 individuals within a one-year period |
| Yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*) | Unknown | 2 individuals within a one-year period |

| Species | Australian Population Estimate | Indicative Significant Impact Threshold (0.1% of population) |
|---|---|---|
| Australian pelican (*Pelicanus conspicillatus*) | Unknown | 3 mortalities in a one-year period at over Subject Land |
| Wedge-tailed eagle (*Aquila audax*) | Unknown | 3 mortalities in a one-year period over Subject Land |
| Black kite (*Milvus migrans*) | Unknown | 3 mortalities in a one-year period at one WTG |
| Brown falcon (*Falco berigora*) | Unknown | 3 mortalities in a one-year period at one WTG |
| Nankeen kestrel (*Falco cenchroides*) | Unknown | 3 mortalities in a one-year period at one WTG |
| Australian magpie (*Gymnorhina tibicen*) | Unknown | 3 mortalities in a one-year period at one WTG |
| Straw-necked ibis (*Threskiornis spinicollis*) | 100,000 - 1,000,000 | 3 mortalities in a one-year period at one WTG |

These significant impact thresholds are indicative only; the actual significant impact assessment and associated advice will be provided by a qualified ecologist aligned with the investigation process outlined in **Section 7**. These indicative thresholds may exhibit fluctuations over time and, as updated species' population estimates become available, it is expected that contemporary information be used through impact investigations.

# 7. ANNUAL REPORTING REQUIREMENTS

Monitoring reports will be produced in the first and second year of operation of the Project, thereafter, monitoring reports will be produced every two years, subject to consultation with NSW DCCEEW. Summaries of BBUS, carcass search data, scavenger and detectability trials will also be provided as attachments to the monitoring reports.

If impact triggers occur and / or significant impact thresholds are met during the lifespan of the Project, additional monitoring may be proposed by the suitably qualified ecologist after the initial two-year initial, intensive monitoring period has concluded. A risk-based approach may be used to determine the monitoring frequency requirements after the first two years of the Project's operation.

Reporting should include the following:

- Results of the carcass and injury searches and observations, including the methods adopted during surveys and the results of the scavenger and detectability trials;
- Statistical analysis of bird and bat mortality rates, confirming the number of deaths per annum per species. Analyses should consider the variability of bird and bat carcasses found during different seasons;
- Descriptions of the carcass and injury search areas, noting the presence of any introduced flora and fauna which may have affected the results;
- The results of any BBUS, other than carcass and injury searches;
- Records of any species' occurrence and site utilisation;
- Identification of impact triggers and significant impact thresholds, or identification of any species or risk levels that may need to be adjusted through an adaptive management approach; and
- Analysis of the effectiveness of the mitigation measures in place and whether changes or adjustments need to be made. This will include an analysis of the effectiveness of the impact trigger framework and to ensure that all impacts are being appropriately considered and accounted for in a reasonable manner.

## 7.1 SPECIFIC MANAGEMENT OBJECTIVES, ACTIVITIES, TIMING AND PERFORMANCE CRITERIA

**Table 7-1** summarises the management objectives, activities, timing and responsible parties for the implementation of the BBAMP. This table should be consulted for reporting and monitoring purposes. It is noted that an adaptive management approach may require adjustments to the requirements in **Table 7-1** under the direction of a suitably qualified ecologist.

## 7.2 BBAMP MONITORING AND IMPLEMENTATION RISKS

There are certain factors that may impact carcass and injury searches, BBUS and monitoring for the BBAMP. Such factors include weather events that restrict access to search areas, including significant flooding, storms (electrical activity), heatwaves and bushfires. Other factors may include WTG malfunction which poses a health and safety risk, biosecurity control measures and access issues due to agricultural management, livestock control and vegetation growth.

If these or other unforeseen factors arise and surveys, monitoring and reporting as per the requirements of the BBAMP cannot proceed, limitations or changes to the original BBAMP will be recorded during the next reporting period.

## TABLE 7-1 SUMMARY OF MANAGEMENT OBJECTIVES, ACTIVITIES, RESPONSIBLE PARTIES AND TIMING

| Stage | Management Actions | Responsibility | Timing |
|---|---|---|---|
| Pre-Development | Areas of remnant and regrowth vegetation will be avoided at the design and micro-siting phases | Applicant | Design |
| | Design of a turbine with a blade sweep area >50 m above ground level to provide a collision-free foraging zone within the canopy and 20 m above the canopy | Applicant | Design |
| | Locating turbines away from key bird and bat habitats (woodland habitat, waterways and drainage lines) | Applicant | Design |
| Pre-Construction | Pre-clearing surveys shall be undertaken prior to any vegetation clearing. Pre-clearance surveys will form part of the micro-siting process which will closely analyse potential infrastructure locations. Micro-siting will consider potential habitat for avian species, such as riparian areas and woodlands, and the design will be adjusted to avoid any impacts to these areas, including indirect and prescribed impacts. Surveys will be undertaken in the control and impact areas prior to construction. Pre-construction surveys will include habitat and waterbody assessment, BUS point surveys, bird of prey surveys, and bat surveys will be conducted via the use of echolocation call detectors and trapping. | Construction Contractor | Prior to Construction |
| | Pre-construction targeted surveys will also be undertaken to identify important habitat features of value to avian in the Subject Land, for example, raptor nesting sites. Identification of specific habitat features will mean that turbine location can be adjusted through micro-siting to minimise collision risk | Construction Contractor | Prior to Construction |
| Construction | All vegetation clearing shall be within clearly marked boundaries and in accordance with the conditions of consent, the Construction Environmental Management Plan (CEMP) and the Biodiversity Management Plan (BMP) | Construction Contractor | At all times |
| | Where trenching and excavations are to be undertaken which may entrap fauna, suitable escape measures are put in place, and excavations are checked for fauna before backfilling | Construction Contractor | At all times |
| | Include toolbox talks presenting site specific bird and bat information for construction personnel | Construction Contractor | Daily |
| | Ensure appropriate waste management procedures are put in place, for example, tightly secured lidded bins for food scraps, to reduce the potential for feral species to become established on-site | Construction Contractor | At all times |

| Stage | Management Actions | Responsibility | Timing |
|---|---|---|---|
| | BACI designed BBUS surveys to be conducted at regular intervals in impact and control areas during construction to determine bird and bat composition, abundance and density. | Construction Contractor | Quarterly (each season) |
| Construction Monitoring | Daily inspections by fauna spotter / catcher during clearing, specifically observing hollow trees, roosting sites, and other avian habitat features. Fauna spotter / catcher will keep an inventory of any bird and bat species encountered (including carcasses) with details of species, capture and release conditions and GPS co-ordinates. | Construction Contractor | Daily |
| | Weekly site inspections to review flora and fauna control measures during vegetation clearing and construction | Construction Contractor | Weekly |
| | Annual auditing of CEMP and BMP measures during construction. | Construction Contractor | Quarterly |
| | Species sightings and incidents reported in daily pre-start meetings. | Construction Contractor | Daily |
| Operational Monitoring | BACI surveys to be conducted in the operational phase at BBUS survey locations identified in the pre-construction and construction phases, to determine the operational impacts on bird and bat composition, abundance and density. | Operational Manager | Quarterly (each season) |
| | Mortality and injury monitoring: All turbines identified as very high or high and 33% of moderate risk turbines for two years. Monitoring requirements after the first two years of operation will be determined following analysis of the monitoring results and subject to consultation with NSW DCCEEW. | Ecologist and trained personnel | Monthly |
| | Scavenger and detectability trials undertaken within the first two years of monitoring. Scavenger trials will be undertaken twice annually and detectability trials seasonally. | Ecologist and trained personnel | Scavenger = bi-annually Detectability = quarterly (each season) |
| | Adaptive management, CRM updates and inclusion of additional mitigation measures following the assessment of impact triggers and significant impact thresholds by a suitably qualified ecologist. Adaptive management may include WTG speed curtailment and the raising of operational speeds. | Applicant | As required |

| Stage | Management Actions | Responsibility | Timing |
|---|---|---|---|
| | Injured native fauna to be reported to the Project's Responsible Officer. | Site Manager | Within 24 hours |
| | Preparation of monitoring reports: annually for two years within three months of the first year of monitoring, and three months of the second year of monitoring. Every two years following the first two years of Project operation (or as agreed with NSW DCCEEW). Monitoring reports to provide estimates of mortality for bird and bat species across the monitoring period, the results of the BBUS and carcass searches, detectability and scavenger trial, and recommendations for adaptive management and mitigation. | Applicant / Ecologist | Year 1 and Year 2 then every second year. |
| | All avian near misses and incidents will be investigated to establish the root cause. Where necessary, corrective actions will be developed to improve existing processes, and significant impacts assessments undertaken. | All Personnel / Ecologist | As required |

# 8. BBAMP REVIEW

The BBAMP monitoring regime will be used to evaluate its success at minimising impacts to at-risk bird and bats. Annual review processes will investigate the success of specific mitigation measures across the construction and operational phases of the Project. Monitoring and reviewing the management systems will allow failures in the processes documented in this BBAMP to be addressed and corrected, with the outcome being best-practice adaptive management.

Evaluation practices will include:

- Annual reporting to include a review of the BBAMP; updates to CRM to be undertaken based on survey results;
- Annual review and updates to the risk assessment outcomes for each turbine, justification and data for any proposed changes should be provided in reports;
- Annual review and updates to species' risk assessment based on the results of surveys; justification and data for any proposed changes should be provided in reports;
- Review and suitable adjustment of significant impact thresholds based on updated species' population estimates;
- Annual analysis and reporting of turbine strikes and success of carcass search methods;
- Identification and implementation of adaptive management actions, including technological improvements, for monitoring and mitigating turbine strikes; and
- Any matter requested by the decision-maker, either pre-operational or throughout the operational lifespan of the Project.

# 9. OFFSETTING AND COMPENSATORY MEASURES

Required offsets for impacts to habitat for threatened species are identified and outlined in Section 10 of the Amended BDAR. While these offsets are critical to ensure a no-net loss of biodiversity values as a result of direct and indirect impacts caused by the Project, prescribed impacts, such as impacts caused by collision with turbines and / or barotrauma, may require further offsetting.

Proposed offsetting measures include:

- Payment into the Biodiversity Conservation Fund;
- Securing and retiring additional biodiversity credits;
- Funding conservation actions which improve biodiversity values for at-risk species (due to Project operation); and
- Funding academic research into the impacts of wind farms on avian species.

Consultation will be undertaken with NSW DCCEEW to determine appropriate offset and compensatory measures.

## 9.1 SOUTHWEST RIVERINA BLACK FALCON PROJECT

The Black Falcon has been assessed to have a very high risk of collision with WTGs, as outlined in **Section 3** of this draft BBAMP. The species is a priority for the Riverina Local Land Services (LLS) with research, conservation actions and community engagement delivered through the Securing the Black Falcon in the Riverina project. The project aims to protect and enhance active nest sites and investigate opportunities for artificial habitat (Local Land Services, 2025). As an additional offsetting and compensatory measure for prescribed impacts as a result of the Project, the Applicant has committed to working with Riverina LLS and are discussing opportunities to engage with their conservation projects.

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# APPENDIX J BIRD UTILISATION SURVEY DATA

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Australasian Grebe | *Tachybaptus novaehollandiae* | 1 | 20 | | 0 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Australian Hobby | *Falco longipennis* | 1 | 30 | | 6 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 40 | | 30 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Australian Magpie | *Gymnorhina tibicen* | 1 | 50 | | 10 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 8 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 20 | | 6 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Australian Raven | *Corvus coronoides* | 2 | 100 | | 15 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Australian Raven | *Corvus coronoides* | 2 | 50 | | 8 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Australian Wood Duck | *Chenonetta jubata* | 4 | 10 | | 0 | 15 Degrees, Clear Skies, No Wind | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Black kite | *Milvus migrans* | 2 | 20 | | 100 | pair circling over canopy, flew east west direction from 20-100 m high | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Black Kite | *Milvus migrans* | 1 | 40 | | 20 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Black kite | *Milvus migrans* | 1 | 100 | | 10 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Black-tailed Native-hen | *Tribonyx ventralis* | 7 | 150 | | 0 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Black-tailed Native-hen | *Tribonyx ventralis* | 30 | 10 | | 0 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Brown falcon | *Falco berigora* | 1 | 100 | | 25 | circling above canopy, perched often | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 2 | 25 | | 3 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Crested pigeon | *Ocyphaps lophotes* | 3 | 20 | | 10 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | | | 4 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Crested pigeon | *Ocyphaps lophotes* | 1 | 50 | | 2 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Fairy-wren | *Malurus spp.* | 2 | 40 | | 0 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Galah | *Eolophus roseicapilla* | 4 | 60 | | 20 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Galah | *Eolophus roseicapilla* | 8 | | | 10 | Sunny, hot, 40 degrees | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Galah | *Eolophus roseicapilla* | 12 | 10 | | 8 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Galah | *Eolophus roseicapilla* | 10 | 50 | | 2 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Grey Teal | *Anas gracilis* | 15 | 20 | | 5 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Grey Teal | *Anas gracilis* | 3 | 20 | | 0 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Hoary-headed Grebe | *Poliocephalus poliocephalus* | 1 | 20 | | 0 | 12 degrees, sunny, moderate wind | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Inland thornbill | *Acanthiza apicalis* | 5 | 25 | | 3 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Inland Thornbill | *Acanthiza apicalis* | 6 | 10 | | 3 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Little Crow | *Corvus bennetti* | 1 | | | 4 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Little Raven | *Corvus mellori* | 6 | 50 | | 30 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Magpie-lark | *Grallina cyanoleuca* | 1 | | | 5 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Magpie-lark | *Grallina cyanoleuca* | 2 | 50 | | 4 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Nankeen kestrel | *Falco cenchroides* | 4 | | | 80 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Nankeen kestrel | *Falco cenchroides* | 1 | 15 | | 25 | single kestrel flying above sparse canopy, circling | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 40 | | 20 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 8 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Noisy Miner | *Manorina melanocephala* | 1 | 40 | | 8 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Noisy miner | *Manorina melanocephala* | 4 | 20 | | 7 | 30 degrees, sunny, patch of black box with lignum bush | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Sacred kingfisher | *Todiramphus sanctus* | 1 | 100 | | 3 | | |
| BUS01 | 18/05/2022 | 8:56:00 | | BUS | 12 degrees, sunny, moderate wind | Southern whiteface | *Aphelocephala leucopsis* | 2 | 50 | | 0 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Striated pardalote | *Pardalotus striatus* | 2 | 50 | | 3 | | |
| BUS01 | 16/05/2022 | 11:45:00 | | BUS | 16 degrees, slight wind sunny | Superb Fairy-wren | *Malurus cyaneus* | 3 | 50 | | 1 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Variegated Fairy-wren | *Malurus lamberti* | 10 | 50 | | 0 | | |
| BUS01 | 15/02/2022 | 1529 | | BUS | Sunny, hot, 40 degrees | Wedge-tailed Eagle | *Aquila audax* | 1 | | | 40 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Wedge-tailed Eagle | *Aquila audax* | 2 | 20 | | 12 | Juvenile pair roosting in large stick nest | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | White-breasted woodswallow | *Artamus leucorynchus* | 2 | 50 | | 30 | | |
| BUS01 | 9/08/2022 | 1700 | | BUS | 15 Degrees, Clear Skies, No Wind | White-winged Fairy-wren | *Malurus leucopterus* | 12 | 20 | | 3 | | |
| BUS01 | 27/10/2021 | 1155 | | BUS | 30 degrees, sunny, patch of black box with lignum bush | Willie wagtail | *Rhipidura leucophrys* | 2 | 50 | | 2 | | |
| BUS02 | 7/08/2024 | 14:00 | PM | BUS | 12C, overcast, no breeze (still) | Australasian Pipit | *Anthus novaeseelandiae* | | 20 | 88 | | | Heard call |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | Australian Hobby | *Falco longipennis* | 1 | 100 | | 6 | north | |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | Australian Hobby | *Falco longipennis* | 1 | 100 | West | 6 | North | Flying above canopy, flew North |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Australian Magpie | *Gymnorhina tibicen* | 2 | 25 | | 10 | | |
| BUS02 | 7/08/2024 | 14:00 | PM | BUS | 12C, overcast, no breeze (still) | Australian Pelican | *Pelecanus conspicillatus* | 15 | 5000 | 187 | 300 | 130 | |
| BUS02 | 7/08/2024 | 14:00 | PM | BUS | 12C, overcast, no breeze (still) | Australian Raven | *Corvus coronoides* | 4 | 1000 | 260 | 30 | 340 | |
| BUS02 | 21/02/2024 | 3:05pm | PM - 2 | | 38C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 600 | | 12 | south | |
| BUS02 | 21/02/2024 | 15:05 | PM - 2 | | 38C, light wind, scattered cloud | Australian Raven | *Corvus coronoides* | 1 | 600 | East | 12 | South | Flying above canopy, flew south |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | Australian White Ibis | *Threskiornis moluccus* | 6 | 80 | | 8 | north | |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | Australian White Ibis | *Threskiornis moluccus* | 6 | 80 | West | 8 | North | Flying above canopy, flew North |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Black Kite | *Milvus migrans* | 2 | 10 | | 80 | | |
| BUS02 | 21/02/2024 | 11:15am | MID - 1 | | 30C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 200 | | 25 | south-west | |
| BUS02 | 21/02/2024 | 11:15 | MID - 1 | | 30C, light wind, scattered cloud | Black Kite | *Milvus migrans* | 1 | 200 | North | 25 | South-West | Flying above canopy, flew south-west |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | Black Kite | *Milvus migrans* | 2 | 100 | | 6 | | soaring - west |
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | Black Kite | *Milvus migrans* | 2 | 100 | West | 6 | | Soaring above canopy |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 500 | | 4 | north | |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | Black Kite | *Milvus migrans* | 1 | 500 | North | 4 | North | Flying above canopy, flew North |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 250 | | 3 | south | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | Black Kite | *Milvus migrans* | 1 | 250 | West | 3 | South | Flying above canopy, flew south |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 2 | 25 | | 10 | | |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | | 1 | | perched |
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | South | 1 | | Perched in shrub |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Bluebonnet | *Northiella haematogaster* | 2 | 60 | | 5 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Brown Songlark | *Cincloramphus cruralis* | 3 | 20 | | 1 | 18 Degrees, Slight Cloud Coverage, Light Winds | |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 6 | | | 4 | | |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Common Bronzewing | *Phaps chalcoptera* | 1 | 120 | | 2 | | |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | | | 6 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Crested pigeon | *Ocyphaps lophotes* | 4 | 20 | | 1 | | |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | Emu | *Dromaius novaehollandiae* | 1 | 350 | | 0 | | running west |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | Emu | *Dromaius novaehollandiae* | 1 | 350 | West | 0 | West | Running through vegetation |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Galah | *Eolophus roseicapilla* | 5 | 150 | | 15 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Galah | *Eolophus roseicapilla* | 9 | 30 | | 15 | | |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | Galah | *Eolophus roseicapilla* | 4 | | | 8 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Grey Fantail | *Rhipidura albiscapa* | 1 | 5 | | 6 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Horsfield's Bronze-Cuckoo | *Chalcites basalis* | 1 | 20 | | 1 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Little Crow | *Corvus bennetti* | 2 | 50 | | 20 | | |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | Masked Lapwing | *Vanellus miles* | 8 | 500 | | 8 | north | |
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | Masked Lapwing | *Vanellus miles* | 8 | 500 | West | 8 | North | Flying above canopy, flew North |
| BUS02 | 7/08/2024 | 14:00 | PM | BUS | 12C, overcast, no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 10 | 8 | 20 | 0 | Hovering over shrublands |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 15 | | 15 | | |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 80 | | 10 | east | |
| BUS02 | 21/02/2024 | 11:15am | MID - 1 | | 30C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | | 10 | | soaring - west |
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 80 | North | 10 | East | Flying above canopy, flew east |
| BUS02 | 21/02/2024 | 11:15 | MID - 1 | | 30C, light wind, scattered cloud | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | West | 10 | | Soaring above canopy |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Nankeen Kestrel | *Falco cenchroides* | 1 | 120 | | 8 | | |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Pied Butcherbird | *Cracticus nigrogularis* | 1 | 130 | | 4 | | |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Rufous Whistler | *Pachycephala rufiventrus* | 1 | 120 | | 3 | | |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Southern whiteface | *Aphelocephala leucopsis* | 6 | 100 | | 0 | | |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 8 | 80 | | 8 | north | |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | Straw-necked Ibis | *Threskiornis spinicollis* | 8 | 80 | West | 8 | North | Flying above canopy, flew North |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | Superb Fairy-wren | *Malurus cyaneus* | 6 | | | 2 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Superb Fairy-Wren | *Malurus cyaneus* | 6 | 13 | | 2 | | |
| BUS02 | 21/02/2024 | 11:45am | MID - 2 | | 32C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 1 | 30 | | 1 | | calling |
| BUS02 | 21/02/2024 | 11:45 | MID - 2 | | 32C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 1 | 30 | South | 1 | | Heard calling from shrub |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Superb Fairy-wren | *Malurus cyaneus* | 7 | 50 | | 0 | | |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Wedge-tailed Eagle | *Aquila audax* | 3 | 300 | | 200 | | |
| BUS02 | 21/02/2024 | 2:35pm | PM - 1 | | 38C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 500 | | 200 | | soaring - west |
| BUS02 | 21/02/2024 | 14:35 | PM - 1 | | 38C, light wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 3 | 500 | West | 200 | | Soaring overhead |
| BUS02 | 21/02/2024 | 11:45am | MID - 2 | | 32C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 600 | | 80 | east | |
| BUS02 | 21/02/2024 | 11:45 | MID - 2 | | 32C, light wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 1 | 600 | North | 80 | East | Flying above canopy, flew east |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | Wedge-tailed Eagle | *Aquila audax* | 2 | 40 | | 50 | 15 degrees, sunny, moderate wind; flying east | |
| BUS02 | 21/02/2024 | 11:15am | MID - 1 | | 30C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 600 | | 30 | | soaring - west |
| BUS02 | 21/02/2024 | 11:15 | MID - 1 | | 30C, light wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 3 | 600 | West | 30 | | Soaring above canopy |
| BUS02 | 7/08/2024 | 14:00 | PM | BUS | 12C, overcast, no breeze (still) | Welcome Swallow | *Hirundo neoxena* | 3 | 10 | 160 | 0 | 0 | |
| BUS02 | 18/05/2022 | 10:48:00 | | BUS | 15 degrees, sunny, moderate wind; flying east | White-breasted woodswallow | *Artamus leucorynchus* | 2 | 100 | | 15 | | |
| BUS02 | 21/02/2024 | 3:05pm | PM - 2 | | 38C, partly cloudy, light wind | White-faced Heron | *Egretta novaehollandiae* | 1 | 100 | | 20 | east | |
| BUS02 | 21/02/2024 | 15:05 | PM - 2 | | 38C, light wind, scattered cloud | White-faced Heron | *Egretta novaehollandiae* | 1 | 100 | East | 20 | East | Flying above canopy, flew east |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | White-faced Heron | *Egretta novaehollandiae* | 1 | 200 | | 12 | west | |
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | White-faced Heron | *Egretta novaehollandiae* | 1 | 200 | West | 12 | West | Flying above canopy, flew West |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | White-fronted Chat | *Epthianura albifrons* | 2 | | | 2 | | |
| BUS02 | 21/02/2024 | 2:35pm | PM - 1 | | 38C, partly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 1 | 200 | | 6 | east | |
| BUS02 | 21/02/2024 | 14:35 | PM - 1 | | 38C, light wind, scattered cloud | White-fronted Chat | *Epthianura albifrons* | 1 | 200 | South | 6 | East | Flying above canopy, flew east |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 4 | 150 | | 8 | | perched |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | White-fronted Chat | *Epthianura albifrons* | 4 | 150 | West | 8 | | Perched in shrub |
| BUS02 | 21/02/2024 | 8:45am | AM - 1 | | 28C, mostly cloudy, light wind | White-necked Heron | *Ardea pacifica* | 1 | 300 | | 20 | south | |
| BUS02 | 21/02/2024 | 8:45 | AM - 1 | | 28C, light wind, moderate cloud cover | White-necked Heron | *Ardea pacifica* | 1 | 300 | West | 20 | South | Flying above canopy, flew South |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | White-necked Heron | *Ardea pacifica* | 1 | 200 | | 6 | | landed |
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | White-necked Heron | *Ardea pacifica* | 1 | 200 | West | 6 | | Flying above, landed in grass |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | White-winged Fairy-wren | *Malurus leucopterus* | 4 | | | 2 | | |
| BUS02 | 7/08/2024 | 14:00 | PM | BUS | 12C, overcast, no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | | 100 | 337 | 0 | 0 | Heard call |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Willie Wagtail | *Rhipidura leucophrys* | 1 | 5 | | 12 | | |
| BUS02 | 15/02/2022 | 1024 | | BUS | Sunny, warm, 32 degrees | Willie wagtail | *Rhipidura leucophrys* | 2 | | | 2 | Sunny, warm, 32 degrees | |
| BUS02 | 21/02/2024 | 11:15am | MID - 1 | | 30C, partly cloudy, light wind | Yellow-billed Spoonbill | *Platalea flavipes* | 1 | 300 | | 14 | east | |
| BUS02 | 21/02/2024 | 11:15 | MID - 1 | | 30C, light wind, scattered cloud | Yellow-billed Spoonbill | *Platalea flavipes* | 1 | 300 | West | 14 | East | Flying above canopy, flew east |
| BUS02 | 21/02/2024 | 9:15am | AM - 2 | | 28C, mostly cloudy, light wind | Yellow-billed Spoonbill | *Platalea flavipes* | 1 | 500 | | 10 | north | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS02 | 21/02/2024 | 9:15 | AM - 2 | | 28C, light wind, moderate cloud cover | Yellow-billed Spoonbill | *Platalea flavipes* | 1 | 500 | West | 10 | North | Flying above canopy, flew North |
| BUS02 | 17/08/2022 | 1330 | | BUS | 18 Degrees, Slight Cloud Coverage, Light Winds | Yellow-rumped Thornbill | *Acanthiza chrysorrhoa* | 1 | 5 | | 12 | | |
| BUS02 | 21/02/2024 | 11:45am | MID - 2 | | 32C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 30 | | 12 | south | |
| BUS02 | 21/02/2024 | 11:45 | MID - 2 | | 32C, light wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 2 | 30 | East | 12 | south | Flying above canopy, flew south |
| BUS02 | 21/02/2024 | 2:35pm | PM - 1 | | 38C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 4 | 150 | | 5 | east | |
| BUS02 | 21/02/2024 | 14:35 | PM - 1 | | 38C, light wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 4 | 150 | South | 5 | East | Flying above canopy, flew east |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 20 | | 12 | | |
| BUS03 | 18/05/2022 | 10:02:00 | | BUS | 15 degrees, sunny, slight wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 50 | | 10 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Australian Magpie | *Gymnorhina tibicen* | 9 | 20 | | 6 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Australian Magpie | *Gymnorhina tibicen* | 1 | | | 5 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Australian Raven | *Corvus coronoides* | 30 | 25 | | 25 | | |
| BUS03 | 18/05/2022 | 10:02:00 | | BUS | 15 degrees, sunny, slight wind | Australian Raven | *Corvus coronoides* | 6 | 50 | | 10 | 15 degrees, sunny, slight wind | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Black kite | *Milvus migrans* | 4 | 75 | | 150 | two pairs high above canopy, flying NE and circling around black box and associated grasslands | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 2 | 70 | | 15 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Black-tailed Native-hen | *Tribonyx ventralis* | 50 | 0 | | 0 | 16 Degrees, Clear Sky, No Wind | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Brown Treecreeper | *Climacteris picumnus picumnus* | 1 | 10 | | 5 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Budgerigar | *Melopsittacus undulatus* | 1 | | | 8 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 5 | 25 | | 3 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Common starling | *Sturnus vulgaris* | 2 | 70 | | 10 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Crested pigeon | *Ocyphaps lophotes* | 1 | 75 | | 10 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | | | 10 | | |
| BUS03 | 18/05/2022 | 10:02:00 | | BUS | 15 degrees, sunny, slight wind | Crested pigeon | *Ocyphaps lophotes* | 1 | 100 | | 6 | | |
| BUS03 | 18/05/2022 | 10:02:00 | | BUS | 15 degrees, sunny, slight wind | Fairy-wren | *Malurus spp.* | 1 | 20 | | 0 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Galah | *Eolophus roseicapilla* | 4 | | | 40 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Galah | *Eolophus roseicapilla* | 8 | 30 | | 40 | | |
| BUS03 | 18/05/2022 | 10:02:00 | | BUS | 15 degrees, sunny, slight wind | Galah | *Eolophus roseicapilla* | 4 | 100 | | 4 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Horsfield's Bushlark | *Mirafra javanica* | 1 | 75 | | 8 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Inland thornbill | *Acanthiza apicalis* | 5 | 25 | | 2 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Inland Thornbill | *Acanthiza apicalis* | 2 | | | 2 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Little Crow | *Corvus bennetti* | 1 | | | 8 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Little Raven | *Corvus mellori* | 2 | 20 | | 12 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Magpie-lark | *Grallina cyanoleuca* | 2 | 40 | | 30 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 30 | | 50 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | Nankeen kestrel | *Falco cenchroides* | 1 | 30 | | 4 | fying in between trees low from canopy | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Pallid Cuckoo | *Cacomantis pallidus* | 1 | | | 25 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Rainbow Bee-eater | *Merops ornatus* | 14 | | | 25 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Singing Honeyeater | *Lichenostomus virescens* | 1 | 15 | | 12 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Southern whiteface | *Aphelocephala leucopsis* | 8 | 8 | | 4 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Superb Fairy-wren | *Malurus cyaneus* | 6 | | | 1.5 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | White-breasted woodswallow | *Artamus leucorynchus* | 10 | | | 30 | | |
| BUS03 | 27/10/2021 | 1415 | | BUS | N/A | White-breasted woodswallow | *Artamus leucorynchus* | 2 | 50 | | 10 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | White-necked Heron | *Ardea pacifica* | 1 | | | 50 | Sunny, clear skies, 24 degrees | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 50 | | 2 | | |
| BUS03 | 9/08/2022 | 1552 | | BUS | 16 Degrees, Clear Sky, No Wind | Willie Wagtail | *Rhipidura leucophrys* | 1 | 10 | | 5 | | |
| BUS03 | 15/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | | | 2 | | |
| BUS03 | 18/05/2022 | 10:02:00 | | BUS | 15 degrees, sunny, slight wind | Willie Wagtail | *Rhipidura leucophrys* | 1 | 40 | | 1 | | |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 100 | | 6 | | |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 100 | North | 6 | | Flew into grass |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 10 | 30 | | 5 | | |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | | 4 | north | |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | East | 4 | North | Flying overhead, flew north |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 50 | | 2 | | |
| BUS04 | 20/02/2024 | 10:50am | MID - 2 | | 28C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 1 | | perched |
| BUS04 | 20/02/2024 | 10:50 | MID - 2 | | 28C, light wind, clear skies | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | South | 1 | | Perched on post/stump |
| BUS04 | 6/08/2024 | 14:40 | PM | BUS | 14C, partly cloudy (3/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 75 | 200 | 5 | 90 | Oscillating flight over shrubland |
| BUS04 | 20/02/2024 | 5:00pm | PM - 2 | | 32C, mostly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 200 | | 15 | north | |
| BUS04 | 20/02/2024 | 17:00 | PM - 2 | | 32C, light wind, scattered cloud | Australian Magpie | *Gymnorhina tibicen* | 2 | 200 | East | 15 | North | Flying above canopy |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 200 | | | | heard |
| BUS04 | 6/08/2024 | 14:40 | PM | BUS | 14C, partly cloudy (3/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 1 | 100 | 10 | 45 | 130 | Flying overhead, calling |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 3 | 500 | | 10 | | perched |
| BUS04 | 20/02/2024 | 5:00pm | PM - 2 | | 32C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 500 | | 10 | | perched |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Australian Raven | *Corvus coronoides* | 3 | 500 | South | 10 | | Perched in tree |
| BUS04 | 20/02/2024 | 17:00 | PM - 2 | | 32C, light wind, scattered cloud | Australian Raven | *Corvus coronoides* | 1 | 500 | South | 10 | | Perched in tree |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Australian Raven | *Corvus coronoides* | 1 | 1000 | | 5 | north | |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Australian Raven | *Corvus coronoides* | 1 | 300 | | 1 | | perched on fence |
| BUS04 | 8/08/2024 | 12:20 | MID | BUS | 16C, strong winds, overcast | Australian Raven | *Corvus coronoides* | 10 | 500 | 195 | 10 | 250 | above canopy |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Black Falcon | *Falco subniger* | 1 | 120 | | 150 | south | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Black Falcon | *Falco subniger* | 1 | 120 | South | 150 | South | Soaring above canopy, flew south |
| BUS04 | 20/02/2024 | 10:50am | MID - 2 | | 28C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 80 | | 150 | south | |
| BUS04 | 20/02/2024 | 10:50 | MID - 2 | | 28C, light wind, clear skies | Black Kite | *Milvus migrans* | 1 | 80 | South | 150 | South | Flying above canopy, flew south |
| BUS04 | 8/08/2024 | 12:20 | MID | BUS | 16C, strong winds, overcast | Black Kite | *Milvus migrans* | 1 | 350 | 184 | 100 | 180 | Soaring |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 300 | | 100 | south | |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Black Kite | *Milvus migrans* | 1 | 300 | South | 100 | South | Soaring above canopy, flew south |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 600 | | 80 | | soaring - south |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Black Kite | *Milvus migrans* | 1 | 600 | South | 80 | | Soaring above canopy |
| BUS04 | 6/08/2024 | 14:40 | PM | BUS | 14C, partly cloudy (3/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 1 | 100 | 80 | 60 | 150 | Soaring, hunting, flew toward woodland |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 2 | 250 | | 40 | | foraging - south |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Black Kite | *Milvus migrans* | 2 | 250 | South | 40 | | Foraging above canopy |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Black Kite | *Milvus migrans* | 2 | 700 | | 10 | south | |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | | 60 | | |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Black-shouldered Kite | *Elanus axillaris* | 2 | 1000 | | 50 | | hunting |
| BUS04 | 20/02/2024 | 10:50 | MID - 2 | | 28C, light wind, clear skies | Brown Quail | *Synoicus ypsilophorus* | 1 | 40 | East | 2 | | Flushed from vegetation |
| BUS04 | 6/08/2024 | 14:40 | PM | BUS | 14C, partly cloudy (3/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 255 | 20 | 175 | Flying over shrubland, calling |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 3 | 100 | | 15 | | |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 7 | | |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 2 | east | |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | East | 2 | | Flew from post/stump |
| BUS04 | 20/02/2024 | 5:00pm | PM - 2 | | 32C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | | 1 | | perched |
| BUS04 | 20/02/2024 | 17:00 | PM - 2 | | 32C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | West | 1 | | Perched on vegetation |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 0 | | calling |
| BUS04 | 20/02/2024 | 10:50am | MID - 2 | | 28C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | | 0 | | calling |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | East | 0 | | Heard calling |
| BUS04 | 20/02/2024 | 10:50 | MID - 2 | | 28C, light wind, clear skies | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | North | 0 | | In grass, heard calling |
| BUS04 | 8/08/2024 | 12:20 | MID | BUS | 16C, strong winds, overcast | Brown Songlark | *Cincloramphus cruralis* | 4 | 15 | 317 | 0 | 45 | Shrubs/foraging |
| BUS04 | 6/08/2024 | 14:40 | PM | BUS | 14C, partly cloudy (3/8 cloud cover), light breeze | Common starling | *Sturnus vulgaris* | 27 | 800 | 180 | 35 | 210 | Flying in flock |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Common starling | *Sturnus vulgaris* | 70 | 1000 | | 5 | south | |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Common starling | *Sturnus vulgaris* | 5 | 2000 | | 3 | south | |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Common starling | *Sturnus vulgaris* | 10 | 1000 | | 2 | west | |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Emu | *Dromaius novaehollandiae* | 1 | 500 | | 0 | | running north |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Emu | *Dromaius novaehollandiae* | 1 | 500 | West | 0 | North | Running north |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Magpie-lark | *Grallina cyanoleuca* | 1 | 250 | | 5 | | pursuing Black Kite |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Magpie-lark | *Grallina cyanoleuca* | 1 | 250 | South | 5 | | Chasing Black Kite, above canopy |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 500 | | 30 | | hovering |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Nankeen Kestrel | *Falco cenchroides* | 1 | 500 | South | 30 | | Hovering above canopy |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 75 | | 25 | | hunting |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | | 20 | west | |
| BUS04 | 20/02/2024 | 5:00pm | PM - 2 | | 32C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | | 15 | south | |
| BUS04 | 20/02/2024 | 17:00 | PM - 2 | | 32C, light wind, scattered cloud | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | South | 15 | South | Flying above canopy, flew south |
| BUS04 | 20/02/2024 | 10:50am | MID - 2 | | 28C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | | 6 | north | |
| BUS04 | 20/02/2024 | 10:50 | MID - 2 | | 28C, light wind, clear skies | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | East | 6 | North | Flying above canopy, flew north |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 250 | | 5 | | pursuing Black Kite |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Nankeen Kestrel | *Falco cenchroides* | 2 | 250 | South | 5 | | Chasing Black Kite, above canopy |
| BUS04 | 20/02/2024 | 10:50am | MID - 2 | | 28C, partly cloudy, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 40 | | 2 | | flushed |
| BUS04 | 8/08/2024 | 12:20 | MID | BUS | 16C, strong winds, overcast | Wedge-tailed Eagle | *Aquila audax* | 2 | 600 | 121 | 200 | 155 | Soaring |
| BUS04 | 8/08/2024 | 12:20 | MID | BUS | 16C, strong winds, overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 800 | 290 | 150 | 200 | Soaring |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 600 | | 80 | | circling - south-east |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 3 | 600 | South-East | 80 | | Circling above canopy |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 150 | | 40 | | soaring - south |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Wedge-tailed Eagle | *Aquila audax* | 2 | 150 | South | 40 | | Soaring above canopy |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | | 5 | | perched in tree |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Whistling Kite | *Haliastur sphenurus* | 1 | 500 | | 20 | | flying over treeline |
| BUS04 | 20/02/2024 | 10:20am | MID - 1 | | 28C, partly cloudy, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 250 | | 10 | south | |
| BUS04 | 20/02/2024 | 10:20 | MID - 1 | | 28C, light wind, clear skies | Whistling Kite | *Haliastur sphenurus* | 1 | 250 | East | 10 | South | Soaring above canopy, flew south |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 400 | | 1 | | foraging - east |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | Whistling Kite | *Haliastur sphenurus* | 1 | 400 | East | 1 | | Foraging above canopy |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | White-necked Heron | *Ardea pacifica* | 1 | 2000 | | 20 | | circling dam |
| BUS04 | 20/02/2024 | 4:30pm | PM - 1 | | 32C, mostly cloudy, light wind | White-necked Heron | *Ardea pacifica* | 1 | 500 | | 8 | | perched |
| BUS04 | 20/02/2024 | 5:00pm | PM - 2 | | 32C, mostly cloudy, light wind | White-necked Heron | *Ardea pacifica* | 1 | 500 | | 8 | | perched |
| BUS04 | 20/02/2024 | 16:30 | PM - 1 | | 32C, light wind, scattered cloud | White-necked Heron | *Ardea pacifica* | 1 | 500 | South | 8 | | Perched in tree |
| BUS04 | 20/02/2024 | 17:00 | PM - 2 | | 32C, light wind, scattered cloud | White-necked Heron | *Ardea pacifica* | 1 | 500 | South | 8 | | Perched in tree |
| BUS04 | 23/02/2024 | 9:40am | AM - 1 | | 21C, partly cloudy, moderate wind | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 200 | | 1 | | |
| BUS04 | 23/02/2024 | 7:30am | AM - 2 | | 21C, partly cloudy, moderate wind | Zebra Finch | *Taeniopygia guttata* | 3 | 50 | | 1 | | flying between shrubs |
| BUS04 | 6/08/2024 | 12:30 | MID | BUS | 14C, Still, 2/3 cloud cover | Australian Raven | *Corvus coronoides* | 2 | 500 | 222 | | | Perched on shrub |
| BUS04 | 6/08/2024 | 12:30 | MID | BUS | 14C, Still, 2/3 cloud cover | Brown Falcon | *Falco berigora* | 1 | 1000 | 260 | 100 | 142 | |
| BUS04 | 6/08/2024 | 12:30 | MID | BUS | 14C, Still, 2/3 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 3 | 1000 | 300 | 150 | | Circling |
| BUS04 | 6/08/2024 | 12:30 | MID | BUS | 14C, Still, 2/3 cloud cover | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 30 | 140 | | | Perched on shrub |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS05 | 13/06/2024 | 2:00-2:20 PM | | BUS | 12 c, Light Northerly, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 2 | 186 | 1 | 163 | |
| BUS05 | 13/06/2024 | 2:00-2:20 PM | | BUS | 12 c, Light Northerly, overcast | Australian Raven | *Corvus coronoides* | 1 | 1000 | 150 | 30 | 70 | |
| BUS05 | 13/06/2024 | 2:00-2:20 PM | | BUS | 12 c, Light Northerly, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 900 | 118 | 10 | 167 | Flying up to perch on powerline |
| BUS06 | 13/06/2024 | 9:39-9:59 AM | | BUS | 8 c, Light Northerly, overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | 316 | 50 | 98 | Hunting |
| BUS06 | 13/06/2024 | 9:39-9:59 AM | | BUS | 8 c, Light Northerly, overcast | Brown Falcon | *Falco berigora* | 1 | 100 | 201 | 3 | 168 | Perched on fenceline |
| BUS06 | 13/06/2024 | 9:39-9:59 AM | | BUS | 8 c, Light Northerly, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 246 | 0 | | Perched |
| BUS06 | 13/06/2024 | 9:39-9:59 AM | | BUS | 8 c, Light Northerly, overcast | Wedge-tailed Eagle | *Aquila audax* | 2 | 2200 | 192 | 0 | | Perched at nest |
| BUS06 | 22/02/2024 | 12:40pm | MID - 1 | | 35C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 25 | | 15 | | |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 30 | | 7 | | |
| BUS06 | 22/02/2024 | 1:10pm | MID - 2 | | 35C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 25 | | 1 | | perched |
| BUS06 | 15/02/2022 | 1144 | | BUS | Sunny, hot, 35 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 3 | | | 5 | | |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 250 | 20 | 5 | 350 | Flying overhead, calling |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 5 | | 1 | | |
| BUS06 | 18/05/2022 | 11:30:00 | | BUS | 14 degrees, moderate wind, sunny | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 10 | | 0 | | |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 400 | | 1 | | perched in shrub |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 3 | 1200 | 75 | 35 | 20 | Flying adjacent to woodland |
| BUS06 | 18/05/2022 | 11:30:00 | | BUS | 14 degrees, moderate wind, sunny | Australian Raven | *Corvus coronoides* | 1 | 50 | | 15 | 14 degrees, moderate wind, sunny | |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 2 | 1000 | 80 | 85 | 90 | Circling/soaring nearby woodland |
| BUS06 | 9/08/2024 | 12:25 | MID | BUS | 17C, 2/8 cloud cover, sunny, light breeze | Black Kite | *Milvus migrans* | 2 | 250 | 218 | 70 | 290 | Soaring/Circling |
| BUS06 | 9/08/2024 | 12:25 | MID | BUS | 17C, 2/8 cloud cover, sunny, light breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 250 | 203 | 60 | 190 | Hovering |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 2 | 300 | 345 | 50 | 310 | Hovering, hunting over shrubland |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 1000 | | 30 | north-west | |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | 360 | 20 | 350 | Hovering, hunting over shrubland - landed on shrub |
| BUS06 | 30/10/2021 | 1300 | | BUS | 17 degrees, Sunny, light wind | Brown falcon | *Falco berigora* | 2 | 500 | | 75 | Flying south | |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Brown Falcon | *Falco berigora* | 1 | 50 | | 40 | | circling |
| BUS06 | 15/02/2022 | 1144 | | BUS | Sunny, hot, 35 degrees | Brown Songlark | *Cincloramphus cruralis* | 6 | | | 20 | Sunny, hot, 35 degrees | |
| BUS06 | 9/08/2024 | 12:25 | MID | BUS | 17C, 2/8 cloud cover, sunny, light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 60 | 0 | 15 | 30 | Flying above shrublands |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 5 | 40 | | 1 | | perched in shrubs |
| BUS06 | 22/02/2024 | 12:40pm | MID - 1 | | 35C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 5 | 40 | | 1 | | perched in shrubs |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 320 | 4 | 290 | Heard calling, perched on shrub |
| BUS06 | 30/10/2021 | 1300 | | BUS | 17 degrees, Sunny, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 30 | | 1 | | |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 1 | | |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | Horsfield's Bronze-Cuckoo | *Chalcites basalis* | 2 | 15 | | 1 | | |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | House Sparrow | *Passer domesticus* | 6 | 20 | | 2 | | |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 120 | 225 | 50 | 140 | Hovering, hunting over shrubland |
| BUS06 | 9/08/2024 | 12:25 | MID | BUS | 17C, 2/8 cloud cover, sunny, light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 358 | 40 | 340 | Soaring/Hovering |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 160 | 35 | 200 | Hovering, hunting over shrubland - landed on fenceline |
| BUS06 | 9/08/2024 | 12:25 | MID | BUS | 17C, 2/8 cloud cover, sunny, light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | 320 | 15 | 305 | Hovering |
| BUS06 | 18/05/2022 | 11:30:00 | | BUS | 14 degrees, moderate wind, sunny | Southern whiteface | *Aphelocephala leucopsis* | 50 | 15 | | 15 | large flock of WFCs, majority flew N to NE | |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 20 | 20 | | 0 | | flushed |
| BUS06 | 15/02/2022 | 1144 | | BUS | Sunny, hot, 35 degrees | Superb Fairy-wren | *Malurus cyaneus* | 5 | | | 1 | | |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 6 | 5000 | | 120 | | soaring over treeline- east |
| BUS06 | 5/08/2024 | 9:15 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 2 | 1200 | 40 | 75 | 40 | Circling/soaring - landed in stag |
| BUS06 | 22/02/2024 | 1:10pm | MID - 2 | | 35C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | | 60 | | soaring |
| BUS06 | 22/02/2024 | 12:40pm | MID - 1 | | 35C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 200 | | 40 | east | |
| BUS06 | 18/05/2022 | 11:30:00 | | BUS | 14 degrees, moderate wind, sunny | Welcome Swallow | *Hirundo neoxena* | 1 | 0 | | 15 | | |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | Welcome Swallow | *Hirundo neoxena* | 1 | 20 | | 5 | | |
| BUS06 | 30/10/2021 | 1300 | | BUS | 17 degrees, Sunny, light wind | Welcome Swallow | *Hirundo neoxena* | 2 | 30 | | 3 | 18 degrees, Sunny, moderate wind | |
| BUS06 | 9/08/2024 | 12:25 | MID | BUS | 17C, 2/8 cloud cover, sunny, light breeze | Welcome Swallow | *Hirundo neoxena* | 2 | 5 | 344 | 2 | 25 | Flying over observers |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | White-faced Heron | *Egretta novaehollandiae* | 1 | 40 | | 15 | 16 Degrees, Sunny, Moderate Winds | |
| BUS06 | 14/08/2022 | 1347 | | BUS | 16 Degrees, Sunny, Moderate Winds | White-fronted Chat | *Epthianura albifrons* | 5 | 15 | | 1 | | |
| BUS06 | 15/02/2022 | 1144 | | BUS | Sunny, hot, 35 degrees | White-fronted Chat | *Epthianura albifrons* | 4 | | | 10 | | |
| BUS06 | 22/02/2024 | 9:23am | AM - 1 | | 25C, clear sky, light wind | White-necked Heron | *Ardea pacifica* | 2 | 200 | | 40 | south | |
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 15 | | 1 | | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 1 | | perched |
| BUS07 | 15/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 0 | | |
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | Australian Magpie | *Gymnorhina tibicen* | 3 | 200 | | 20 | | |
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | | 40 | | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 25 | | 15 | | |
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | Brown Songlark | *Cincloramphus cruralis* | 5 | 30 | | 7 | | |
| BUS07 | 15/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 1 | | perched |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | | | heard |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS07 | 22/10/2024 | 9:40-10 | AM | | 21 degrees, Sunny, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | | | Heard call |
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | | 50 | | |
| BUS07 | 15/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 15 | | 1 | | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | | 1 | | perched |
| BUS07 | 15/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | | 0 | | |
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 30 | | | | heard |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS07 | 15/11/2023 | 08:50am | | BUS | 17C, clear sky, still | Zebra Finch | *Taeniopygia guttata* | 20 | 20 | | 10 | | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 20 | | 4 | east | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 3 | 75 | | 4 | south | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 3 | 30 | | 3 | south | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 4 | 50 | | 2 | | |
| BUS07 | 15/11/2023 | 11:32am | | BUS | 24C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 15 | 25 | | 1 | | perched |
| BUS07 | 15/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 100 | | | | heard |
| BUS08 | 21/02/2024 | 10:00am | MID - 1 | | 28C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 80 | | 15 | west | |
| BUS08 | 21/02/2024 | 10:00 | MID - 1 | | 28C, light wind, scattered cloud | Australian Raven | *Corvus coronoides* | 1 | 80 | North | 15 | West | Flying over canopy, flew west |
| BUS08 | 21/02/2024 | 10:30am | MID - 2 | | 28C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | | 10 | | perched |
| BUS08 | 21/02/2024 | 10:30 | MID - 2 | | 28C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | South | 10 | | Perched in shrub |
| BUS08 | 21/02/2024 | 10:00am | MID - 1 | | 28C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 1 | | calling |
| BUS08 | 21/02/2024 | 10:00 | MID - 1 | | 28C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | South | 1 | | Heard calling from shrub |
| BUS08 | 21/02/2024 | 10:00am | MID - 1 | | 28C, partly cloudy, light wind | Fairy Martin | *Petrochelidon ariel* | 2 | 50 | | 20 | west | |
| BUS08 | 21/02/2024 | 10:00 | MID - 1 | | 28C, light wind, scattered cloud | Fairy Martin | *Petrochelidon ariel* | 2 | 50 | East | 20 | West | Flying over canopy, flew west |
| BUS08 | 21/02/2024 | 10:00am | MID - 1 | | 28C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 30 | | 20 | | soaring - east |
| BUS08 | 21/02/2024 | 10:00 | MID - 1 | | 28C, light wind, scattered cloud | Nankeen Kestrel | *Falco cenchroides* | 1 | 30 | East | 20 | | Soaring above canopy |
| BUS08 | 21/02/2024 | 10:30am | MID - 2 | | 28C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 12 | | soaring - north |
| BUS08 | 21/02/2024 | 10:30 | MID - 2 | | 28C, light wind, scattered cloud | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | North | 12 | | Soaring above canopy |
| BUS08 | 21/02/2024 | 10:00am | MID - 1 | | 28C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 3 | 10 | | 1 | | calling |
| BUS08 | 21/02/2024 | 10:30am | MID - 2 | | 28C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 3 | 10 | | 1 | | calling |
| BUS08 | 21/02/2024 | 10:00 | MID - 1 | | 28C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 3 | 10 | North | 1 | | Heard calling from shrub |
| BUS08 | 21/02/2024 | 10:30 | MID - 2 | | 28C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 3 | 10 | North | 1 | | Heard calling from shrub |
| BUS09 | 15/02/2022 | 1213 | | BUS | Sunny, hot, 36 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 2 | | | 3 | | |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 400 | | 2 | | |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 80 | | 1 | | perched |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 1 | | |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 150 | | 1 | | |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | perched in shrub |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 120 | | 0 | | |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 0 | | |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 60 | 198 | 10 | 164 | Oscillating in flight, over shrubland |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | 330 | 0 | 330 | On ground |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | | 7 | west | |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | | 5 | west | |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 350 | | 1 | | perched on gate |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | Australian Magpie | *Gymnorhina tibicen* | 1 | | | | | Calling from shrubs |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 1 | 200 | | 20 | west | |
| BUS09 | 18/05/2022 | 12:00:00 | | BUS | 15 degrees, partly cloudy, moderate wind | Australian Raven | *Corvus coronoides* | 15 | 30 | | 15 | 15 degrees, partly cloudy, moderate wind | |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Australian Raven | *Corvus coronoides* | 2 | 300 | 206 | 10 | 225 | Flying overhead |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | Australian Raven | *Corvus coronoides* | 2 | 50 | 22 | 10 | 22 | Heard calling, flying overhead |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Australian Raven | *Corvus coronoides* | 1 | 350 | 80 | 6 | 178 | |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 1 | 200 | | 2 | | perched on water tank |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 1 | 400 | | 1 | | perched on gate |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Australian Raven | *Corvus coronoides* | 2 | 200 | 30 | 1 | 178 | On gound |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | Australian Raven | *Corvus coronoides* | 1 | 300 | 330 | 1 | 330 | Perched on Shrub |
| BUS09 | 7/08/2024 | 14:37 | PM | BUS | 12C, Light wind, 5/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 400 | 75 | 0 | | Heard call/Aural |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | Australian Raven | *Corvus coronoides* | 1 | | | | | Heard calling |
| BUS09 | 15/11/2023 | 10:24am | | BUS | 22C, clear sky, still | Banded Lapwing | *Vanellus tricolor* | 5 | 50 | | 2 | east | |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | Black Kite | *Milvus migrans* | 1 | 800 | 33 | 35 | 90 | Hunting, flying over shrubland |
| BUS09 | 14/08/2022 | 1416 | | BUS | 17 Degrees, Slight Cloud Cover, Moderate-High Winds | Black Kite | *Milvus migrans* | 2 | 50 | | 20 | | |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | | 40 | | |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Black-shouldered Kite | *Elanus axillaris* | 1 | 400 | | 40 | | |
| BUS09 | 15/11/2023 | 10:24am | | BUS | 22C, clear sky, still | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | | 12 | | |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | | 2 | | perched in shrub |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | | 2 | | perched in shrub |
| BUS09 | 15/11/2023 | 10:24am | | BUS | 22C, clear sky, still | Brown Falcon | *Falco berigora* | 1 | 200 | | 1 | | perched |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | Brown Quail | *Synoicus ypsilophorus* | 2 | 150 | 49 | 1 | 90 | Flushed from grass |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Brown Songlark | *Cincloramphus cruralis* | 2 | 30 | | 15 | | |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | 15 | | |
| BUS09 | 15/02/2022 | 1213 | | BUS | Sunny, hot, 36 degrees | Brown Songlark | *Cincloramphus cruralis* | 2 | | | 8 | | |
| BUS09 | 30/10/2021 | 1225 | | BUS | 17 degrees, Sunny, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 0 | 17 degrees, Sunny, light wind | |
| BUS09 | 18/05/2022 | 12:00:00 | | BUS | 15 degrees, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 0 | | |
| BUS09 | 15/11/2023 | 10:24am | | BUS | 22C, clear sky, still | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | | | | heard |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 200 | | | | heard |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Brown Songlark | *Cincloramphus cruralis* | 4 | 50 | 132 | 8 | 160 | Heard calling, perched on shrub |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Brown Songlark | *Cincloramphus cruralis* | 10 | 70 | 30 | 1 | 178 | On ground |
| BUS09 | 21/10/2024 | 2:53-3:13 | PM | | 28 degrees, Sunny | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | | | Heard call |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS09 | 24/10/2024 | 11:20-11:40 | MID | | 16 degrees, Moderate wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | 120 | | | Heard call |
| BUS09 | 24/10/2024 | 11:20-11:40 | MID | | 16 degrees, Moderate wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 180 | | | Heard call |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Common starling | *Sturnus vulgaris* | 10 | 250 | | 2 | south | |
| BUS09 | 14/08/2022 | 1416 | | BUS | 17 Degrees, Slight Cloud Cover, Moderate-High Winds | Crested pigeon | *Ocyphaps lophotes* | 2 | 2 | | 0 | 17 Degrees, Slight Cloud Cover, Moderate-High Winds | |
| BUS09 | 7/08/2024 | 14:37 | PM | BUS | 12C, Light wind, 5/8 cloud cover | Emu | *Dromaius novaehollandiae* | 11 | 800 | 37 | 0 | | Visual |
| BUS09 | 24/10/2024 | 11:20-11:40 | MID | | 16 degrees, Moderate wind | Emu | *Dromaius novaehollandiae* | 5 | 500 | 20 | | 270 | |
| BUS09 | 7/08/2024 | 14:37 | PM | BUS | 12C, Light wind, 5/8 cloud cover | Fairy Martin | *Petrochelidon ariel* | | 0 | | 0 | | Heard call/Aural |
| BUS09 | 14/08/2022 | 1416 | | BUS | 17 Degrees, Slight Cloud Cover, Moderate-High Winds | Horsfield's Bronze-Cuckoo | *Chalcites basalis* | 1 | 20 | | 1 | | |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | House Sparrow | *Passer domesticus* | 4 | 400 | | 2 | | beside dam |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | House Sparrow | *Passer domesticus* | 3 | 350 | | 1 | | beside dam |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | House Sparrow | *Passer domesticus* | 4 | 400 | | 1 | | perched on gate |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | House Sparrow | *Passer domesticus* | 3 | 150 | 49 | 1 | 267 | Flying between shrubs |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | House Sparrow | *Passer domesticus* | 2 | 400 | | 0 | | |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | Little Grassbird | *Megalurus gramineus* | 2 | 100 | 82 | 1 | 82 | Flushed from grass |
| BUS09 | 7/08/2024 | 14:37 | PM | BUS | 12C, Light wind, 5/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 400 | 213 | 0 | | Perched on shrub |
| BUS09 | 15/02/2022 | 1213 | | BUS | Sunny, hot, 36 degrees | Orange Chat | *Epthianura aurifrons* | 1 | | | 4 | Sunny, hot, 36 degrees | |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | Pacific Black Duck | *Anas superciliosa* | 2 | 100 | 295 | 20 | 275 | Flying from nearby flooded area |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | Purple-backed Fairywren | *Malurus assimilis* | 4 | 250 | | 1 | | |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | Rufous Songlark | *Cincloramphus mathewsi* | 1 | 40 | 186 | 1 | 210 | Perched on Shrub |
| BUS09 | 15/02/2022 | 1213 | | BUS | Sunny, hot, 36 degrees | Superb Fairy-wren | *Malurus cyaneus* | 4 | | | 2 | | |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | Swamp Harrier | *Circus approximans* | 1 | 1000 | 269 | 55 | 209 | Flying above shrubs, hunting |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | Tree Martin | *Petrochelidon nigricans* | 2 | 300 | | 10 | east | |
| BUS09 | 24/10/2024 | 11:20-11:40 | MID | | 16 degrees, Moderate wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 800 | 260 | 200 | 320 | Soaring |
| BUS09 | 7/08/2024 | 14:37 | PM | BUS | 12C, Light wind, 5/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 2000 | 80 | 120 | | Circling |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 1500 | | 60 | | circling |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Wedge-tailed Eagle | *Aquila audax* | 2 | 700 | | 30 | | |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Whistling Kite | *Haliastur sphenurus* | 1 | 400 | | 1 | | |
| BUS09 | 14/08/2022 | 1416 | | BUS | 17 Degrees, Slight Cloud Cover, Moderate-High Winds | White-fronted Chat | *Epthianura albifrons* | 6 | 30 | | 12 | | |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | White-fronted Chat | *Epthianura albifrons* | 8 | 50 | 18 | 4 | 300 | Flying/perched on shrub |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | White-fronted Chat | *Epthianura albifrons* | 15 | 140 | 206 | 20 | 206 | Moving between shrubs |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | White-fronted Chat | *Epthianura albifrons* | 30 | 70 | 49 | 20 | 49 | Flying between shrubs |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | White-necked Heron | *Ardea pacifica* | 1 | 200 | | 25 | west | |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | White-necked Heron | *Ardea pacifica* | 1 | 10 | 215 | 25 | 350 | Flying from nearby flooded area |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 50 | | 1 | | |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 200 | | | | heard |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 300 | | | | heard |
| BUS09 | 21/10/2024 | 2:53-3:13 | PM | | 28 degrees, Sunny | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 100 | | | | Heard call |
| BUS09 | 14/08/2022 | 1416 | | BUS | 17 Degrees, Slight Cloud Cover, Moderate-High Winds | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 15 | | 1 | | |
| BUS09 | 18/05/2022 | 12:00:00 | | BUS | 15 degrees, partly cloudy, moderate wind | White-winged Fairy-wren | *Malurus leucopterys* | 8 | 20 | | 0 | | |
| BUS09 | 7/08/2024 | 14:37 | PM | BUS | 12C, Light wind, 5/8 cloud cover | White-winged Fairy-wren | *Malurus leucopterus* | | 100 | 247 | 0 | | Heard call/Aural |
| BUS09 | 24/10/2024 | 11:20-11:40 | MID | | 16 degrees, Moderate wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 30 | 110 | | | Heard call |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 35 | 56 | 2 | 20 | Flying between shrubs |
| BUS09 | 11/06/2024 | 9:22 AM | | BUS | 12 c, light breeze, overcast | White-winged Fairy-wren | *Malarus leucopterus* | 20 | 60 | 277 | 2 | 277 | Within shrubs |
| BUS09 | 10/06/2024 | 11:34 AM | | BUS | 17 c, still, clear skies | White-winged Fairy-wren | *Malarus leucopterus* | 5 | 125 | 315 | 1 | 178 | Within shrubs |
| BUS09 | 12/06/2024 | 2:58 PM | | BUS | 15 c, moderate wind, partly cloudy | White-winged Fairy-wren | *Malarus leucopterus* | 5 | 190 | 26 | 1 | 26 | Foraging in shrubs |
| BUS09 | 15/11/2023 | 10:24am | | BUS | 22C, clear sky, still | Zebra Finch | *Taeniopygia guttata* | 2 | 30 | | 15 | north | |
| BUS09 | 15/11/2023 | 09:37am | | BUS | 20C, clear sky, still | Zebra Finch | *Taeniopygia guttata* | 1 | 20 | | 10 | | |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 3 | 400 | | 7 | north-east | |
| BUS09 | 15/11/2023 | 10:54am | | BUS | 23C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 10 | 200 | | 5 | | |
| BUS09 | 18/05/2022 | 12:00:00 | | BUS | 15 degrees, partly cloudy, moderate wind | Zebra Finch | *Taeniopygia guttata* | 2 | 30 | | 1 | | |
| BUS09 | 15/11/2023 | 04:15pm | | BUS | 29C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 1 | 350 | | 1 | | |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 3 | 350 | | 1 | | perched in shrub |
| BUS09 | 15/11/2023 | 04:45pm | | BUS | 29C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 5 | 350 | | 0 | | drinking from dam |
| BUS09 | 16/11/2023 | 06:26am | | BUS | 12C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 75 | | | | heard |
| BUS10 | 23/10/2024 | 7:35-7:55 | AM | | 18 degrees, Light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 30 | 300 | | | Heard calls |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 340 | 4 | 10 | Perched on Shrub |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | 241 | 3 | 280 | Oscillating above shrubs |
| BUS10 | 7/08/2024 | 15:10 | PM | BUS | 16C, Still, 4/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 2 | 300 | 165 | 10 | 180 | |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Australian Magpie | *Gymnorhina tibicen* | 1 | 300 | 104 | 0 | | Foraging in grass |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | Australian Magpie | *Gymnorhina tibicen* | 1 | 1000 | 33 | 0 | 0 | Perched |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Australian Raven | *Corvus coronoides* | 1 | 30 | 260 | 40 | | Landed on shrub |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Australian Raven | *Corvus coronoides* | 2 | 1400 | 96 | 20 | 17 | |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 2 | 800 | 190 | 20 | 95 | Heard calling |
| BUS10 | 12/06/2024 | 3:39 PM | | BUS | 14 c, moderate wind, partly cloudy | Australian Raven | *Corvus coronoides* | 6 | 1500 | 60 | 15 | 342 | Flying overhead |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | Australian Raven | *Corvus coronoides* | 1 | 15 | 101 | 15 | 270 | In flight |
| BUS10 | 23/10/2024 | 7:35-7:55 | AM | | 18 degrees, Light breeze | Australian Raven | *Corvus coronoides* | 3 | 150 | 20 | | | Perched on shrub |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | Australian Wood Duck | *Chenonetta jubata* | 2 | 10 | 112 | 10 | 110 | In flight |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | Brown Falcon | *Falco berigora* | 1 | 20 | 350 | 35 | 120 | Flew overhead, landed on shrub |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Brown Falcon | *Falco berigora* | 1 | 800 | 310 | 50 | 310 | Soaring over grassland, circling |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Brown Falcon | *Falco berigora* | 2 | 200 | 187 | 20 | 187 | Soaring over grassland, circling |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Brown Falcon | *Falco berigora* | 1 | 650 | 96 | 1 | 17 | Perched on dillon bush |
| BUS10 | 12/06/2024 | 3:39 PM | | BUS | 14 c, moderate wind, partly cloudy | Brown Falcon | *Falco berigora* | 1 | 800 | 183 | 1 | 183 | Perched on Shrub |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 1 | 60 | 265 | 55 | 20 | Heard calling, flying overhead |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | Brown Songlark | *Cincloramphus cruralis* | 2 | 25 | 70 | 0 | 0 | Heard call |
| BUS10 | 7/08/2024 | 15:10 | PM | BUS | 16C, Still, 4/8 cloud cover | Brown Songlark | *Cincloramphus cruralis* | | | | | | Heard call/Aural |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Brown Songlark | *Cincloramphus cruralis* | 3 | 35 | 45 | 8 | 158 | Heard calling, flying over shrubs |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Brown Songlark | *Cincloramphus cruralis* | 2 | | | | | Heard calling |
| BUS10 | 23/10/2024 | 7:35-7:55 | AM | | 18 degrees, Light breeze | Brown Songlark | *Cincloramphus cruralis* | 4 | 20 | 310 | | | Heard calls |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | Emu | *Dromaius novaehollandiae* | 2 | 200 | 165 | 0 | 80 | Foraging |
| BUS10 | 7/08/2024 | 15:10 | PM | BUS | 16C, Still, 4/8 cloud cover | Emu | *Dromaius novaehollandiae* | 2 | 200 | 280 | | | |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 187 | 50 | 187 | Soaring over grassland, circling |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 35 | 35 | 45 | 100 | Hovering/hunting over shrubland |
| BUS10 | 12/06/2024 | 3:39 PM | | BUS | 14 c, moderate wind, partly cloudy | Nankeen Kestrel | *Falco cenchroides* | 1 | 350 | 282 | 40 | 12 | Hovering, hunting |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Nankeen Kestrel | *Falco cenchroides* | 2 | 800 | 68 | 30 | 132 | Hunting, hovering above grass |
| BUS10 | 12/06/2024 | 3:39 PM | | BUS | 14 c, moderate wind, partly cloudy | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | 35 | 30 | 80 | Flying/hovering |
| BUS10 | 7/08/2024 | 15:10 | PM | BUS | 16C, Still, 4/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 2 | 500 | 265 | 20 | | Hovering |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 40 | 300 | 10 | 300 | Perched on shrub |
| BUS10 | 7/08/2024 | 15:10 | PM | BUS | 16C, Still, 4/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 10 | 100 | 26 | | | Perched on shrub |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Pacific Black Duck | *Anas superciliosa* | 2 | 150 | 90 | 20 | 250 | Flew from nearby agricultural dam |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | Swamp Harrier | *Circus approximans* | 1 | 400 | 225 | 1 | 250 | Perched on shrub |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Tree Martin | *Petrochelidon nigricans* | 5 | 150 | 180 | 40 | 180 | Foraging over grassland, circling |
| BUS10 | 10/06/2024 | 12:15 PM | | BUS | 18 c, light breeze, clear skies | Tree Martin | *Petrochelidon nigricans* | 4 | 200 | 260 | 20 | 260 | Foraging over shrubs, circling |
| BUS10 | 12/06/2024 | 3:39 PM | | BUS | 14 c, moderate wind, partly cloudy | Wedge-tailed Eagle | *Aquila audax* | 2 | 1300 | 348 | 15 | 348 | In nest, nearby dam |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | White-fronted Chat | *Epthianura albifrons* | 5 | 150 | 120 | 5 | 120 | Flying between shrubs nearby flooded patch |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | White-necked Heron | *Ardea pacifica* | 1 | 150 | 80 | 40 | 255 | In flight |
| BUS10 | 23/10/2024 | 7:35-7:55 | AM | | 18 degrees, Light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 50 | 250 | | | Heard calls |
| BUS10 | 6/08/2024 | 1:40 | MID | BUS | 13C, clear sky (2/8 cloud cover), no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 100 | 130 | 1 | 130 | Heard calling, flying between shrubs |
| BUS10 | 5/08/2024 | 7:50 | AM | BUS | 8C, overcast, slight breze | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 25 | 328 | 0 | 0 | Heard call |
| BUS10 | 11/06/2024 | 8:45 AM | | BUS | 12 c, light breeze, overcast | White-winged Fairy-wren | *Malurus leucopterus* | 3 | | | | | Heard calling |
| BUS11 | 29/02/2024 | 14:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 60 | | 1 | | Flying to shrub |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 50 | 240 | | | Heard call |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Australian Magpie | *Gymnorhina tibicen* | 30 | 100 | | 30 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | | 15 | | |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Australian Magpie | *Gymnorhina tibicen* | 4 | 30 | | 15 | | |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Australian Magpie | *Gymnorhina tibicen* | 5 | 300 | 143 | | | Heard call |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Australian Raven | *Corvus coronoides* | 1 | 175 | | 5 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Australian Raven | *Corvus coronoides* | 10 | 200 | 138 | | | Perched in tree |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Australian Wood Duck | *Chenonetta jubata* | 6 | 30 | | 25 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Banded lapwing | *Vanellus tricolor* | 1 | 25 | | 25 | | |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Black Kite | *Milvus migrans* | 1 | 10 | 155 | 60 | 352 | Flew over us/circling |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Black-fronted Dotterel | *Elseyornis melanops* | 3 | 20 | | 0 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Black-tailed Native-hen | *Tribonyx ventralis* | 40 | 20 | | 5 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Black-tailed Native-hen | *Tribonyx ventralis* | 2 | 30 | | 0 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Bluebonnet | *Northiella haematogaster* | 1 | 45 | | 10 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Bluebonnet | *Northiella haematogaster* | 3 | 10 | | 7 | | |
| BUS11 | 29/02/2024 | 14:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | Brown Songlark | *Cincloramphus cruralis* | | | | | | Heard |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 280 | | | Heard call |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 2 | 1 | 130 | 1 | | Flying between tree |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Common Blackbird | *Turdus merula* | 16 | 100 | | 15 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Crested pigeon | *Ocyphaps lophotes* | 8 | | | 15 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Crested pigeon | *Ocyphaps lophotes* | 2 | 10 | | 12 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Crested pigeon | *Ocyphaps lophotes* | 1 | 20 | | 5 | | |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Crested pigeon | *Ocyphaps lophotes* | 2 | 30 | | 4 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Crested pigeon | *Ocyphaps lophotes* | | | 130 | | | Heard call/Aural |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Crimson Rosella | *Platycercus elegans* | 1 | 12 | | 10 | | |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Fairy-wren | *Malurus spp.* | 2 | 40 | | 0 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Galah | *Eolophus roseicapilla* | 2 | 150 | | 10 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Galah | *Eolophus roseicapilla* | 3 | 20 | | 10 | | |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Galah | *Eolophus roseicapilla* | 15 | 10 | | 6 | 16 degrees, partly cloudy, moderate wind | |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Galah | *Eolophus roseicapilla* | 8 | 40 | 130 | | 300 | Perched in tree |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Horsfield's Bronze-Cuckoo | *Chalcites basalis* | 1 | 0 | | 6 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Little Raven | *Corvus mellori* | 3 | 20 | | 15 | | |
| BUS11 | 29/02/2024 | 9:35 | AM 1 | | Clear, sunny, slight winds, 26 degrees | Little Raven | *Corvus mellori* | 2 | 100 | | 2 | N | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Magpie-lark | *Grallina cyanoleuca* | 2 | | | 20 | | |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Magpie-lark | *Grallina cyanoleuca* | 2 | 50 | | 6 | | |
| BUS11 | 29/02/2024 | 10:05 | MID 1 | | Clear, sunny, slight winds, 30 degrees | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 70 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Nankeen kestrel | *Falco cenchroides* | 2 | | | 50 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Nankeen kestrel | *Falco cenchroides* | 1 | 50 | | 25 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Nankeen Kestrel | *Falco cenchroides* | 8 | 20 | | 15 | 16 Degrees, Overcast, Moderate to Strong Winds | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 130 | | | Perched in tree |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 185 | | | Perched in tree |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Noisy Miner | *Manorina melanocephala* | 8 | 40 | | 20 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Noisy Miner | *Manorina melanocephala* | 6 | | | 12 | Sunny, clear, 22 degrees | |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Noisy Miner | *Manorina melanocephala* | 1 | 60 | | 8 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Noisy Miner | *Manorina melanocephala* | | | 120 | | | Heard call/Aural |
| BUS11 | 18/05/2022 | 1:04:00 | | BUS | 16 degrees, partly cloudy, moderate wind | Pacific Black Duck | *Anas superciliosa* | 1 | 30 | | 25 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Pacific Black Duck | *Anas superciliosa* | 3 | 10 | | 12 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Pied butcherbird | *Cracticus nigrogularis* | 1 | 15 | | 2 | 27 degrees, sunny | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Red-rumped parrot | *Psephotus heamatonotus* | 4 | | | 12 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Singing honeyeater | *Lichenostomus virescens* | 2 | | | 8 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Singing Honeyeater | *Lichenostomus virescens* | 1 | 10 | 41 | 1 | 359 | Visual |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Southern whiteface | *Aphelocephala leucopsis* | 3 | 150 | | 10 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Striated pardalote | *Pardalotus striatus* | 2 | 25 | | 10 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Striated Pardalote | *Pardalotus striatus* | 1 | 10 | 172 | | | In tree/perched |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Striated Pardalote | *Pardalotus striatus* | 1 | 50 | 140 | | | Heard call |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Superb Fairy-wren | *Malurus cyaneus* | 3 | 50 | | 1 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Superb Fairy-wren | *Malurus cyaneus* | 10 | | | 3 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Superb Fairy-wren | *Malurus cyaneus* | 3 | 100 | 250 | 1 | | In shrub |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Variegated Fairy-wren | *Malurus lamberti* | 8 | 5 | | 1 | | |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 200 | | 100 | | |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | 333 | 100 | 350 | Flew out of powertower below nest |
| BUS11 | 29/02/2024 | 9:35 | AM 1 | | Clear, sunny, slight winds, 26 degrees | Wedge-tailed Eagle | *Aquila audax* | 1 | 100 | | 80 | | Circling |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Welcome Swallow | *Hirundo neoxena* | 5 | 5 | | 12 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | White-faced Heron | *Egretta novaehollandiae* | 1 | 10 | 265 | 5 | 280 | Flying to dam |
| BUS11 | 23/10/2024 | 2:48-3:08 | PM | | 24 degrees, Sunny, Light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | 270 | | | Heard calls |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 20 | | 1 | | |
| BUS11 | 1/11/2021 | 1850 | | BUS | 27 degrees, sunny | Willie wagtail | *Rhipidura leucophrys* | 1 | 175 | | 10 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Willie wagtail | *Rhipidura leucophrys* | 2 | | | 3 | | |
| BUS11 | 7/08/2024 | 16:08 | PM | BUS | 15C, No breeze, 3/8 cloud cover | Willie Wagtail | *Rhipidura leucophrys* | 1 | 5 | 150 | 1 | 245 | Flying between tree |
| BUS11 | 14/08/2022 | 1546 | | BUS | 16 Degrees, Overcast, Moderate to Strong Winds | Willie Wagtail | *Rhipidura leucophrys* | 2 | 5 | | 0 | | |
| BUS11 | 29/02/2024 | 10:35 | MID 2 | | Clear, sunny, slight winds, 31 degrees | XXX | *#N/A* | | | | | | |
| BUS11 | 29/02/2024 | 14:30 | PM 2 | | Mostly clear, moderate winds, 40 degrees | XXX | *#N/A* | | | | | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Yellow-throated Miner | *Manorina flavigula* | 4 | | | 10 | | |
| BUS11 | 17/02/2022 | 843 | | BUS | Sunny, clear, 22 degrees | Zebra Finch | *Taeniopygia guttata* | 8 | | | 2 | | |
| BUS12 | 23/02/2024 | 9:30 | AM - 1 | | 25C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 200 | south | 6 | south | Flying overhead, flew south |
| BUS12 | 23/02/2024 | 14:00 | PM - 1 | | 25C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 6 | 50 | South | 6 | north | Flying over shrubland, flew north |
| BUS12 | 23/02/2024 | 14:30 | PM - 2 | | 25C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 200 | West | 5 | | Gliding overhead |
| BUS12 | 23/02/2024 | 11:30 | MID - 1 | | 24C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | south | 2 | west | Flying overhead, flew west |
| BUS12 | 23/02/2024 | 12:00 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | South | 2 | north | Flying overhead, flew north |
| BUS12 | 23/02/2024 | 12:00 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 30 | south | 0 | | Foraging in grass |
| BUS12 | 23/02/2024 | 14:30 | PM - 2 | | 25C, moderate wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | North | 0 | | Foraging in grass |
| BUS12 | 6/08/2024 | 15:15 | PM | BUS | 13C, partly cloudy (3/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | 350 | 25 | 310 | Heard calling |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Australian Magpie | *Gymnorhina tibicen* | 1 | 20 | 325 | 3 | 330 | Perched/Flying |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Australian Raven | *Corvus coronoides* | 10 | 100 | | 50 | Sunny, 31 degrees, partly cloudy | |
| BUS12 | 6/08/2024 | 15:15 | PM | BUS | 13C, partly cloudy (3/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 8 | 50 | 345 | 30 | 260 | Flying from nearby woodland |
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | Australian Raven | *Corvus coronoides* | 2 | 50 | | 10 | | |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Australian Raven | *Corvus coronoides* | 6 | 700 | 283 | 10 | 330 | Flying |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Australian Raven | *Corvus coronoides* | 4 | 60 | 146 | 2 | 65 | Flying above shrublands |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Australian Wood Duck | *Chenonetta jubata* | 1 | 15 | | 2 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Black kite | *Milvus migrans* | 2 | 25 | | 100 | circling above canopy | |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Black Kite | *Milvus migrans* | 1 | 500 | 7 | 35 | 65 | Soaring |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Black Kite | *Milvus migrans* | 2 | 20 | | 30 | 17 Degrees, Overcast, Moderate to Strong Winds | |
| BUS12 | 23/02/2024 | 9:30 | AM - 1 | | 25C, moderate wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | East | 30 | | Hovering overhead, hunting |
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | Brown Falcon | *Falco berigora* | 2 | 30 | | 20 | 15 degrees, partly cloudy, slight wind | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Brown Falcon | *Falco berigora* | 1 | 25 | | 12 | | |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Brown Falcon | *Falco berigora* | 1 | 50 | 131 | 2 | 90 | Perched/flying |
| BUS12 | 6/08/2024 | 15:15 | PM | BUS | 13C, partly cloudy (3/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 25 | 10 | 15 | 80 | Flying over shrubland, perched on shrub |
| BUS12 | 23/02/2024 | 14:00 | PM - 1 | | 25C, moderate wind, moderate cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | West | 12 | | Gliding overhead |
| BUS12 | 23/02/2024 | 14:30 | PM - 2 | | 25C, moderate wind, moderate cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | West | 4 | north | Flying over shrubland, flew north |
| BUS12 | 23/02/2024 | 9:30 | AM - 1 | | 25C, moderate wind, moderate cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | south | 1 | | Heard calling from grass |
| BUS12 | 23/02/2024 | 11:30 | MID - 1 | | 24C, moderate wind, moderate cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 200 | south | 1 | | Heard calling from grass |
| BUS12 | 23/02/2024 | 12:00 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Brown Songlark | *Cincloramphus cruralis* | 4 | 30 | East | 1 | | Heard calling from grass |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Brown Songlark | *Cincloramphus cruralis* | 1 | 15 | 310 | 0 | 300 | Foraging |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 4 | 30 | | 12 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 2 | 45 | | 7 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 2 | 40 | | 0 | | |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Fairy Martin | *Petrochelidon ariel* | 6 | 20 | | 60 | | |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Galah | *Eolophus roseicapilla* | 2 | 40 | | 30 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Galah | *Eolophus roseicapilla* | 5 | 50 | | 1 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Little Eagle | *Hieraaetus morphnoides* | 1 | 50 | | 400 | Noticed while flying only 50 m high, rose high above straw-necked ibis. circling | |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Little Raven | *Corvus mellori* | 2 | 80 | | 12 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Masked woodswallow | *Artamus personatus* | 1 | 40 | | 6 | | |
| BUS12 | 6/08/2024 | 15:15 | PM | BUS | 13C, partly cloudy (3/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 2 | 200 | 220 | 40 | 240 | Hovering, hunting over shrubland |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 20 | | |
| BUS12 | 23/02/2024 | 9:30 | AM - 1 | | 25C, moderate wind, moderate cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | North | 20 | west | Flying overhead, flew west |
| BUS12 | 23/02/2024 | 11:30 | MID - 1 | | 24C, moderate wind, moderate cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | south | 20 | | Hovering overhead, hunting |
| BUS12 | 23/02/2024 | 12:00 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 40 | south | 12 | north | Flying overhead, flew north |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Pallid Cuckoo | *Cacomantis pallidus* | 1 | 15 | | 5 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Plum-headed finch | *Neochmia modesta* | 10 | 15 | | 2 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Rainbow Bee-eater | *Merops ornatus* | 4 | 30 | | 5 | | |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Red-rumped Parrot | *Psephotus heamatonotus* | 1 | 10 | | 7 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Southern whiteface | *Aphelocephala leucopsis* | 3 | 15 | | 0 | | |
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | Southern whiteface | *Aphelocephala leucopsis* | 2 | 40 | | 0 | | |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Southern whiteface | *Aphelocephala leucopsis* | 5 | 10 | | 1 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Splendid fairy-wren | *Malurus splendens* | 2 | 40 | | 1 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Straw-necked Ibis | *Threskiornis spinicollis* | 6 | 20 | | 200 | group of 6 circling high above survey point before flying north | |
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | Superb Fairy-wren | *Malurus cyaneus* | 8 | 40 | | 0 | | |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Variegated Fairy-wren | *Malurus lamberti* | 8 | 15 | | 1 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Variegated Fairy-wren | *Malurus lamberti* | 5 | 10 | | 1 | | |
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 60 | | 250 | Circling, flying from 40-250m high | |
| BUS12 | 8/08/2024 | 13:00 | MID | BUS | 17C, overcast, windy | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | 7 | 150 | 60 | Soaring |
| BUS12 | 23/02/2024 | 9:30 | AM - 1 | | 25C, moderate wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 800 | West | 80 | south | Flying overhead, flew south |
| BUS12 | 23/02/2024 | 9:30 | AM - 1 | | 25C, moderate wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | North | 80 | | Soaring overhead |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Welcome Swallow | *Hirundo neoxena* | 5 | 5 | | 20 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Welcome Swallow | *Hirundo neoxena* | 3 | 25 | | 10 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | White-breasted woodswallow | *Artamus leucorynchus* | 4 | 25 | | 13 | | |
| BUS12 | 18/05/2022 | 12:26:00 | | BUS | 15 degrees, partly cloudy, slight wind | White-faced Heron | *Egretta novaehollandiae* | 1 | 50 | | 15 | | |
| BUS12 | 23/02/2024 | 11:30 | MID - 1 | | 24C, moderate wind, moderate cloud cover | White-winged Fairy-wren | *Malarus leucopterus* | 2 | 80 | south | 1 | | Perched in shrub |
| BUS12 | 23/02/2024 | 12:00 | MID - 2 | | 24C, moderate wind, moderate cloud cover | White-winged Fairy-wren | *Malarus leucopterus* | 1 | 60 | North | 1 | | Perched in shrub |
| BUS12 | 23/02/2024 | 14:00 | PM - 1 | | 25C, moderate wind, moderate cloud cover | White-winged Fairy-wren | *Malarus leucopterus* | 3 | 30 | West | 1 | | Perched in shrub |
| BUS12 | 23/02/2024 | 14:30 | PM - 2 | | 25C, moderate wind, moderate cloud cover | White-winged Fairy-wren | *Malarus leucopterus* | 5 | 50 | West | 1 | | Group of females, perched in shrub |
| BUS12 | 14/08/2022 | 1501 | | BUS | 17 Degrees, Overcast, Moderate to Strong Winds | Willie Wagtail | *Rhipidura leucophrys* | 3 | 5 | | 3 | | |
| BUS12 | 28/10/2021 | 1150 | | BUS | Sunny, 31 degrees, partly cloudy | Zebra finch | *Taeniopygia guttata* | 2 | 50 | | 1 | | |
| BUS12 | 13/06/2024 | 3:06-3:26 PM | | BUS | 10 c, Light Northerly, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | 328 | 30 | 101 | Hunting |
| BUS12 | 13/06/2024 | 3:06-3:26 PM | | BUS | 10 c, Light Northerly, overcast | White-fronted chat | *Epthianura albifrons* | 2 | 50 | 331 | 2 | 81 | |
| BUS13 | 23/02/2024 | 13:10 | MID - 2 | | 25C, light wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | East | 6 | North | Flying overhead, flew north |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | South | 5 | North | Foraging in grass, flew north |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 40 | | 1 | | perched on fence |
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | | 1 | | perched on shrub |
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 0 | | |
| BUS13 | 23/02/2024 | 12:40 | MID - 1 | | 25C, light wind, moderate cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 20 | south | 0 | | Foraging in grass |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 40 | 25 | 160 | Undulating flight, flying above shrubland |
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 3 | 1000 | | 8 | | perched on windmill |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | 190 | 12 | 330 | Heard calling, perched on shrub |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Australian Raven | *Corvus coronoides* | 2 | 1000 | 150 | 45 | 150 | Perched on transmission line, nest nearby in transmission tower |
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 200 | | 20 | north | |
| BUS13 | 23/02/2024 | 12:40 | MID - 1 | | 25C, light wind, moderate cloud cover | Australian Raven | *Corvus coronoides* | 2 | 350 | South | 15 | West | Flying overhead, flew west |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Australian Raven | *Corvus coronoides* | 2 | 80 | East | 10 | north | Flying over canopy, flew North |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Australian Raven | *Corvus coronoides* | 1 | 80 | South | 1 | | Perched on post/stump |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | Black Falcon | *Falco subniger* | 1 | 250 | | 60 | | circling |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Black Kite | *Milvus migrans* | 6 | 1250 | 130 | 100 | 130 | Circling, hunting nearby woodland |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Black Kite | *Milvus migrans* | 1 | 300 | South | 15 | West | Flying overhead, flew west |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Black Kite | *Milvus migrans* | 2 | 300 | South | 10 | | Foraging |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 75 | | 35 | | circling |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 60 | south | 15 | North | Flying over canopy, flew North |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | South | 2 | South | Flying overhead, flew south |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Brown Falcon | *Falco berigora* | 1 | 1800 | 340 | 50 | 30 | Hunting over shrubland, perched on shrub |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 10 | | |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | East | 1 | | Heard calling from grass |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Brown Songlark | *Cincloramphus cruralis* | 2 | 60 | West | 1 | | Heard calling from grass |
| BUS13 | 23/02/2024 | 13:10 | MID - 2 | | 25C, light wind, moderate cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | North | 1 | | Heard calling from grass |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS13 | 23/02/2024 | 12:40 | MID - 1 | | 25C, light wind, moderate cloud cover | Common starling | *Sturnus vulgaris* | 50 | 350 | south | 20 | South | Flying overhead, flew south |
| BUS13 | 15/02/2022 | 1249 | | BUS | Sunny, hot, 36 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | | | 10 | | |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Emu | *Dromaius novaehollandiae* | 2 | 500 | 330 | 0 | 320 | Foraging across shrubland |
| BUS13 | 23/02/2024 | 13:10 | MID - 2 | | 25C, light wind, moderate cloud cover | Fairy Martin | *Petrochelidon ariel* | 25 | 300 | South | 25 | | Circling above |
| BUS13 | 23/02/2024 | 12:40 | MID - 1 | | 25C, light wind, moderate cloud cover | Fairy Martin | *Petrochelidon ariel* | 15 | 300 | south | 12 | West | Flying overhead, flew west |
| BUS13 | 15/02/2022 | 1249 | | BUS | Sunny, hot, 36 degrees | Masked woodswallow | *Artamus personatus* | 2 | | | 25 | Sunny, hot, 36 degrees | |
| BUS13 | 15/02/2022 | 1249 | | BUS | Sunny, hot, 36 degrees | Nankeen kestrel | *Falco cenchroides* | 2 | | | 15 | | |
| BUS13 | 8/08/2024 | 13:35 | MID | BUS | 18C, overcast, windy | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | 285 | 10 | 300 | Hovering over shrublands |
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 30 | 400 | | 10 | north | |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 8 | 400 | | 7 | | flying around floodwater |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 8 | 50 | | 1 | | |
| BUS13 | 21/02/2024 | 6:37pm | PM - 2 | | 37C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 15 | 50 | | 1 | | perched on fence |
| BUS13 | 5/08/2024 | 15:15 | PM | BUS | 14C, partly cloudy (5/8 cloud cover), very light breeze | Wedge-tailed Eagle | *Aquila audax* | 2 | 2000 | 185 | 150 | 170 | Circling, hunting - flying toward woodland |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 3000 | South | 120 | West | Flying overhead, flew west |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Wedge-tailed Eagle | *Aquila audax* | 3 | 3000 | South | 80 | west | Flying over canopy, flew west |
| BUS13 | 23/02/2024 | 13:10 | MID - 2 | | 25C, light wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 350 | south | 15 | | Circling above water source |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 50 | North | 10 | north-east | Flying over canopy, flew NE |
| BUS13 | 23/02/2024 | 8:20 | AM - 1 | | 24C, moderate wind, overcast | Whistling Kite | *Haliastur sphenurus* | 1 | 200 | West | 15 | north | Flying over canopy, flew North |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | Whistling Kite | *Haliastur sphenurus* | 1 | 250 | South | 15 | West | Flying overhead, flew west |
| BUS13 | 23/02/2024 | 12:40 | MID - 1 | | 25C, light wind, moderate cloud cover | Whistling Kite | *Haliastur sphenurus* | 1 | 300 | South | 10 | | Foraging, flying above canopy |
| BUS13 | 8/08/2024 | 13:35 | MID | BUS | 18C, overcast, windy | White-fronted Chat | *Epthianura albifrons* | 4 | 10 | 145 | 0.5 | 130 | Flying over shrublands |
| BUS13 | 15/02/2022 | 1249 | | BUS | Sunny, hot, 36 degrees | White-fronted Chat | *Epthianura albifrons* | 4 | | | 24 | | |
| BUS13 | 23/02/2024 | 8:50 | AM - 2 | | 24C, light wind, overcast | White-necked Heron | *Ardea pacifica* | 5 | 300 | South | 20 | | Flock startled by Black Kite |
| BUS13 | 23/02/2024 | 12:40 | MID - 1 | | 25C, light wind, moderate cloud cover | White-necked Heron | *Ardea pacifica* | 1 | 350 | south | 15 | South | Flying overhead, flew south |
| BUS13 | 21/02/2024 | 6:07pm | PM - 1 | | 37C, partly cloudy, light wind | White-necked Heron | *Ardea pacifica* | 2 | 400 | | 0 | | perched by floodwater |
| BUS13 | 23/02/2024 | 13:10 | MID - 2 | | 25C, light wind, moderate cloud cover | White-winged Fairy-wren | *Malarus leucopterus* | 1 | 30 | south | 1 | | Perched on post/stump |
| BUS13 | 15/02/2022 | 1249 | | BUS | Sunny, hot, 36 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | | | 4 | | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 30 | | 5 | | |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 100 | | 1 | | perched in shrubs |
| BUS14 | 20/02/2024 | 12:07pm | MID - 2 | | 30C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 30 | | 1 | | perched |
| BUS14 | 20/02/2024 | 12:07 | MID - 2 | | 30C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 30 | North | 1 | | Perched in shrub |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | 20 | 5 | 20 | Undulating flight, flying above |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | 80 | 1 | | |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | | 400 | 310 | 0 | | Heard call/Aural |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 200 | | 6 | | perched in tree |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Australian Magpie | *Gymnorhina tibicen* | 2 | 120 | 150 | 20 | 100 | Heard calling |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Australian Magpie | *Gymnorhina tibicen* | 2 | 150 | 335 | 10 | 320 | Heard calling, perched on shrub |
| BUS14 | 9/08/2024 | 15:30 | PM | BUS | 19C, partial sun, 6/8 cloud cover, moderate breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 250 | 124 | 10 | 300 | Flying |
| BUS14 | 18/05/2022 | 2:17:00 | | BUS | 16 degrees, moderate wind, sunny | Australian Magpie | *Gymnorhina tibicen* | 1 | 20 | | 6 | 16 degrees, moderate wind, sunny | |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Australian Magpie | *Gymnorhina tibicen* | 1 | 25 | | 4 | | |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | | 400 | 310 | 0 | | Heard call/Aural |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Pelican | *Pelecanus conspicillatus* | 7 | 10 | 85 | 200 | 90 | |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Australian Raven | *Corvus coronoides* | 2 | 100 | | 50 | East flight | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Australian Raven | *Corvus coronoides* | 1 | 80 | | 60 | south-east | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Australian Raven | *Corvus coronoides* | 2 | 100 | | 40 | north-east | |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 2 | 650 | 10 | 30 | 90 | Heard calling, flew overhead |
| BUS14 | 20/02/2024 | 11:37am | MID - 1 | | 28C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 2 | 350 | | 4 | | perched |
| BUS14 | 20/02/2024 | 11:37 | MID - 1 | | 28C, light wind, scattered cloud | Australian Raven | *Corvus coronoides* | 2 | 350 | South | 4 | | Perched in tree |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 450 | 340 | 20 | 50 | |
| BUS14 | 9/08/2024 | 15:30 | PM | BUS | 19C, partial sun, 6/8 cloud cover, moderate breeze | Australian Raven | *Corvus coronoides* | 12 | 250 | 109 | 20 | 38 | Flying |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 4 | 200 | 165 | 10 | 165 | Heard calling, standing in grass |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Black kite | *Milvus migrans* | 3 | 100 | | 75 | Circling above canopy, nest in area | |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Black Kite | *Milvus migrans* | 7 | 450 | 260 | 60 | | Circling |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Black Kite | *Milvus migrans* | 2 | 400 | 330 | 50 | | Circling |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Black Kite | *Milvus migrans* | 1 | 50 | | 40 | | |
| BUS14 | 20/02/2024 | 11:37am | MID - 1 | | 28C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 350 | | 4 | | perched |
| BUS14 | 20/02/2024 | 11:37 | MID - 1 | | 28C, light wind, scattered cloud | Black Kite | *Milvus migrans* | 1 | 350 | South | 4 | | Perched in tree |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 25 | | 10 | | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Black-shouldered Kite | *Elanus axillaris* | 4 | 1000 | | 60 | | hunting - west |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 250 | | 10 | | perched in stag |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | | 6 | | perched in tree |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Bluebonnet | *Northiella haematogaster* | 2 | 100 | | 5 | | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Brown Falcon | *Falco berigora* | 1 | 50 | | 70 | east | |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 70 | 310 | 20 | 360 | Calling from nearby shrub |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 4 | 25 | 150 | 12 | 350 | Heard calling, perched on shrub |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 150 | | 5 | | |
| BUS14 | 20/02/2024 | 11:37am | MID - 1 | | 28C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | | 0 | | calling |
| BUS14 | 20/02/2024 | 11:37 | MID - 1 | | 28C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | North | 0 | | Heard calling from grass |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | | 5 | | |
| BUS14 | 9/08/2024 | 15:30 | PM | BUS | 19C, partial sun, 6/8 cloud cover, moderate breeze | Brown Songlark | *Cincloramphus cruralis* | 4 | 15 | 313 | 0 | 0 | heard call |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Common starling | *Sturnus vulgaris* | 7 | 250 | | 15 | west | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Common starling | *Sturnus vulgaris* | 25 | 1000 | | 10 | north | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Common starling | *Sturnus vulgaris* | 6 | 150 | | 5 | west | |
| BUS14 | 20/02/2024 | 15:10 | PM - 1 | | 25C, moderate wind, scattered cloud | Fairy Martin | *Petrochelidon ariel* | 3 | 20 | East | 10 | West | Flying above canopy, flew west |
| BUS14 | 18/05/2022 | 2:17:00 | | BUS | 16 degrees, moderate wind, sunny | Fairy-wren | *Malurus spp.* | 3 | 40 | | 0 | | |
| BUS14 | 17/02/2022 | 1040 | | BUS | Sunny, clear 25, degrees | Galah | *Eolophus roseicapilla* | 2 | | | 30 | Sunny, clear 25, degrees | |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Galah | *Eolophus roseicapilla* | 2 | 2 | 265 | 25 | 20 | Flying toward trees |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Galah | *Eolophus roseicapilla* | 1 | 25 | | 8 | 15 Degrees, Slight Overcast, Slight Breeze | |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Grey butcherbird | *Cracticus torquatus* | 1 | 150 | | 10 | | |
| BUS14 | 18/05/2022 | 2:17:00 | | BUS | 16 degrees, moderate wind, sunny | Grey Fantail | *Rhipidura albiscapa* | 1 | 40 | | 0 | | |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Little Raven | *Corvus mellori* | 4 | 20 | | 10 | | |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Masked Lapwing | *Vanellus miles* | | | 330 | 0 | | Heard call/Aural |
| BUS14 | 17/02/2022 | 1040 | | BUS | Sunny, clear 25, degrees | Nankeen kestrel | *Falco cenchroides* | 2 | | | 60 | | |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 2 | 25 | 240 | 45 | 270 | Hovering/hunting, landed on fenceline |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 220 | 30 | 260 | Hovering/hunting, landed on fenceline |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 40 | | 7 | | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | | 4 | | perched |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Noisy miner | *Manorina melanocephala* | 2 | 100 | | 15 | | |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Straw-necked Ibis | *Threskiornis spinicollis* | 19 | 30 | | 80 | | |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 12 | 500 | | 15 | | small flock - dispersed |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Striated pardalote | *Pardalotus striatus* | 1 | 150 | | 10 | | |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Striated Pardalote | *Pardalotus striatus* | | 400 | 310 | 0 | | Heard call/Aural |
| BUS14 | 17/02/2022 | 1040 | | BUS | Sunny, clear 25, degrees | Superb Fairy-wren | *Malurus cyaneus* | 6 | | | 2 | | |
| BUS14 | 20/02/2024 | 15:10 | PM - 1 | | 25C, moderate wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 2 | 30 | South | 2 | | Heard calling from shrub |
| BUS14 | 20/02/2024 | 11:37am | MID - 1 | | 28C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 2 | 50 | | 1 | | calling |
| BUS14 | 20/02/2024 | 12:07pm | MID - 2 | | 30C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 6 | 20 | | 1 | | perched |
| BUS14 | 20/02/2024 | 11:37 | MID - 1 | | 28C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 2 | 50 | North | 1 | | Heard calling, perched on shrub |
| BUS14 | 20/02/2024 | 12:07 | MID - 2 | | 30C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 6 | 20 | North | 1 | | Perched in shrub |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Superb Fairy-wren | *Malurus cyaneus* | 2 | 100 | | 1 | | |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Variegated Fairy-wren | *Malurus lamberti* | 1 | 10 | | 1 | Moderate wind, 29 degrees, overcast | |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 450 | | 150 | | soaring |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 150 | 300 | 100 | 360 | Soaring/circling above, hunting |
| BUS14 | 20/02/2024 | 15:10 | PM - 1 | | 25C, moderate wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 1 | 800 | South | 80 | | Soaring above canopy |
| BUS14 | 19/02/2024 | 4:52pm | PM - 1 | | 35C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | | 60 | west | |
| BUS14 | 20/02/2024 | 15:10 | PM - 1 | | 25C, moderate wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 1 | 2000 | West | 50 | South | Soaring above canopy, flew south |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | 310 | 40 | | Circling |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 20 | | 20 | In nest | |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 300 | | 20 | | |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | Welcome Swallow | *Hirundo neoxena* | 2 | 200 | 270 | 20 | 270 | Circling/foraging, perched on nearby water tank |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Western gerygone | *Gerygone fusca* | 1 | 150 | | 5 | | |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Western gerygone | *Gerygone fusca* | | 400 | 310 | 0 | | Aural |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | Whistling Kite | *Haliastur sphenurus* | 1 | 200 | 230 | 75 | 300 | Soaring, hunting |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | Whistling Kite | *Haliastur sphenurus* | 1 | 600 | 25 | 60 | 340 | hunting, flew toward nearby woodland and perched on stag |
| BUS14 | 20/02/2024 | 15:10 | PM - 1 | | 25C, moderate wind, scattered cloud | White-fronted Chat | *Epthianura albifrons* | 4 | 50 | East | 2 | | Perched in shrub |
| BUS14 | 17/02/2022 | 1040 | | BUS | Sunny, clear 25, degrees | White-winged Fairy-wren | *Malurus leucopterus* | 4 | | | 3 | | |
| BUS14 | 7/08/2024 | 10:50 | MID | BUS | 15C, clear sky (1/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | 270 | 3 | 150 | Heard calling, flying between shurbs |
| BUS14 | 6/08/2024 | 7:40 | AM | BUS | 2C, light fog (8/8 cloud cover), no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 30 | 270 | 2 | 180 | heard calling, flying between shrubs, foraging |
| BUS14 | 8/08/2022 | 1549 | | BUS | 15 Degrees, Slight Overcast, Slight Breeze | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 10 | | 1 | | |
| BUS14 | 20/02/2024 | 12:07pm | MID - 2 | | 30C, partly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 40 | | 3 | | perched |
| BUS14 | 20/02/2024 | 12:07 | MID - 2 | | 30C, light wind, scattered cloud | White-winged Fairy-wren | *Malarus leucopterus* | 8 | 40 | East | 3 | | Perched on post |
| BUS14 | 18/05/2022 | 2:17:00 | | BUS | 16 degrees, moderate wind, sunny | Willie Wagtail | *Rhipidura leucophrys* | 1 | 30 | | 1 | | |
| BUS14 | 28/10/2021 | 1300 | | BUS | Moderate wind, 29 degrees, overcast | Yellow-throated miner | *Manorina flavigula* | 4 | 100 | | 1 | | |
| BUS14 | 20/02/2024 | 12:07pm | MID - 2 | | 30C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 12 | 40 | | 3 | | perched |
| BUS14 | 7/08/2024 | 11:11 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Zebra Finch | *Taeniopygia guttata* | | | 17 | 0 | | Heard call/Aural |
| BUS14 | 20/02/2024 | 12:07 | MID - 2 | | 30C, light wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 12 | 40 | East | 3 | | Perched on post |
| BUS14 | 20/02/2024 | 15:10 | PM - 1 | | 25C, moderate wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 10 | 50 | East | 2 | | Perched in shrub |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Zebra Finch | *Taeniopygia guttata* | 7 | 100 | | 1 | south-west | |
| BUS14 | 23/02/2024 | 7:00am | AM - 1 | | 21C, partly cloudy, moderate wind | Zebra Finch | *Taeniopygia guttata* | 8 | 75 | | 1 | | flying between shrubs |
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | 218 | 10 | 30 | Chasing Kite |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | 309 | | | Heard calls |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 20 | 230 | | | Heard calls |
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 1 | 600 | 97 | 1 | 145 | |
| BUS15 | 9/08/2024 | 16:10 | PM | BUS | 18C, 6/8 cloud cover, moderate breeze | Australian Magpie | *Gymnorhina tibicen* | 4 | 15 | 103 | 1 | 150 | Flying over shrublands |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Australian Magpie | *Gymnorhina tibicen* | 1 | 150 | 321 | | | In tree |
| BUS15 | 7/08/2024 | 13:30 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 1 | 60 | 340 | 25 | 210 | Flying from disgant woodland |
| BUS15 | 5/08/2024 | 8:30 | AM | BUS | 3C, light fog (8/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 2 | 150 | 105 | 10 | 110 | Heard calling, flew overhead |
| BUS15 | 9/08/2024 | 16:10 | PM | BUS | 18C, 6/8 cloud cover, moderate breeze | Australian Raven | *Corvus coronoides* | 2 | 30 | 176 | 2 | 200 | Flying over shrublands |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 900 | 90 | | | Perched in tree |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Banded Lapwing | *Vanellus tricolor* | 2 | 60 | 10 | | 90 | On ground |
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Black Kite | *Milvus migrans* | 1 | 100 | 218 | 10 | 30 | Flying over us |
| BUS15 | 7/08/2024 | 13:30 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 215 | 25 | 260 | Calling from nearby shrub |
| BUS15 | 5/08/2024 | 8:30 | AM | BUS | 3C, light fog (8/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 310 | 10 | 160 | Heard calling, perched on shrub |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Brown Songlark | *Cincloramphus cruralis* | 3 | 50 | 178 | | | Heard calls |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Brown Songlark | *Cincloramphus cruralis* | 3 | 50 | 221 | | | Heard calls |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | 238 | | | Heard calls |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 231 | | | Heard call |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Emu | *Dromaius novaehollandiae* | 8 | 600 | 260 | | 200 | |
| BUS15 | 5/08/2024 | 17:20 | PM | BUS | 11C, Light wind, 3/8 cloud cover | Galah | *Eolophus roseicapilla* | 3 | 300 | 40 | | | |
| BUS15 | 5/08/2024 | 17:20 | PM | BUS | 11C, Light wind, 3/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 40 | 4 | 280 | |
| BUS15 | 23/10/2024 | 8:17-8:37 | AM | | 17 degrees, Light breeze, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 500 | 180 | 120 | 240 | Hovering |
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Spotted Harrier | *Circus assimilis* | 1 | 300 | 41 | 1 | 8 | |
| BUS15 | 9/08/2024 | 16:10 | PM | BUS | 18C, 6/8 cloud cover, moderate breeze | Superb Fairy-wren | *Malurus cyaneus* | 6 | 20 | 90 | 1 | 195 | Perched |
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | 30 | 100 | 310 | |
| BUS15 | 8/08/2024 | 13:33 | MID | BUS | 17C, Moderate/high winds, 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | 1 | 10 | 163 | |
| BUS15 | 5/08/2024 | 17:20 | PM | BUS | 11C, Light wind, 3/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 800 | 8 | 5 | 188 | Perched then flew to ground |
| BUS15 | 7/08/2024 | 13:30 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Welcome Swallow | *Hirundo neoxena* | 2 | 20 | 275 | 30 | 250 | Circling, foraging - landed on nearby water tank |
| BUS15 | 5/08/2024 | 8:30 | AM | BUS | 3C, light fog (8/8 cloud cover), no breeze (still) | Welcome Swallow | *Hirundo neoxena* | 2 | 80 | 275 | 20 | 160 | Circling/foragin, landed on nearby water tank |
| BUS15 | 7/08/2024 | 13:30 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Whistling Kite | *Haliastur sphenurus* | 1 | 35 | 60 | 45 | 270 | Soaring/hunting, flew overhead |
| BUS15 | 5/08/2024 | 8:30 | AM | BUS | 3C, light fog (8/8 cloud cover), no breeze (still) | White-fronted Chat | *Epthianura albifrons* | 2 | 100 | 100 | 6 | 120 | Heard calling, flying bettwen shrubs |
| BUS15 | 7/08/2024 | 13:30 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | White-fronted Chat | *Epthianura albifrons* | 5 | 30 | 290 | 15 | 100 | Foraging on ground and between shrubs |
| BUS15 | 7/08/2024 | 13:30 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 75 | 210 | 5 | 230 | Flying, foraging between bushes/shrubs |
| BUS15 | 5/08/2024 | 17:20 | PM | BUS | 11C, Light wind, 3/8 cloud cover | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 5 | 306 | 1 | 286 | Flying between shrubs |
| BUS16 | 20/02/2024 | 3:13pm | PM - 1 | | 35C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | | 1 | | perched |
| BUS16 | 20/02/2024 | 15:13 | PM - 1 | | 35C, light wind, partly cloudy | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | South | 1 | | Perched on shrub |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | 110 | 6 | 70 | Flying between shurbs |
| BUS16 | 9/08/2024 | 16:40 | PM | BUS | 17C,6/8 cloud cover, light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 100 | 233 | 2 | 205 | Perched |
| BUS16 | 7/08/2024 | 12:30 | MID | BUS | 14C, Still, 3/8 cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | 122 | 1 | 20 | |
| BUS16 | 21/10/2024 | 10:45-11:05 | MID | | 22 degrees, Sunny, light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 300 | 110 | | | |
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 200 | 250 | 30 | 250 | Calling from nearby vegetation patch |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 200 | 50 | 15 | 50 | Heard calling |
| BUS16 | 7/08/2024 | 12:30 | MID | BUS | 14C, Still, 3/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 1 | | 2 | | | Heard call/Aural |
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 1 | 100 | 220 | 30 | 210 | Flew overhead from nearby vegetation patch |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Australian Raven | *Corvus coronoides* | 3 | 50 | 280 | 20 | 190 | Flew over from nearby vegetation patch |
| BUS16 | 9/08/2024 | 16:40 | PM | BUS | 17C,6/8 cloud cover, light breeze | Australian Raven | *Corvus coronoides* | 2 | 80 | 237 | 10 | 330 | Flying over shrublands |
| BUS16 | 21/10/2024 | 10:45-11:05 | MID | | 22 degrees, Sunny, light breeze | Australian Raven | *Corvus coronoides* | 1 | 15 | 150 | | | In tree next to nest |
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 1 | 35 | 350 | 50 | 220 | Soaring/hunting, flew overhead from vegetation patch |
| BUS16 | 22/10/2024 | 2:50-3:10 | PM | | 33 degrees, Sunny, Light breeze | Black-tailed Native-hen | *Tribonyx ventralis* | 3 | 180 | 30 | | 200 | |
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 60 | 20 | 160 | Calling from shrub |
| BUS16 | 20/02/2024 | 3:13pm | PM - 1 | | 35C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 2 | | |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Brown Songlark | *Cincloramphus cruralis* | 3 | 35 | 270 | 10 | 90 | Calling , perched on shrub |
| BUS16 | 20/02/2024 | 15:13 | PM - 1 | | 35C, light wind, partly cloudy | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | South | 2 | | On shrub, flew into grass |
| BUS16 | 7/08/2024 | 12:30 | MID | BUS | 14C, Still, 3/8 cloud cover | Brown Songlark | *Cincloramphus cruralis* | | | 215 | | | Heard call/Aural |
| BUS16 | 21/10/2024 | 10:45-11:05 | MID | | 22 degrees, Sunny, light breeze | Brown Songlark | *Cincloramphus cruralis* | 3 | 20 | 270 | | | Heard call |
| BUS16 | 22/10/2024 | 2:50-3:10 | PM | | 33 degrees, Sunny, Light breeze | Galah | *Eolophus roseicapilla* | 6 | 200 | 120 | 60 | 30 | Flying above canopy |
| BUS16 | 22/10/2024 | 2:50-3:10 | PM | | 33 degrees, Sunny, Light breeze | Grey Teal | *Anas gracilis* | 2 | 240 | 100 | | | In dam |
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 75 | 90 | 40 | 220 | Hunting/hovering over shrubland |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | 40 | 35 | 340 | Hovering/hunting, landed on wire |
| BUS16 | 21/10/2024 | 10:45-11:05 | MID | | 22 degrees, Sunny, light breeze | Nankeen Kestrel | *Falco cenchroides* | 2 | 150 | 10 | 100 | 330 | Soaring/hovering |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Pied Cormorant | *Phalacrocorax varius* | 2 | 400 | 80 | 55 | 260 | Flew overhead from nearby dam |
| BUS16 | 9/08/2024 | 16:40 | PM | BUS | 17C,6/8 cloud cover, light breeze | Superb Fairy-wren | *Malurus cyaneus* | 8 | 20 | 266 | 2 | 0 | Perched |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1700 | 195 | 125 | 195 | Soaring/circling overhead, hunting |
| BUS16 | 6/08/2024 | 9:40 | AM | BUS | 9C, clear sky (1/8 cloud cover), very light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1800 | 195 | 80 | 195 | Soaring/circling overhead, hunting |
| BUS16 | 20/02/2024 | 3:13pm | PM - 1 | | 35C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 600 | | 80 | | soaring - west |
| BUS16 | 20/02/2024 | 15:13 | PM - 1 | | 35C, light wind, partly cloudy | Wedge-tailed Eagle | *Aquila audax* | 1 | 600 | West | 80 | | Soaring above canopy |
| BUS16 | 20/02/2024 | 3:43pm | PM - 2 | | 32C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | | 5 | | flying low - south |
| BUS16 | 20/02/2024 | 15:43 | PM - 2 | | 30C, light wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | South | 5 | | Flying low over vegetation |
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Welcome Swallow | *Hirundo neoxena* | 2 | 25 | 140 | 60 | 140 | Circling/foraging above |
| BUS16 | 21/10/2024 | 10:45-11:05 | MID | | 22 degrees, Sunny, light breeze | Whistling Kite | *Haliastur sphenurus* | 2 | 150 | 10 | 120 | 310 | Soaring |
| BUS16 | 22/10/2024 | 2:50-3:10 | PM | | 33 degrees, Sunny, Light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 30 | 120 | | | Heard calls |
| BUS16 | 20/02/2024 | 3:13pm | PM - 1 | | 35C, partly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | | 1 | | perched |
| BUS16 | 20/02/2024 | 3:43pm | PM - 2 | | 32C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | | 1 | | perched |
| BUS16 | 20/02/2024 | 15:13 | PM - 1 | | 35C, light wind, partly cloudy | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | North | 1 | | Perched in shrub |
| BUS16 | 20/02/2024 | 15:43 | PM - 2 | | 30C, light wind, moderate cloud cover | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | North | 1 | | Perched on shrub |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS16 | 7/08/2024 | 13:05 | MID | BUS | 16C, partly cloudy (3/8 cloud cover), light breeze | Willie Wagtail | *Rhipidura leucophrys* | 2 | 100 | 220 | 10 | 230 | Foraging, flying between tree branch and ground |
| BUS16 | 9/08/2024 | 16:40 | PM | BUS | 17C,6/8 cloud cover, light breeze | Willie Wagtail | *Rhipidura leucophrys* | 3 | 120 | 246 | 2 | 50 | Perched on shrub/calling |
| BUS16 | 9/08/2024 | 16:40 | PM | BUS | 17C,6/8 cloud cover, light breeze | Zebra Finch | *Taeniopygia guttata* | 6 | 80 | 270 | 2 | 520 | Nesting in tree |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 50 | | 2 | | |
| BUS17 | 20/02/2024 | 2:06pm | PM - 1 | | 32C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 150 | | 1 | | perched |
| BUS17 | 20/02/2024 | 2:36pm | PM - 2 | | 35C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 50 | | 1 | | perched |
| BUS17 | 20/02/2024 | 14:06 | PM - 1 | | 32C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 150 | South | 1 | | Perched in shrub |
| BUS17 | 20/02/2024 | 14:36 | PM - 2 | | 35C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 50 | West | 1 | | Perched in shrub |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 50 | | 1 | | |
| BUS17 | 7/08/2024 | 11:35 | MID | BUS | 15C, clear sky (2/8 cloud cover), no breeze (still) | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 50 | 200 | 15 | 220 | Perched on shrub, calling |
| BUS17 | 6/08/2024 | 9:05 | AM | BUS | 5C, light fog (8/8 cloud cover), no breeze (still) | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | 330 | 5 | 20 | Flew from track onto shrub |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 4 | | |
| BUS17 | 17/08/2022 | 1501 | | BUS | 18 Degrees, Overcast, Moderate Winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 1 | | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | perched in shrub |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 0 | | |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 0 | | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 20 | 260 | | | Foraging on ground |
| BUS17 | 25/02/2022 | 1427 | | BUS | Slightly cloudy, hot, 35 degrees | Australian Magpie | *Gymnorhina tibicen* | 1 | | | 20 | | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 2 | 400 | 290 | 15 | 10 | |
| BUS17 | 18/05/2022 | 2:47:00 | | BUS | 16 degrees, moderate wind, sunny | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | | 10 | 16 degrees, moderate wind, sunny | |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 200 | | 5 | | perched |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 200 | | 3 | 31 degrees, overcast, strong winds | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 500 | | 2 | north | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | | | 250 | | | Heard call/Aural |
| BUS17 | 22/10/2024 | 11:03-11:23 | MID | | 25 degrees, Sunny, Light winds | Australian Magpie | *Gymnorhina tibicen* | 2 | 120 | 305 | | | Heard calls |
| BUS17 | 23/10/2024 | 2:00-2:20 | PM | | 22 degrees, Light breeze | Australian Magpie | *Gymnorhina tibicen* | 1 | 300 | 280 | | | Heard calls |
| BUS17 | 6/08/2024 | 9:05 | AM | BUS | 5C, light fog (8/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 2 | 300 | 90 | 15 | 150 | Heard calling, flew overhead |
| BUS17 | 9/08/2024 | 14:35 | PM | BUS | 19C, partial sun, 6/8 cloud cover, moderate breeze | Australian Raven | *Corvus coronoides* | 1 | 600 | 228 | 15 | 315 | Flying a |
| BUS17 | 18/05/2022 | 2:47:00 | | BUS | 16 degrees, moderate wind, sunny | Australian Raven | *Corvus coronoides* | 2 | 100 | | 10 | 16 degrees, slight wind sunny | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Raven | *Corvus coronoides* | 3 | 800 | 20 | 2 | 340 | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Australian Raven | *Corvus coronoides* | | | 250 | | | Heard call/Aural |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 200 | | 7 | | |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 30 | | 12 | | |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 700 | | 40 | | hunting |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | | 35 | | hunting |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | | 20 | | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | | 12 | | |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 30 | | 2 | | |
| BUS17 | 20/02/2024 | 2:36pm | PM - 2 | | 35C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 80 | | 1 | | perched |
| BUS17 | 20/02/2024 | 14:36 | PM - 2 | | 35C, light wind, scattered cloud | Black-shouldered Kite | *Elanus axillaris* | 1 | 80 | North | 1 | | Perched in shrub |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 25 | | 1 | | perched on fence |
| BUS17 | 23/10/2024 | 2:00-2:20 | PM | | 22 degrees, Light breeze | Black-tailed Native-hen | *Tribonyx ventralis* | 5 | 300 | 280 | | | On ground |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Bluebonnet | *Northiella haematogaster* | 6 | 200 | | 5 | | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Bluebonnet | *Northiella haematogaster* | 4 | 300 | | 5 | south | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Brown Falcon | *Falco berigora* | 2 | 400 | | 30 | | |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Brown Falcon | *Falco berigora* | 1 | 500 | | 7 | | hunting |
| BUS17 | 7/08/2024 | 11:35 | MID | BUS | 15C, clear sky (2/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 1 | 25 | 80 | 20 | 120 | Perched on shrub, calling |
| BUS17 | 17/08/2022 | 1501 | | BUS | 18 Degrees, Overcast, Moderate Winds | Brown Songlark | *Cincloramphus cruralis* | 5 | 30 | | 10 | 18 Degrees, Overcast, Moderate Winds | |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 5 | 50 | | 10 | | |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 75 | | 7 | | |
| BUS17 | 6/08/2024 | 9:05 | AM | BUS | 5C, light fog (8/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 20 | 10 | 100 | Perched on shrub, calling |
| BUS17 | 20/02/2024 | 2:06pm | PM - 1 | | 32C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | | 1 | | perched |
| BUS17 | 20/02/2024 | 2:36pm | PM - 2 | | 35C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 3 | 50 | | 1 | | perched |
| BUS17 | 20/02/2024 | 14:06 | PM - 1 | | 32C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | South | 1 | | Perched in shrub |
| BUS17 | 20/02/2024 | 14:36 | PM - 2 | | 35C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 3 | 50 | West | 1 | | Perched in shrub |
| BUS17 | 9/08/2024 | 14:35 | PM | BUS | 19C, partial sun, 6/8 cloud cover, moderate breeze | Brown Songlark | *Cincloramphus cruralis* | 3 | 25 | 144 | 2 | 220 | Perched on shrub |
| BUS17 | 21/10/2024 | 9:40-10:00 | AM | | 19 degrees, Sunny, light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 30 | 90 | | | Perched |
| BUS17 | 23/10/2024 | 2:00-2:20 | PM | | 22 degrees, Light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | 254 | | | Heard calls |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Common starling | *Sturnus vulgaris* | 8 | 350 | | 15 | east | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Common starling | *Sturnus vulgaris* | 5 | 250 | | 5 | | |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Crested pigeon | *Ocyphaps lophotes* | 1 | 250 | | 5 | | |
| BUS17 | 17/08/2022 | 1501 | | BUS | 18 Degrees, Overcast, Moderate Winds | Crested pigeon | *Ocyphaps lophotes* | 1 | 30 | | 0 | | |
| BUS17 | 20/02/2024 | 2:06pm | PM - 1 | | 32C, partly cloudy, light wind | Emu | *Dromaius novaehollandiae* | 1 | 500 | | 0 | | moving east |
| BUS17 | 20/02/2024 | 14:06 | PM - 1 | | 32C, light wind, scattered cloud | Emu | *Dromaius novaehollandiae* | 1 | 500 | West | 0 | East | Moving through vegetation |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Fairy-wren | *Malurus spp.* | | | 330 | | | Heard call/Aural |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Little Black Cormorant | *Phalacrocorax sulcirostris* | 5 | 700 | | 30 | north-west | |
| BUS17 | 17/08/2022 | 1501 | | BUS | 18 Degrees, Overcast, Moderate Winds | Little Raven | *Corvus mellori* | 12 | 50 | | 50 | | |
| BUS17 | 18/05/2022 | 2:47:00 | | BUS | 16 degrees, moderate wind, sunny | Magpie-lark | *Grallina cyanoleuca* | 2 | 150 | | 10 | | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Magpie-lark | *Grallina cyanoleuca* | | | 340 | | | Heard call/Aural |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS17 | 18/05/2022 | 2:47:00 | | BUS | 16 degrees, moderate wind, sunny | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 50 | | |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | | 40 | | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | | 15 | | |
| BUS17 | 7/08/2024 | 11:40 | MID | BUS | 14C, Light wind, 1/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 400 | 267 | 10 | | Foraging/hunting |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 75 | | 10 | | hunting |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Southern whiteface | *Aphelocephala leucopsis* | 3 | 100 | | 1 | | |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Spotted Harrier | *Circus assimilis* | 1 | 150 | | 0 | | on ground |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 3 | 400 | | 25 | south-east | |
| BUS17 | 6/08/2024 | 9:05 | AM | BUS | 5C, light fog (8/8 cloud cover), no breeze (still) | Stubble Quail | *Coturnix pectoralis* | 3 | 10 | 310 | 0 | 280 | Running from track into shrubs |
| BUS17 | 25/02/2022 | 1427 | | BUS | Slightly cloudy, hot, 35 degrees | Superb Fairy-wren | *Malurus cyaneus* | 2 | | | 3 | Slightly cloudy, hot, 35 degrees | |
| BUS17 | 20/02/2024 | 2:36pm | PM - 2 | | 35C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 3 | 40 | | 1 | | perched |
| BUS17 | 20/02/2024 | 14:36 | PM - 2 | | 35C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 3 | 40 | South | 1 | | Perched in shrub |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Swamp Harrier | *Circus approximans* | 2 | 300 | | 5 | | hunting |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Swamp Harrier | *Circus approximans* | 1 | 250 | | 5 | | hunting |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Swamp Harrier | *Circus approximans* | 1 | 200 | | 3 | | hunting |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Tree martin | *Petrochelidon nigricans* | 4 | 250 | | 8 | | |
| BUS17 | 23/02/2024 | 8:30am | AM - 1 | | 21C, partly cloudy, moderate wind | Tree Martin | *Petrochelidon nigricans* | 30 | 100 | | 50 | | aerial feeding |
| BUS17 | 23/02/2024 | 9:00am | AM - 2 | | 21C, partly cloudy, moderate wind | Tree Martin | *Petrochelidon nigricans* | 30 | 100 | | 50 | | aerial feeding |
| BUS17 | 22/10/2024 | 11:03-11:23 | MID | | 25 degrees, Sunny, Light winds | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | 70 | 250 | 330 | Soaring |
| BUS17 | 7/08/2024 | 11:35 | MID | BUS | 15C, clear sky (2/8 cloud cover), no breeze (still) | Wedge-tailed Eagle | *Aquila audax* | 2 | 1800 | 75 | 200 | 75 | Circling/hunting overhead |
| BUS17 | 23/10/2024 | 2:00-2:20 | PM | | 22 degrees, Light breeze | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | 200 | 160 | 260 | |
| BUS17 | 22/10/2024 | 11:03-11:23 | MID | | 25 degrees, Sunny, Light winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | 330 | 80 | | Sitting in nest |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 400 | | 20 | | |
| BUS17 | 22/10/2024 | 11:03-11:23 | MID | | 25 degrees, Sunny, Light winds | Whistling Kite | *Haliastur sphenurus* | 2 | 600 | 113 | 100 | 220 | Flew up from dam |
| BUS17 | 20/02/2024 | 2:36pm | PM - 2 | | 35C, partly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 4 | 50 | | 6 | | foraging |
| BUS17 | 20/02/2024 | 14:36 | PM - 2 | | 35C, light wind, scattered cloud | White-fronted Chat | *Epthianura albifrons* | 4 | 50 | West | 6 | | Foraging at edge of water |
| BUS17 | 7/08/2024 | 11:35 | MID | BUS | 15C, clear sky (2/8 cloud cover), no breeze (still) | White-fronted Chat | *Epthianura albifrons* | 2 | 60 | 230 | 10 | 200 | Flying between shrubs, foraging |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | White-winged Chough | *Corcorax melanorhamphos* | 20 | 250 | | 0 | | |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 15 | 20 | | 1 | | |
| BUS17 | 16/11/2023 | 08:48am | | BUS | 16C, partly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 10 | 50 | | 1 | | |
| BUS17 | 22/10/2024 | 11:03-11:23 | MID | | 25 degrees, Sunny, Light winds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | 310 | | 300 | In shrub |
| BUS17 | 17/08/2022 | 1501 | | BUS | 18 Degrees, Overcast, Moderate Winds | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 20 | | 1 | | |
| BUS17 | 28/10/2021 | 1430 | | BUS | 31 degrees, overcast, strong winds | Yellow-throated miner | *Manorina flavigula* | 1 | 250 | | 3 | | |
| BUS17 | 16/11/2023 | 08:18am | | BUS | 15C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 1 | 50 | | | | heard |
| BUS17 | 20/02/2024 | 2:36pm | PM - 2 | | 35C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 4 | 20 | | 1 | | perched |
| BUS17 | 20/02/2024 | 14:36 | PM - 2 | | 35C, light wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 4 | 20 | West | 1 | | Perched in shrub |
| BUS18 | 29/02/2024 | 11:20 | MID 1 | | Partly cloudy, moderate winds, 36 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 1 | | | 15 | | |
| BUS18 | 29/02/2024 | 11:50 | MID 2 | | Partly cloudy, moderate winds, 36 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 30 | | 1 | | |
| BUS18 | 29/02/2024 | 7:30 | AM 1 | | Clear, sunny, 23 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 8 | 50 | | 0 | | |
| BUS18 | 29/02/2024 | 8:00 | AM 2 | | Clear, sunny, 23 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | | 0 | | |
| BUS18 | 16/11/2023 | 09:35am | | BUS | 17C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | |
| BUS18 | 16/11/2023 | 1:45pm | | BUS | 26C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 0 | | |
| BUS18 | 16/11/2023 | 05:10pm | | BUS | 27C, partly cloudy, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 75 | | 0 | | |
| BUS18 | 22/10/2024 | 1:40-2:00 | MID | | 31 degrees, Sunny, Light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 352 | | | In grass |
| BUS18 | 29/02/2024 | 7:30 | AM 1 | | Clear, sunny, 23 degrees | Australian Magpie | *Gymnorhina tibicen* | | | | | | Heard |
| BUS18 | 29/02/2024 | 8:00 | AM 2 | | Clear, sunny, 23 degrees | Australian Magpie | *Gymnorhina tibicen* | | | | | | Heard |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Australian Magpie | *Gymnorhina tibicen* | 2 | 800 | 230 | 20 | 170 | Heard calling |
| BUS18 | 16/11/2023 | 1:45pm | | BUS | 26C, mostly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 500 | | 10 | | |
| BUS18 | 5/08/2024 | 16:30 | PM | BUS | 14C, light winds, 3/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 5 | 100 | 223 | 10 | 151 | |
| BUS18 | 16/11/2023 | 09:35am | | BUS | 17C, partly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 250 | | 3 | north-west | |
| BUS18 | 10/06/2024 | 2:10 PM | | BUS | 16 c, still, overcast | Australian Magpie | *Gymnorhina tibicen* | 1 | 800 | 130 | 0 | | On ground |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 1 | 10 | 200 | 30 | 10 | Flying overhead from woodland |
| BUS18 | 29/02/2024 | 8:00 | AM 2 | | Clear, sunny, 23 degrees | Australian Raven | *Corvus coronoides* | 2 | 30 | | 5 | NW | |
| BUS18 | 29/02/2024 | 7:30 | AM 1 | | Clear, sunny, 23 degrees | Australian Raven | *Corvus coronoides* | 1 | 100 | | 2 | NE | |
| BUS18 | 10/06/2024 | 2:10 PM | | BUS | 16 c, still, overcast | Australian Raven | *Corvus coronoides* | 2 | 500 | 316 | 10 | 220 | Heard calling |
| BUS18 | 16/11/2023 | 1:45pm | | BUS | 26C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 200 | | | | heard |
| BUS18 | 8/08/2024 | 12:53 | MID | BUS | 16C, overcast 7/8 cloud cover, High winds | Black Kite | *Milvus migrans* | 2 | 600 | 70 | 40 | 140 | |
| BUS18 | 29/02/2024 | 7:30 | AM 1 | | Clear, sunny, 23 degrees | Black-shouldered Kite | *Elanus axillaris* | 1 | 350 | | 25 | | Hovering |
| BUS18 | 10/06/2024 | 2:10 PM | | BUS | 16 c, still, overcast | Brown Quail | *Synoicus ypsilophorus* | 2 | 80 | 166 | 1 | 45 | Flushed from grass |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 140 | 20 | 70 | Heard calling, perched on shrub |
| BUS18 | 16/11/2023 | 1:45pm | | BUS | 26C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 10 | | |
| BUS18 | 29/02/2024 | 8:00 | AM 2 | | Clear, sunny, 23 degrees | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | 4 | | Heard |
| BUS18 | 29/02/2024 | 7:30 | AM 1 | | Clear, sunny, 23 degrees | Brown Songlark | *Cincloramphus cruralis* | 5 | 10 | | 3 | N | |
| BUS18 | 29/02/2024 | 11:20 | MID 1 | | Partly cloudy, moderate winds, 36 degrees | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 1 | | |
| BUS18 | 16/11/2023 | 05:10pm | | BUS | 27C, partly cloudy, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 5 | | |
| BUS18 | 8/08/2024 | 12:53 | MID | BUS | 16C, overcast 7/8 cloud cover, High winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 0 | 70 | 0 | | Heard call/Aural |
| BUS18 | 16/11/2023 | 09:35am | | BUS | 17C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | | | | heard |
| BUS18 | 10/06/2024 | 2:10 PM | | BUS | 16 c, still, overcast | Brown Songlark | *Cincloramphus cruralis* | 2 | 150 | 255 | 0 | | Foraging over shrubs |
| BUS18 | 22/10/2024 | 1:40-2:00 | MID | | 31 degrees, Sunny, Light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | 243 | | | Heard calls |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS18 | 29/02/2024 | 11:50 | MID 2 | | Partly cloudy, moderate winds, 36 degrees | Emu | *Dromaius novaehollandiae* | 2 | 100 | | 0 | | |
| BUS18 | 10/06/2024 | 2:10 PM | | BUS | 16 c, still, overcast | Grey Teal | *Anas gracilis* | 3 | 800 | 130 | 30 | 130 | Flying around agricultural dam, before landing |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 325 | 50 | 300 | Hovering/hunting overhead, landed on shrub |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 350 | 45 | 320 | Hovering/hunting over shrubland |
| BUS18 | 16/11/2023 | 09:35am | | BUS | 17C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | | 20 | | |
| BUS18 | 16/11/2023 | 05:10pm | | BUS | 27C, partly cloudy, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | | 10 | | hunting |
| BUS18 | 16/11/2023 | 09:35am | | BUS | 17C, partly cloudy, light wind | Peregrine Falcon | *Falco peregrinus* | 1 | 20 | | 25 | south | |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Stubble Quail | *Coturnix pectoralis* | 1 | 35 | 140 | 1 | 120 | Flew out of shrub |
| BUS18 | 29/02/2024 | 7:30 | AM 1 | | Clear, sunny, 23 degrees | Swamp Harrier | *Circus approximans* | 2 | 80 | | 3 | SW | |
| BUS18 | 29/02/2024 | 11:50 | MID 2 | | Partly cloudy, moderate winds, 36 degrees | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | | 150 | | Circling |
| BUS18 | 29/02/2024 | 11:20 | MID 1 | | Partly cloudy, moderate winds, 36 degrees | Wedge-tailed Eagle | *Aquila audax* | 2 | 400 | | 120 | | Circling |
| BUS18 | 8/08/2024 | 12:53 | MID | BUS | 16C, overcast 7/8 cloud cover, High winds | Wedge-tailed Eagle | *Aquila audax* | 3 | 800 | 156 | 60 | | Circling |
| BUS18 | 16/11/2023 | 09:35am | | BUS | 17C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 100 | | 50 | | |
| BUS18 | 16/11/2023 | 1:45pm | | BUS | 26C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 30 | | |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | Whistling Kite | *Haliastur sphenurus* | 1 | 450 | 10 | 80 | 120 | Soaring/hunting over shrubland |
| BUS18 | 7/08/2024 | 9:00 | AM | BUS | 7C, clear sky (0/8 cloud cover), no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | 5 | 50 | 250 | 3 | 250 | Flying between shrubs, foraging |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 6 | 25 | | 15 | | |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 50 | | 10 | | |
| BUS19 | 22/02/2024 | 11:19am | MID - 1 | | 29C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 40 | | 5 | | |
| BUS19 | 22/02/2024 | 2:00pm | PM - 1 | | 36C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 30 | | 5 | | flying between shrubs |
| BUS19 | 22/02/2024 | 11:49am | MID - 2 | | 32C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 8 | 20 | | 1 | | perched in shrubs |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 100 | 65 | 20 | 80 | Oscillating flight over shrubland |
| BUS19 | 22/02/2024 | 11:19am | MID - 1 | | 29C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 3 | 600 | | 7 | | perched on water tank |
| BUS19 | 22/02/2022 | 1535 | | BUS | Sunny, clear skies, 27 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 15 | | |
| BUS19 | 17/08/2022 | 1640 | | BUS | 16 Degrees, Opvercast, Slight Winds | Australian Magpie | *Gymnorhina tibicen* | 3 | 30 | | 10 | | |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 250 | 225 | 10 | 225 | Heard calling |
| BUS19 | 18/05/2022 | 4:25:00 | | BUS | 14 degrees, sunny, moderate wind | Australian Magpie | *Gymnorhina tibicen* | 30 | 20 | | 8 | 14 degrees, sunny, moderate wind | |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Australian Magpie | *Gymnorhina tibicen* | 1 | 45 | | 5 | | |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 4 | 500 | 315 | 40 | 210 | Flying overhead, heard calling |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 6 | 800 | 125 | 30 | 70 | Flying over shrubland, heard calling |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Australian Raven | *Corvus coronoides* | 5 | 100 | | 25 | | |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 1 | 500 | | 15 | north | |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Australian Raven | *Corvus coronoides* | 1 | 200 | 40 | 20 | 160 | Flying |
| BUS19 | 18/05/2022 | 4:25:00 | | BUS | 14 degrees, sunny, moderate wind | Australian Raven | *Corvus coronoides* | 1 | 50 | | 12 | | |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Australian Raven | *Corvus coronoides* | 1 | 0 | 188 | 0 | 0 | Heard call |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Black Kite | *Milvus migrans* | 2 | 150 | 295 | 40 | 310 | Gliding |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 10 | 10 | 25 | 60 | Percched on shrub |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | | 15 | | hunting |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | | 15 | west | |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 2 | 1000 | 250 | 8 | 250 | Nesting in man-made structure |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 3 | 250 | | 1 | | perched in shrubs |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 80 | | 1 | | perched in shrub |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 75 | | 1 | | perched in shrub |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Bluebonnet | *Northiella haematogaster* | 2 | 100 | | 12 | | |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 4 | 50 | | 8 | | |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 3 | 100 | | 5 | | |
| BUS19 | 22/02/2024 | 2:30pm | PM - 2 | | 36C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 2 | south | |
| BUS19 | 22/02/2024 | 11:19am | MID - 1 | | 29C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | 1 | | perched in shrub |
| BUS19 | 22/02/2024 | 2:00pm | PM - 1 | | 36C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 25 | | 1 | | perched in shrub |
| BUS19 | 22/02/2024 | 2:30pm | PM - 2 | | 36C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 1 | | perched in shrub |
| BUS19 | 22/02/2024 | 2:30pm | PM - 2 | | 36C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | 1 | | perched in shrub |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Brown Songlark | *Cincloramphus cruralis* | 3 | 15 | 216 | 1 | 245 | Perched on shrub |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Galah | *Eolophus roseicapilla* | 25 | 50 | | 30 | | |
| BUS19 | 22/02/2022 | 1535 | | BUS | Sunny, clear skies, 27 degrees | Little Crow | *Corvus bennetti* | 1 | | | 80 | | |
| BUS19 | 17/08/2022 | 1640 | | BUS | 16 Degrees, Opvercast, Slight Winds | Little Raven | *Corvus mellori* | 2 | 30 | | 30 | 16 Degrees, Opvercast, Slight Winds | |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Magpie-lark | *Grallina cyanoleuca* | 1 | 45 | | 1 | | |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 150 | | 50 | | hunting |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 600 | | 40 | | hunting |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 600 | | 40 | | hunting |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 600 | | 25 | | hunting |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Nankeen Kestrel | *Falco cenchroides* | 3 | 50 | 127 | 20 | 220 | Hovering over shrublands |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 330 | 20 | 245 | Hovering over shrublands |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Nankeen kestrel | *Falco cenchroides* | 2 | 150 | | 12 | | |
| BUS19 | 28/10/2021 | 1555 | | BUS | N/A | Noisy miner | *Manorina melanocephala* | 2 | 40 | | 10 | | |
| BUS19 | 17/08/2022 | 1640 | | BUS | 16 Degrees, Opvercast, Slight Winds | Noisy Miner | *Manorina melanocephala* | 1 | 20 | | 10 | | |
| BUS19 | 18/05/2022 | 4:25:00 | | BUS | 14 degrees, sunny, moderate wind | Noisy Miner | *Manorina melanocephala* | 4 | 30 | | 2 | | |
| BUS19 | 18/05/2022 | 4:25:00 | | BUS | 14 degrees, sunny, moderate wind | Red-rumped Parrot | *Psephotus haematonotus* | 1 | 5 | | 3 | | |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 4 | 50 | | 0 | | |
| BUS19 | 22/02/2024 | 2:00pm | PM - 1 | | 36C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 2 | 200 | | 1 | | perched on fence |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Swamp Harrier | *Circus approximans* | 1 | 100 | | 3 | | hunting |
| BUS19 | 22/02/2022 | 1535 | | BUS | Sunny, clear skies, 27 degrees | Wedge-tailed Eagle | *Aquila audax* | 1 | | | 200 | | |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | Wedge-tailed Eagle | *Aquila audax* | 3 | 30 | 230 | 120 | 220 | Circling observers at BUS point |
| BUS19 | 22/02/2024 | 8:20am | AM - 1 | | 22C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | | 100 | | soaring |
| BUS19 | 22/02/2024 | 8:50am | AM - 2 | | 24C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 1000 | | 80 | | soaring - west |
| BUS19 | 22/02/2024 | 2:00pm | PM - 1 | | 36C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | | 20 | | landed by dam |
| BUS19 | 22/02/2024 | 11:19am | MID - 1 | | 29C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | | 10 | east | |
| BUS19 | 22/02/2024 | 2:30pm | PM - 2 | | 36C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 10 | | |
| BUS19 | 5/08/2024 | 8:45 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 30 | 10 | 2 | 40 | Flying between shrubs, heard calling |
| BUS19 | 9/08/2024 | 13:00 | MID | BUS | 18C, sunny, 4/8 cloud cover, light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 20 | 85 | 1 | 140 | In shrub |
| BUS19 | 22/02/2024 | 11:19am | MID - 1 | | 29C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 650 | | 1 | | perched on fence |
| BUS19 | 22/02/2022 | 1535 | | BUS | Sunny, clear skies, 27 degrees | Yellow-throated Miner | *Manorina flavigula* | 4 | | | 10 | | |
| BUS19 | 13/06/2024 | 2:30-2:50 PM | | BUS | 11 c, Light Northerly, overcast | Black-shouldered Kite | *Elanus axillaris* | 6 | 250 | 303 | 30 | 272 | Hunting |
| BUS19 | 13/06/2024 | 2:30-2:50 PM | | BUS | 11 c, Light Northerly, overcast | Spotted Harrier | *Circus assimilis* | 1 | 700 | 267 | 1 | 163 | Flying low, hunting |
| BUS20 | 21/02/2024 | 3:50pm | PM - 1 | | 35C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 6 | 20 | | 6 | north | |
| BUS20 | 21/02/2024 | 4:20pm | PM - 2 | | 35C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 80 | | 6 | west | |
| BUS20 | 21/02/2024 | 15:50 | PM - 1 | | 35C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 6 | 20 | North | 6 | North | Flying from grass |
| BUS20 | 21/02/2024 | 16:20 | PM - 2 | | 35C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 80 | North | 6 | West | Flying above canopy, flew west |
| BUS20 | 21/02/2024 | 12:30pm | MID - 1 | | 33C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 1 | | perched |
| BUS20 | 21/02/2024 | 1:00pm | MID - 2 | | 33C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | perched |
| BUS20 | 21/02/2024 | 12:30 | MID - 1 | | 33C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | West | 1 | | Perched on post |
| BUS20 | 21/02/2024 | 13:00 | MID - 2 | | 33C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | North | 1 | | Perched in shrub |
| BUS20 | 21/02/2024 | 1:00pm | MID - 2 | | 33C, partly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 40 | | 15 | west | |
| BUS20 | 21/02/2024 | 13:00 | MID - 2 | | 33C, light wind, scattered cloud | Australian Magpie | *Gymnorhina tibicen* | 2 | 40 | East | 15 | West | Flying above canopy, flew west |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Australian Magpie | *Gymnorhina tibicen* | 1 | 400 | West | 1 | | Foraging in grass |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 400 | | 0 | | foraging |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Australian Magpie | *Gymnorhina tibicen* | 5 | 30 | | 10 | | |
| BUS20 | 22/02/2022 | 1636 | | BUS | Sunny, clear skies, 27 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 8 | | |
| BUS20 | 18/05/2022 | 3:54:00 | | BUS | 16 degrees, slight wind sunny | Australian Magpie | *Gymnorhina tibicen* | 1 | 30 | | 6 | | |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 75 | | 0 | | |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 3 | 100 | | 20 | north | |
| BUS20 | 5/08/2024 | 8:20 | AM | BUS | 8C, overcast, slight breze | Australian Raven | *Corvus coronoides* | 2 | 80 | 343 | 25 | 290 | In flight |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 8 | 100 | | 6 | north | |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | Australian Raven | *Corvus coronoides* | 8 | 100 | North | 6 | North | Flying above canopy, flew north |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Australian Raven | *Corvus coronoides* | 3 | 100 | East | 3 | North | Flying above canopy, flew North |
| BUS20 | 6/08/2024 | 11:55 | MID | BUS | 12C, scattered cloud (2/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 2 | 50 | 300 | 15 | 340 | Heard calling |
| BUS20 | 6/08/2024 | 11:55 | MID | BUS | 12C, scattered cloud (2/8 cloud cover), no breeze (still) | Australian Wood Duck | *Chenonetta jubata* | 2 | 100 | 330 | 25 | 270 | Flew overhead from flooded area |
| BUS20 | 5/08/2024 | 8:20 | AM | BUS | 8C, overcast, slight breze | Black Kite | *Milvus migrans* | 1 | 60 | 40 | 18 | 180 | Soaring |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Black-eared Cuckoo | *Chrysococcyx osculans* | 1 | 10 | | 15 | | |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 15 | | 2 | | |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 2 | 80 | | 40 | | fighting each other |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 2 | 80 | North | 40 | | fighting each other |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 3 | 60 | | 20 | | hovering |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 3 | 60 | West | 20 | | Hovering above canopy |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 2 | 500 | | 20 | north | |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 80 | | 12 | north | |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 15 | | 8 | north | |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 2 | 500 | North | 2 | North | Flying above canopy |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 80 | North | 1 | North | Flying above canopy, flew north |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 15 | South | 1 | North | Flying above canopy, flew north |
| BUS20 | 18/05/2022 | 3:54:00 | | BUS | 16 degrees, slight wind sunny | Bluebonnet | *Northiella haematogaster* | 2 | 60 | | 4 | | |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Bluebonnet | *Northiella haematogaster* | 6 | 50 | | 1 | | |
| BUS20 | 21/02/2024 | 13:00 | MID - 2 | | 33C, light wind, scattered cloud | Brown Falcon | *Falco berigora* | 1 | 100 | East | 30 | North | Flying above canopy, flew north |
| BUS20 | 21/02/2024 | 15:50 | PM - 1 | | 35C, light wind, scattered cloud | Brown Quail | *Synoicus ypsilophorus* | 3 | 20 | North | 3 | North | Flushed from grass |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Brown Quail | *Synoicus ypsilophorus* | 1 | 10 | South | 1 | | Flushed from grass |
| BUS20 | 21/02/2024 | 4:20pm | PM - 2 | | 35C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 60 | | 3 | south | |
| BUS20 | 21/02/2024 | 16:20 | PM - 2 | | 35C, light wind, scattered cloud | Brown Songlark | *Cincloramphus cruralis* | 1 | 60 | North | 3 | South | Flying above canopy, flew south |
| BUS20 | 6/08/2024 | 11:55 | MID | BUS | 12C, scattered cloud (2/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 330 | 1 | 330 | Heard calling, perched on shrub |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Crested pigeon | *Ocyphaps lophotes* | 1 | 80 | | 5 | | |
| BUS20 | 21/02/2024 | 12:30pm | MID - 1 | | 33C, partly cloudy, light wind | Fairy Martin | *Petrochelidon ariel* | 15 | 80 | | 12 | | aerial feeding |
| BUS20 | 21/02/2024 | 12:30 | MID - 1 | | 33C, light wind, scattered cloud | Fairy Martin | *Petrochelidon ariel* | 15 | 80 | North | 12 | | aerial feeding |
| BUS20 | 21/02/2024 | 1:00pm | MID - 2 | | 33C, partly cloudy, light wind | Fairy Martin | *Petrochelidon ariel* | 4 | 60 | | 10 | | aerial feeding |
| BUS20 | 21/02/2024 | 13:00 | MID - 2 | | 33C, light wind, scattered cloud | Fairy Martin | *Petrochelidon ariel* | 4 | 60 | East | 10 | | aerial feeding |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Galah | *Eolophus roseicapilla* | 5 | 20 | | 15 | 16 Degrees, Overcast, Mild Winds | |
| BUS20 | 22/02/2022 | 1636 | | BUS | Sunny, clear skies, 27 degrees | Galah | *Eolophus roseicapilla* | 10 | | | 12 | | |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Galah | *Eolophus roseicapilla* | 2 | 50 | | 5 | | |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | Galah | *Eolophus roseicapilla* | 7 | 80 | | 6 | east | |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | Galah | *Eolophus roseicapilla* | 7 | 80 | North | 6 | East | Flying above canopy, flew east |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Grey Butcherbird | *Cracticus torquatus* | 1 | 15 | | 12 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS20 | 5/08/2024 | 8:20 | AM | BUS | 8C, overcast, slight breze | Grey Teal | *Anas gracilis* | 13 | 60 | 295 | 8 | 230 | Edge of water |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Horsfield's Bronze-Cuckoo | *Chalcites basalis* | 1 | 30 | | 10 | | |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Magpie-lark | *Grallina cyanoleuca* | 1 | 20 | | 15 | | |
| BUS20 | 21/02/2024 | 1:00pm | MID - 2 | | 33C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 30 | | hovering |
| BUS20 | 21/02/2024 | 13:00 | MID - 2 | | 33C, light wind, scattered cloud | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | East | 30 | | Hovering above canopy |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 30 | | 20 | | |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 20 | | |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | | 20 | | hovering |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | North | 20 | | Hovering above canopy |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Noisy miner | *Manorina melanocephala* | 3 | 15 | | 15 | | |
| BUS20 | 18/05/2022 | 3:54:00 | | BUS | 16 degrees, slight wind sunny | Noisy Miner | *Manorina melanocephala* | 1 | 20 | | 6 | | |
| BUS20 | 22/02/2022 | 1636 | | BUS | Sunny, clear skies, 27 degrees | Pied Butcherbird | *Cracticus nigrogularis* | 1 | | | 5 | | |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Pied butcherbird | *Cracticus nigrogularis* | 1 | 40 | | 2 | 17 degrees, sunny, strong winds | |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Red-rumped parrot | *Psephotus heamatonotus* | 2 | 20 | | 15 | | |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Red-rumped Parrot | *Psephotus heamatonotus* | 18 | 20 | | 15 | | |
| BUS20 | 22/02/2022 | 1636 | | BUS | Sunny, clear skies, 27 degrees | Red-rumped parrot | *Psephotus heamatonotus* | 8 | | | 10 | | |
| BUS20 | 18/05/2022 | 3:54:00 | | BUS | 16 degrees, slight wind sunny | Red-rumped Parrot | *Psephotus heamatonotus* | 2 | 40 | | 6 | | |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | Spotted Harrier | *Circus assimilis* | 1 | 100 | | 4 | south | |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | Spotted Harrier | *Circus assimilis* | 1 | 100 | West | 4 | South | Immature individual, flying above canopy |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Striated pardalote | *Pardalotus striatus* | 1 | 15 | | 15 | | |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 10 | | 6 | | flushed |
| BUS20 | 21/02/2024 | 3:50pm | PM - 1 | | 35C, partly cloudy, light wind | Stubble Quail | *Coturnix pectoralis* | 3 | 20 | | 3 | west | |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Superb Fairy-wren | *Malurus cyaneus* | 2 | 20 | North | 2 | | Heard calling from shrub |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 2 | 20 | | 1 | | calling |
| BUS20 | 21/02/2024 | 3:50pm | PM - 1 | | 35C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 4 | 10 | | 1 | | perched |
| BUS20 | 21/02/2024 | 4:20pm | PM - 2 | | 35C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 4 | 30 | | 1 | | calling |
| BUS20 | 21/02/2024 | 15:50 | PM - 1 | | 35C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 4 | 10 | North | 1 | | Perched on post |
| BUS20 | 21/02/2024 | 16:20 | PM - 2 | | 35C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 4 | 30 | North | 1 | | Heard calling from shrub |
| BUS20 | 21/02/2024 | 12:30pm | MID - 1 | | 33C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 30 | | 150 | | soaring into thermals |
| BUS20 | 21/02/2024 | 12:30 | MID - 1 | | 33C, light wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 2 | 30 | East | 150 | | Soaring on thermal above canopy |
| BUS20 | 30/10/2021 | 1105 | | BUS | 17 degrees, sunny, strong winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 150 | | 100 | | |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | | 3 | | perched |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | | 3 | south | |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | South | 2 | South | Perched on shrub, flew South |
| BUS20 | 21/02/2024 | 7:25am | AM - 2 | | 22C, mostly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 1 | 80 | | 1 | | perched |
| BUS20 | 21/02/2024 | 1:00pm | MID - 2 | | 33C, partly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 2 | 40 | | 1 | | perched |
| BUS20 | 21/02/2024 | 3:50pm | PM - 1 | | 35C, partly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 2 | 60 | | 1 | | perched |
| BUS20 | 21/02/2024 | 7:25 | AM - 2 | | 22C, light wind, moderate cloud cover | White-fronted Chat | *Epthianura albifrons* | 1 | 80 | North | 1 | | Perched in shrub |
| BUS20 | 21/02/2024 | 13:00 | MID - 2 | | 33C, light wind, scattered cloud | White-fronted Chat | *Epthianura albifrons* | 2 | 40 | East | 1 | | Perched in shrub |
| BUS20 | 21/02/2024 | 15:50 | PM - 1 | | 35C, light wind, scattered cloud | White-fronted Chat | *Epthianura albifrons* | 2 | 60 | North | 1 | | Perched in shrub |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | White-fronted Chat | *Epthianura albifrons* | 4 | 20 | | 3 | | perched |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | White-fronted Chat | *Epthianura albifrons* | 4 | 20 | North | 4 | | Perched in shrub |
| BUS20 | 6/08/2024 | 11:55 | MID | BUS | 12C, scattered cloud (2/8 cloud cover), no breeze (still) | White-fronted Chat | *Epthianura albifrons* | 6 | 20 | 230 | 10 | 340 | Heard calling, flying between shrubs, foraging |
| BUS20 | 5/08/2024 | 8:20 | AM | BUS | 8C, overcast, slight breze | White-fronted Chat | *Epthianura albifrons* | 6 | 40 | 230 | 12 | 145 | In flight/ above shrubland |
| BUS20 | 6/08/2024 | 11:55 | MID | BUS | 12C, scattered cloud (2/8 cloud cover), no breeze (still) | White-necked Heron | *Ardea pacifica* | 1 | 10 | 150 | 20 | 310 | Flew overhead toward to flooded area |
| BUS20 | 6/08/2024 | 11:55 | MID | BUS | 12C, scattered cloud (2/8 cloud cover), no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | 9 | 30 | 25 | 6 | 330 | Flying between shrubs, heard calling |
| BUS20 | 5/08/2024 | 8:20 | AM | BUS | 8C, overcast, slight breze | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 15 | 331 | 0 | 0 | Heard call |
| BUS20 | 17/08/2022 | 1537 | | BUS | 16 Degrees, Overcast, Mild Winds | Yellow-throated Miner | *Manorina flavigula* | 8 | 10 | | 12 | | |
| BUS20 | 22/02/2022 | 1636 | | BUS | Sunny, clear skies, 27 degrees | Yellow-throated Miner | *Manorina flavigula* | 4 | | | 6 | | |
| BUS20 | 21/02/2024 | 3:50pm | PM - 1 | | 35C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 6 | 30 | | 4 | | perched |
| BUS20 | 21/02/2024 | 6:55 | AM - 1 | | 22C, light wind, moderate cloud cover | Zebra Finch | *Taeniopygia guttata* | 4 | 30 | North | 4 | | Perched in shrub |
| BUS20 | 21/02/2024 | 15:50 | PM - 1 | | 35C, light wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 6 | 30 | East | 4 | | Perched in shrub |
| BUS20 | 21/02/2024 | 4:20pm | PM - 2 | | 35C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 50 | | 2 | | calling |
| BUS20 | 21/02/2024 | 16:20 | PM - 2 | | 35C, light wind, scattered cloud | Zebra Finch | *Taeniopygia guttata* | 2 | 50 | North | 2 | | Heard calling from shrub |
| BUS20 | 21/02/2024 | 6:55am | AM - 1 | | 22C, mostly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 4 | 30 | | 1 | | perched |
| BUS21 | 16/11/2023 | 11:45am | | BUS | 22C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 75 | | 3 | | |
| BUS21 | 6/08/2024 | 8:00 | AM | BUS | 2C, foggy, overcast, no breeze | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 40 | 243 | 2 | 250 | In shrub |
| BUS21 | 6/08/2024 | 8:00 | AM | BUS | 2C, foggy, overcast, no breeze | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 10 | 157 | 0 | 0 | Heard call |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 150 | 340 | 3 | 340 | Within grassy groundcover |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Australian Magpie | *Gymnorhina tibicen* | 2 | 800 | 300 | 20 | 235 | Flying overhead |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 350 | 250 | 15 | 250 | Heard calling from woodland |
| BUS21 | 6/08/2024 | 8:00 | AM | BUS | 2C, foggy, overcast, no breeze | Australian Magpie | *Gymnorhina tibicen* | 1 | 0 | 260 | 0 | 0 | Heard call |
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | Australian Magpie | *Gymnorhina tibicen* | 4 | 100 | 275 | 0 | 0 | Heard call |
| BUS21 | 10/06/2024 | 3:54 PM | | BUS | 16 c, still, overcast | Australian Magpie | *Gymnorhina tibicen* | 1 | | | | | Heard calling |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Australian Magpie | *Gymnorhina tibicen* | 1 | | | | | Heard calling |
| BUS21 | 16/11/2023 | 11:45am | | BUS | 22C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 2 | 100 | | 30 | | circling paddock |
| BUS21 | 12/06/2024 | 8:54 AM | | BUS | 10 c, moderate wind, clear skies | Australian Raven | *Corvus coronoides* | 1 | 800 | 268 | 30 | 130 | Flying |
| BUS21 | 16/11/2023 | 11:45am | | BUS | 22C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 500 | | 25 | north-west | |
| BUS21 | 12/06/2024 | 8:54 AM | | BUS | 10 c, moderate wind, clear skies | Australian Raven | *Corvus coronoides* | 6 | 1000 | 290 | 25 | 209 | Flying |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | Australian Raven | *Corvus coronoides* | 1 | 80 | 309 | 15 | 40 | Flew into tree |
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | Australian Raven | *Corvus coronoides* | 3 | 120 | 225 | 15 | 145 | In flight above shrubland |
| BUS21 | 12/06/2024 | 8:54 AM | | BUS | 10 c, moderate wind, clear skies | Australian Raven | *Corvus coronoides* | 2 | 900 | 325 | 10 | 195 | Flying |
| BUS21 | 5/08/2024 | 3:00 | PM | BUS | 14c, still, dry 7/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 10 | 281 | 10 | 174 | |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 1 | 200 | 50 | 10 | 310 | Heard calling |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 500 | 266 | 10 | 234 | |
| BUS21 | 6/08/2024 | 8:00 | AM | BUS | 2C, foggy, overcast, no breeze | Australian Raven | *Corvus coronoides* | 2 | 0 | 260 | 0 | 0 | Heard call |
| BUS21 | 16/11/2023 | 11:15am | | BUS | 21C, mostly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 500 | | 40 | | |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Black Kite | *Milvus migrans* | 1 | 80 | 345 | 15 | 57 | Flying overhead, hunting |
| BUS21 | 16/11/2023 | 02:45pm | | BUS | 27C, mostly cloudy, light wind | Brown Falcon | *Falco berigora* | 1 | 100 | | 1 | | perched in shrub |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Brown Quail | *Synoicus ypsilophorus* | 1 | 100 | 340 | 1 | 340 | Flushed from grass |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Brown Quail | *Synoicus ypsilophorus* | 1 | 100 | 340 | 1 | 100 | Flushed from grass |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 50 | 12 | 90 | Heard calling, perched on fenceline |
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | Brown Songlark | *Cincloramphus cruralis* | 1 | 0 | 0 | 0 | 0 | Heard call |
| BUS21 | 16/11/2023 | 11:15am | | BUS | 21C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | | | | heard |
| BUS21 | 16/11/2023 | 11:45am | | BUS | 22C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS21 | 16/11/2023 | 02:45pm | | BUS | 27C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | Emu | *Dromaius novaehollandiae* | 3 | 800 | 300 | | | |
| BUS21 | 5/08/2024 | 3:00 | PM | BUS | 14c, still, dry 7/8 cloud cover | Fairy-wren | *Malurus spp.* | 2 | 5 | 157 | | | Heard call/Aural |
| BUS21 | 16/11/2023 | 11:15am | | BUS | 21C, mostly cloudy, light wind | Galah | *Eolophus roseicapilla* | 4 | 800 | | 20 | north-west | |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 300 | 50 | 70 | Hovering, hunting |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 1000 | 130 | 40 | 200 | |
| BUS21 | 16/11/2023 | 02:45pm | | BUS | 27C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 75 | | 30 | west | |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 800 | 300 | 15 | | Hovering |
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | Noisy Miner | *Manorina melanocephala* | 1 | 80 | 309 | 15 | 15 | Flew into tree |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | Striated Pardalote | *Pardalotus striatus* | 5 | 300 | 270 | 10 | 270 | Calling from woodland |
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | Superb Fairy-wren | *Malurus cyaneus* | 1 | 10 | 315 | 0 | 0 | Heard call |
| BUS21 | 5/08/2024 | 3:00 | PM | BUS | 14c, still, dry 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 2 | 2000 | 220 | 500 | | Circling |
| BUS21 | 5/08/2024 | 3:00 | PM | BUS | 14c, still, dry 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 2 | 1500 | 220 | 250 | | Circling |
| BUS21 | 5/08/2024 | 3:00 | PM | BUS | 14c, still, dry 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 2 | 100 | 29 | 130 | | Circling |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1800 | 350 | 100 | 320 | Circling/hunting overhead |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | 111 | 80 | | Circling |
| BUS21 | 16/11/2023 | 11:15am | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | | 50 | | |
| BUS21 | 10/06/2024 | 3:54 PM | | BUS | 16 c, still, overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | 45 | 50 | 105 | Soaring overhead |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 3000 | 105 | 50 | | Circling |
| BUS21 | 16/11/2023 | 11:45am | | BUS | 22C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | | 10 | | |
| BUS21 | 8/08/2024 | 16:40 | PM | BUS | 17C, moderate breeze , overcast | White-fronted Chat | *Epthianura albifrons* | 3 | 20 | 313 | 1 | 230 | In shrub |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | White-fronted Chat | *Epthianura albifrons* | 5 | 200 | 35 | 10 | 340 | Flying between shrubs |
| BUS21 | 10/06/2024 | 3:54 PM | | BUS | 16 c, still, overcast | White-fronted Chat | *Epthianura albifrons* | 2 | 70 | 45 | 10 | 45 | Flying overhead, landing on shrub |
| BUS21 | 16/11/2023 | 11:15am | | BUS | 21C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 20 | 50 | | 1 | | amongst shrubs |
| BUS21 | 16/11/2023 | 11:45am | | BUS | 22C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 10 | 50 | | 1 | | |
| BUS21 | 16/11/2023 | 02:45pm | | BUS | 27C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 16 | 20 | | 1 | | |
| BUS21 | 16/11/2023 | 03:15pm | | BUS | 27C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 12 | 60 | | 1 | | |
| BUS21 | 6/08/2024 | 13:00 | MID | BUS | 13C, scattered cloud (3/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | 125 | 2 | 240 | Heard calling, flying between shrubs, foraging |
| BUS21 | 8/08/2024 | 12:06 | MID | BUS | 14c, Moderate/high winds, 7/8 cloud cover | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 10 | 283 | | | Heard call/Aural |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | White-winged Fairy-wren | *Malarus leucopterus* | 5 | 50 | 209 | 1 | 209 | Foraging in bushes |
| BUS21 | 13/06/2024 | 10:33 AM | | BUS | 8 c, still, overcast | White-winged Fairy-wren | *Malarus leucopterus* | 10 | 150 | 340 | 1 | 340 | Foraging in bushes |
| BUS21 | 10/06/2024 | 3:54 PM | | BUS | 16 c, still, overcast | White-winged Fairy-wren | *Malarus leucopterus* | 2 | | | | | Heard calling |
| BUS22 | 29/02/2024 | 13:00 | MID 3 | | Partly cloudy, moderate winds, 37 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 8 | | 2 | | |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 15 | | 0 | | |
| BUS22 | 29/02/2024 | 15:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 8 | 15 | | 0 | | |
| BUS22 | 29/02/2024 | 15:30 | PM 2 | | Mostly clear, moderate winds, 42 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 8 | 20 | | 0 | | |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 85 | 345 | 20 | 240 | Undulating flight over shrubs |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 6 | 75 | 190 | 20 | 190 | Heard calling |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Australian Raven | *Corvus coronoides* | 1 | 40 | 200 | 30 | 115 | Flying above canopy |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Australian Wood Duck | *Chenonetta jubata* | 15 | 60 | 199 | 30 | 250 | Flying above canopy |
| BUS22 | 30/10/2021 | 1030 | | BUS | 15 degrees, sunny, strong winds | Black kite | *Milvus migrans* | 1 | 1000 | | 150 | located 1km south - circling, flying east | |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 1 | 600 | 60 | 60 | 150 | Soaring, hunting overhead |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 2 | 350 | 90 | 50 | 150 | Soaring/hunting overhead |
| BUS22 | 30/10/2021 | 1030 | | BUS | 15 degrees, sunny, strong winds | Black kite | *Milvus migrans* | 1 | 800 | | 50 | locate north west of the survey point, hovering often | |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Black Kite | *Milvus migrans* | 2 | 40 | 180 | 30 | 280 | In flight |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Bluebonnet | *Northiella haematogaster* | 2 | 50 | 190 | 0 | 0 | In tree/perched |
| BUS22 | 30/10/2021 | 1030 | | BUS | 15 degrees, sunny, strong winds | Brown falcon | *Falco berigora* | 1 | 400 | | 75 | Located south of survey point, flying east | |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Brown Songlark | *Cincloramphus cruralis* | 1 | 500 | 174 | 5 | 0 | In flight above shrubland |
| BUS22 | 30/10/2021 | 1030 | | BUS | 15 degrees, sunny, strong winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 1 | 15 degrees, sunny, strong winds | |
| BUS22 | 15/08/2022 | 1441 | | BUS | 13 Degrees, Raining, Overcast, Light Winds | Brown Songlark | *Cincloramphus cruralis* | 4 | 20 | | 1 | 13 Degrees, Raining, Overcast, Light Winds | |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Common Blackbird | *Turdus merula* | 10 | 40 | 200 | 15 | 190 | In flight/In tree |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | Common starling | *Sturnus vulgaris* | 30 | 30 | | 8 | | Foraging |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Crested pigeon | *Ocyphaps lophotes* | 8 | 25 | 210 | 15 | 180 | Perched in group, flew overhead |
| BUS22 | 29/02/2024 | 15:30 | PM 2 | | Mostly clear, moderate winds, 42 degrees | Crested pigeon | *Ocyphaps lophotes* | 2 | 15 | | 3 | | |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Crested pigeon | *Ocyphaps lophotes* | 1 | 50 | 197 | 0 | 0 | In tree/perched |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Galah | *Eolophus roseicapilla* | 12 | 40 | 195 | 15 | 120 | Flock flying overhead, calling |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Galah | *Eolophus roseicapilla* | 2 | 40 | 188 | 0 | 0 | In tree/perched |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Galah | *Eolophus roseicapilla* | 1 | 50 | 210 | 0 | 0 | In tree/perched |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Grey Teal | *Anas gracilis* | 7 | 120 | 204 | 40 | 280 | In flight |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | Magpie-lark | *Grallina cyanoleuca* | 1 | 40 | | 0 | | |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Magpie-lark | *Grallina cyanoleuca* | 1 | 0 | 0 | 0 | 0 | Heard call |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Masked Lapwing | *Vanellus miles* | 1 | 30 | 260 | 3 | 55 | Flew from dam/ edge of water |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 500 | 300 | 40 | 210 | Hovering/hunting over shrubland |
| BUS22 | 18/02/2022 | 1320 | | BUS | Sunny, slight wind, 30 degrees | NIL | | | | | | | |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Striated Pardalote | *Pardalotus striatus* | 2 | 50 | 120 | 10 | 120 | Heard calling |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | Superb Fairy-wren | *Malurus cyaneus* | 8 | 15 | | 1 | | |
| BUS22 | 29/02/2024 | 15:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | Superb Fairy-wren | *Malurus cyaneus* | 10 | 5 | | 1 | | |
| BUS22 | 29/02/2024 | 15:30 | PM 2 | | Mostly clear, moderate winds, 42 degrees | Superb Fairy-wren | *Malurus cyaneus* | 10 | 30 | | 0 | | |
| BUS22 | 29/02/2024 | 13:00 | MID 3 | | Partly cloudy, moderate winds, 37 degrees | Superb Fairy-wren | *Malurus cyaneus* | 15 | | | | | |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1500 | 150 | 200 | 190 | Soaring, hunting overhead |
| BUS22 | 29/02/2024 | 15:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | Wedge-tailed Eagle | *Aquila audax* | 2 | 300 | | 80 | | Circling |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1900 | 100 | 75 | 150 | Flying overhead, hunting |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | Wedge-tailed Eagle | *Aquila audax* | 2 | 70 | 234 | 0 | 0 | In tree/perched |
| BUS22 | 19/05/2022 | 11:44:00 | | BUS | 10 degrees, sunny, moderate wind | Whistling Kite | *Haliastur sphenurus* | 1 | 125 | | 10 | 10 degrees, sunny, moderate wind | |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | White-faced Heron | *Egretta novaehollandiae* | 1 | 60 | 250 | 20 | 300 | Flying above canopy |
| BUS22 | 29/02/2024 | 15:30 | PM 2 | | Mostly clear, moderate winds, 42 degrees | White-fronted Chat | *Epthianura albifrons* | 4 | 20 | | 0 | | |
| BUS22 | 29/02/2024 | 13:00 | MID 3 | | Partly cloudy, moderate winds, 37 degrees | White-fronted Chat | *Epthianura albifrons* | 8 | 10 | | 1 | | |
| BUS22 | 29/02/2024 | 15:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | White-fronted Chat | *Epthianura albifrons* | 6 | 8 | | 1 | | |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | White-fronted Chat | *Epthianura albifrons* | 2 | 20 | | 2 | | |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | White-fronted Chat | *Epthianura albifrons* | 7 | 30 | 280 | 20 | 120 | Heard calling, flying between shrubs |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | White-necked Heron | *Ardea pacifica* | 1 | 10 | | 15 | | Circling |
| BUS22 | 6/08/2024 | 11:15 | MID | BUS | 11C, clear skies (2/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 6 | 30 | 275 | 4 | 340 | Heard calling, flying between shrubs, foraging |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 5 | | 1 | | Heard |
| BUS22 | 5/08/2024 | 9:05 | AM | BUS | 8C, overcast, slight breze | White-winged Fairy-wren | *Malurus leucopterus* | 6 | 30 | 50 | 0 | 0 | Heard call |
| BUS22 | 29/02/2024 | 15:00 | PM 1 | | Mostly clear, moderate winds, 40 degrees | Zebra Finch | *Taeniopygia guttata* | 5 | 30 | | 3 | | |
| BUS22 | 29/02/2024 | 15:30 | PM 2 | | Mostly clear, moderate winds, 42 degrees | Zebra Finch | *Taeniopygia guttata* | 3 | 20 | | 0 | | |
| BUS22 | 29/02/2024 | 12:30 | MID 1 | | Partly cloudy, moderate winds, 37 degrees | Zebra Finch | *Taeniopygia guttata* | | | | | | Heard |
| BUS22 | 29/02/2024 | 13:00 | MID 3 | | Partly cloudy, moderate winds, 37 degrees | Zebra Finch | *Taeniopygia guttata* | | | | | | Heard |
| BUS23 | 16/11/2023 | 04:20pm | | BUS | 27C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 3 | south | |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 75 | | 1 | | |
| BUS23 | 19/05/2022 | 2:15:00 | | BUS | 14 degrees, moderate wind, sunny | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | | 0 | | |
| BUS23 | 16/11/2023 | 03:50pm | | BUS | 27C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 50 | | 0 | | |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | Australian Magpie | *Gymnorhina tibicen* | | | | | | Heard |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | Australian Raven | *Corvus coronoides* | | | | | | Heard |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Australian Raven | *Corvus coronoides* | 2 | 100 | | 10 | | circling |
| BUS23 | 16/11/2023 | 04:20pm | | BUS | 27C, partly cloudy, light wind | Australian Wood Duck | *Chenonetta jubata* | 1 | 120 | | 0 | | injured - under shrub |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Black-tailed Native-hen | *Tribonyx ventralis* | 30 | 150 | | 0 | | |
| BUS23 | 16/11/2023 | 12:55pm | | BUS | 24C, mostly cloudy, light wind | Black-tailed Native-hen | *Tribonyx ventralis* | 10 | 75 | | 0 | | |
| BUS23 | 16/11/2023 | 03:50pm | | BUS | 27C, partly cloudy, light wind | Black-tailed Native-hen | *Tribonyx ventralis* | 14 | 120 | | 0 | | |
| BUS23 | 16/11/2023 | 04:20pm | | BUS | 27C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | 10 | | |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | Brown Songlark | *Cincloramphus cruralis* | | | | | | Heard |
| BUS23 | 30/10/2021 | 955 | | BUS | Sunny, moderate winds, 17 degrees | Brown Songlark | *Cincloramphus cruralis* | 2 | 30 | | 1 | | |
| BUS23 | 15/08/2022 | 1403 | | BUS | 12 Degrees, Overcast, Drizzly Rain | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 1 | | |
| BUS23 | 29/02/2024 | 9:05 | AM 2 | | Clear, sunny, slight winds, 26 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | 20 | | 5 | NE | |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | Crested pigeon | *Ocyphaps lophotes* | 2 | 80 | | 1.5 | | Heard |
| BUS23 | 19/05/2022 | 2:15:00 | | BUS | 14 degrees, moderate wind, sunny | Fairy-wren | *Malurus spp.* | 2 | 40 | | 0 | | |
| BUS23 | 30/10/2021 | 955 | | BUS | Sunny, moderate winds, 17 degrees | Galah | *Eolophus roseicapilla* | 2 | 50 | | 10 | | |
| BUS23 | 15/08/2022 | 1403 | | BUS | 12 Degrees, Overcast, Drizzly Rain | Horsfield's Bronze-Cuckoo | *Chalcites basalis* | 2 | 30 | | 1 | | |
| BUS23 | 19/05/2022 | 2:15:00 | | BUS | 14 degrees, moderate wind, sunny | House sparrow | *Passer domesticus* | 6 | 10 | | 15 | | |
| BUS23 | 29/02/2024 | 9:05 | AM 2 | | Clear, sunny, slight winds, 26 degrees | Intermediate Egret | *Ardea intermedia* | 2 | 200 | | 90 | | |
| BUS23 | 15/08/2022 | 1403 | | BUS | 12 Degrees, Overcast, Drizzly Rain | Little Raven | *Corvus mellori* | 3 | 30 | | 15 | 12 Degrees, Overcast, Drizzly Rain | |
| BUS23 | 16/11/2023 | 12:55pm | | BUS | 24C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | | 20 | | |
| BUS23 | 30/10/2021 | 955 | | BUS | Sunny, moderate winds, 17 degrees | Red-rumped parrot | *Psephotus heamatonotus* | 2 | 30 | | 0 | | |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Red-rumped Parrot | *Psephotus heamatonotus* | 2 | 120 | | 0 | | |
| BUS23 | 16/11/2023 | 12:55pm | | BUS | 24C, mostly cloudy, light wind | Red-rumped Parrot | *Psephotus heamatonotus* | 2 | 100 | | 0 | | |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Singing Honeyeater | *Lichenostomus virescens* | 1 | 75 | | 2 | | perched in shrub |
| BUS23 | 15/08/2022 | 1403 | | BUS | 12 Degrees, Overcast, Drizzly Rain | Southern whiteface | *Aphelocephala leucopsis* | 1 | 20 | | 1 | | |
| BUS23 | 19/05/2022 | 2:15:00 | | BUS | 14 degrees, moderate wind, sunny | Stubble Quail | *Coturnix pectoralis* | 1 | 10 | | 0 | | |
| BUS23 | 30/10/2021 | 955 | | BUS | Sunny, moderate winds, 17 degrees | Superb Fairy-wren | *Malurus cyaneus* | 5 | 30 | | 1 | | |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 15 | 30 | | 1 | | |
| BUS23 | 16/11/2023 | 12:55pm | | BUS | 24C, mostly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 10 | 50 | | 1 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS23 | 16/11/2023 | 03:50pm | | BUS | 27C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 10 | 80 | | 1 | | |
| BUS23 | 16/11/2023 | 04:20pm | | BUS | 27C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 6 | 50 | | 1 | | |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | Superb Fairy-wren | *Malurus cyaneus* | 8 | 10 | | 1 | | |
| BUS23 | 29/02/2024 | 9:05 | AM 2 | | Clear, sunny, slight winds, 26 degrees | Superb Fairy-wren | *Malurus cyaneus* | | | | | | Heard |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 100 | | 80 | | perched in powerline then circled |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | White-faced Heron | *Egretta novaehollandiae* | 3 | 10 | | 7 | | |
| BUS23 | 15/08/2022 | 1403 | | BUS | 12 Degrees, Overcast, Drizzly Rain | White-fronted Chat | *Epthianura albifrons* | 2 | 40 | | 1 | | |
| BUS23 | 16/11/2023 | 12:55pm | | BUS | 24C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 10 | 50 | | 1 | | |
| BUS23 | 16/11/2023 | 03:50pm | | BUS | 27C, partly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 5 | 100 | | 1 | | |
| BUS23 | 18/02/2022 | 1255 | | BUS | Sunny, slight wind, 30 degrees | White-winged Fairy-wren | *Malurus leucopterus* | 4 | | | 2 | | |
| BUS23 | 15/08/2022 | 1403 | | BUS | 12 Degrees, Overcast, Drizzly Rain | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 20 | | 1 | | |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | White-winged Fairy-wren | *Malurus leucopterus* | | | | | | Heard |
| BUS23 | 30/10/2021 | 955 | | BUS | Sunny, moderate winds, 17 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | 25 | | 1 | Sunny, moderate winds, 17 degrees | |
| BUS23 | 19/05/2022 | 2:15:00 | | BUS | 14 degrees, moderate wind, sunny | Willie Wagtail | *Rhipidura leucophrys* | 1 | 10 | | 0 | 14 degrees, moderate wind, sunny | |
| BUS23 | 29/02/2024 | 8:35 | AM 1 | | Clear, sunny, 27 degrees | Willie Wagtail | *Rhipidura leucophrys* | 1 | 30 | | 0 | | |
| BUS23 | 29/02/2024 | 9:05 | AM 2 | | Clear, sunny, slight winds, 26 degrees | Willie Wagtail | *Rhipidura leucophrys* | 1 | 30 | | 0 | | |
| BUS23 | 16/11/2023 | 03:50pm | | BUS | 27C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 6 | 75 | | 2 | | |
| BUS23 | 16/11/2023 | 12:25pm | | BUS | 23C, mostly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 100 | | 1 | | |
| BUS23 | 16/11/2023 | 12:55pm | | BUS | 24C, mostly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 9 | 80 | | 1 | | |
| BUS23 | 16/11/2023 | 04:20pm | | BUS | 27C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 5 | 100 | | 1 | | |
| BUS23 | 29/02/2024 | 9:05 | AM 2 | | Clear, sunny, slight winds, 26 degrees | Zebra Finch | *Taeniopygia guttata* | 5 | 10 | | 0 | | |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | 280 | 25 | 230 | Undulating flight over shrubs |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 40 | 222 | 0 | | On ground |
| BUS24 | 8/08/2024 | 11:23 | MID | BUS | 14C, Moderate wind, 7/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 5 | 500 | 307 | 40 | 257 | |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 650 | 130 | 0 | 130 | Heard calling, perched on shrub |
| BUS24 | 5/08/2024 | 15:50 | PM | BUS | 14c, still, dry 6/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 2 | 1000 | 170 | | | |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 2 | 300 | 260 | 40 | 140 | Heard calling |
| BUS24 | 8/08/2024 | 11:23 | MID | BUS | 14C, Moderate wind, 7/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 1500 | 215 | 40 | 334 | |
| BUS24 | 13/06/2024 | 11:16 AM | | BUS | 9 c, still, ovrecast | Australian Raven | *Corvus coronoides* | 1 | 900 | 180 | 8 | 330 | Flying overhead |
| BUS24 | 5/08/2024 | 15:50 | PM | BUS | 14c, still, dry 6/8 cloud cover | Australian Raven | *Corvus coronoides* | 7 | 300 | 214 | 5 | 180 | |
| BUS24 | 13/06/2024 | 11:16 AM | | BUS | 9 c, still, ovrecast | Australian Raven | *Corvus coronoides* | 2 | 350 | 290 | 0 | | Foraging |
| BUS24 | 10/06/2024 | 3:11 PM | | BUS | 16.6 c, still, overcast | Australian Raven | *Corvus coronoides* | 2 | | | | | Heard calling |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | Australian Raven | *Corvus coronoides* | 1 | | | | | Heard calling |
| BUS24 | 13/06/2024 | 11:16 AM | | BUS | 9 c, still, ovrecast | Australian Raven | *Corvus coronoides* | 1 | | | | | Heard calling |
| BUS24 | 21/10/2024 | 8:20-8:40 | AM | | 14 degrees, Sunny, Light wind | Australian Raven | *Corvus coronoides* | 1 | 40 | 40 | | | Heard calll |
| BUS24 | 10/06/2024 | 3:11 PM | | BUS | 16.6 c, still, overcast | Black-shouldered Kite | *Elanus axillaris* | 2 | 1000 | 153 | 30 | | Foraging in grass |
| BUS24 | 13/06/2024 | 11:16 AM | | BUS | 9 c, still, ovrecast | Black-shouldered Kite | *Elanus axillaris* | 2 | 400 | 245 | 10 | 128 | Attacking Nankeen Kestrel |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | 190 | 10 | 160 | Heard calling, perched on shrub |
| BUS24 | 21/10/2024 | 8:20-8:40 | AM | | 14 degrees, Sunny, Light wind | Brown Songlark | *Cincloramphus cruralis* | 5 | 20 | 20 | | | Heard call |
| BUS24 | 21/10/2024 | 8:20-8:40 | AM | | 14 degrees, Sunny, Light wind | Brown Songlark | *Cincloramphus cruralis* | 4 | 15 | 330 | | | Perched in shrub |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | Nankeen Kestrel | *Falco cenchroides* | 1 | 800 | 29 | 60 | 29 | Circling |
| BUS24 | 8/08/2024 | 11:23 | MID | BUS | 14C, Moderate wind, 7/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 1000 | 210 | 60 | | Hovering |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 750 | 150 | 45 | 170 | Hovering, hunting - landed on shrub |
| BUS24 | 8/08/2024 | 11:23 | MID | BUS | 14C, Moderate wind, 7/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 1000 | 292 | 40 | | Hovering |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | Nankeen Kestrel | *Falco cenchroides* | 1 | 1500 | 355 | 30 | 218 | Flying overhead, hunting |
| BUS24 | 13/06/2024 | 11:16 AM | | BUS | 9 c, still, ovrecast | Nankeen Kestrel | *Falco cenchroides* | 1 | 400 | 245 | 10 | 128 | Flying |
| BUS24 | 13/06/2024 | 11:16 AM | | BUS | 9 c, still, ovrecast | Stubble Quail | *Coturnix pectoralis* | 1 | 80 | 10 | 1 | 60 | Flying from grass |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | Swamp Harrier | *Circus approximans* | 1 | 150 | 300 | 25 | 35 | Hunting, flying over shrubland |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | Tree Martin | *Petrochelidon nigricans* | 4 | 150 | 300 | 25 | 300 | Circling |
| BUS24 | 8/08/2024 | 11:23 | MID | BUS | 14C, Moderate wind, 7/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | 210 | 80 | | Circling |
| BUS24 | 10/06/2024 | 3:11 PM | | BUS | 16.6 c, still, overcast | Wedge-tailed Eagle | *Aquila audax* | 2 | 950 | 340 | 30 | 70 | Pair perched on power pole |
| BUS24 | 5/08/2024 | 15:50 | PM | BUS | 14c, still, dry 6/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 970 | 320 | | | Perched in nest (in powertower) |
| BUS24 | 8/08/2024 | 11:23 | MID | BUS | 14C, Moderate wind, 7/8 cloud cover | Whistling Kite | *Haliastur sphenurus* | 2 | 1000 | 200 | 80 | | Circling |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | White-fronted Chat | *Epthianura albifrons* | 5 | 20 | 15 | 8 | 10 | Flying between shrubs nearby swampy area |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | White-necked Heron | *Ardea pacifica* | 1 | 500 | 60 | 30 | 310 | Flying from nearby flooded area |
| BUS24 | 21/10/2024 | 8:20-8:40 | AM | | 14 degrees, Sunny, Light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | 50 | | 120 | Perched |
| BUS24 | 7/08/2024 | 8:50 | AM | BUS | 4C, clear sky (0/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | 120 | 2 | 120 | Flying between shrubs, heard calling |
| BUS24 | 10/06/2024 | 3:11 PM | | BUS | 16.6 c, still, overcast | White-winged Fairy-wren | *Malarus leucopterus* | 4 | 200 | 275 | 1 | | Perched in shrub |
| BUS24 | 12/06/2024 | 9:36 AM | | BUS | 12 c, moderate wind, clear skies | White-winged Fairy-wren | *Malarus leucopterus* | 3 | 40 | 222 | 1 | | Flying between shrubs |
| BUS25 | 17/02/2022 | 1757 | | BUS | Sunny, slight wind, 30 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 20 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Australian Magpie | *Gymnorhina tibicen* | 1 | 80 | | 15 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Australian Magpie | *Gymnorhina tibicen* | 4 | 20 | | 12 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Australian Magpie | *Gymnorhina tibicen* | 1 | 150 | | 6 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Australian Raven | *Corvus coronoides* | 1 | 100 | | 10 | | |
| BUS25 | 17/02/2022 | 1757 | | BUS | Sunny, slight wind, 30 degrees | Black Kite | *Milvus migrans* | 2 | | | 150 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Black kite | *Milvus migrans* | 2 | 25 | | 80 | Flying east to west | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Black Kite | *Milvus migrans* | 4 | 30 | | 20 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 10 | | 10 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Bluebonnet | *Northiella haematogaster* | 2 | 20 | | 13 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Bluebonnet | *Northiella haematogaster* | 4 | 10 | | 10 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Bluebonnet | *Northiella haematogaster* | 7 | 30 | | 8 | | |
| BUS25 | 17/02/2022 | 1757 | | BUS | Sunny, slight wind, 30 degrees | Brown Falcon | *Falco berigora* | 1 | | | 80 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 2 | 3 | | 5 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Chestnut-rumped Thornbill | *Acanthiza uropygialis* | 1 | 50 | | 0 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Common starling | *Sturnus vulgaris* | 1 | 15 | | 15 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Crested pigeon | *Ocyphaps lophotes* | 6 | 10 | | 10 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Crested pigeon | *Ocyphaps lophotes* | 2 | 75 | | 4 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Galah | *Eolophus roseicapilla* | 7 | 15 | | 15 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Galah | *Eolophus roseicapilla* | 2 | 25 | | 5 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Little Raven | *Corvus mellori* | 1 | 25 | | 20 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Magpie-lark | *Grallina cyanoleuca* | 1 | 70 | | 5 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Magpie-lark | *Grallina cyanoleuca* | 2 | 50 | | 5 | 14 degrees, slight breeze, cloudy | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Magpie-lark | *Grallina cyanoleuca* | 1 | 60 | | 5 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Nankeen kestrel | *Falco cenchroides* | 2 | 20 | | 75 | Flying west to east (30 degrees, strong winds, sunny) | |
| BUS25 | 17/02/2022 | 1757 | | BUS | Sunny, slight wind, 30 degrees | Nankeen kestrel | *Falco cenchroides* | 1 | | | 60 | Sunny, slight wind, 30 degrees | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Nankeen Kestrel | *Falco cenchroides* | 5 | 10 | | 15 | 18 Degrees, Slight Cloud Coverage, Moderate Winds | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Noisy miner | *Manorina melanocephala* | 1 | 50 | | 20 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Noisy Miner | *Manorina melanocephala* | 1 | 50 | | 7 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Red-rumped parrot | *Psephotus heamatonotus* | 2 | 25 | | 10 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Red-rumped Parrot | *Psephotus heamatonotus* | 2 | 30 | | 5 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Southern whiteface | *Aphelocephala leucopsis* | 1 | 60 | | 0 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Southern whiteface | *Aphelocephala leucopsis* | 3 | 15 | | 1 | | |
| BUS25 | 12/08/2022 | 1634 | | BUS | 18 Degrees, Slight Cloud Coverage, Moderate Winds | Splendid fairy-wren | *Malurus splendens* | 1 | 10 | | 1 | | |
| BUS25 | 28/10/2021 | 1635 | | BUS | N/A | Superb Fairy-wren | *Malurus cyaneus* | 2 | 60 | | 1 | | |
| BUS25 | 19/05/2022 | 3:25:00 | | BUS | 14 degrees, slight breeze, cloudy | Variegated Fairy-wren | *Malurus lamberti* | 7 | 50 | | 0 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | 107 | 0 | 0 | Perched on shrub |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Australian Magpie | *Gymnorhina tibicen* | 1 | 50 | | 10 | Overcast, 24 degrees | |
| BUS26 | 8/08/2024 | 16:15 | PM | BUS | 17C, moderate breeze,overcast | Australian Magpie | *Gymnorhina tibicen* | 1 | 120 | 206 | 8 | 225 | Flew from tree |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 6 | Sunny, hot 38, degrees | |
| BUS26 | 17/05/2022 | 2:38:00 | | BUS | 16 degrees, sunny, moderate wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 150 | | 1 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | Australian Magpie | *Gymnorhina tibicen* | 6 | 130 | 115 | 0 | 0 | Heard call |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Australian Raven | *Corvus coronoides* | 4 | 200 | | 20 | | |
| BUS26 | 17/05/2022 | 2:38:00 | | BUS | 16 degrees, sunny, moderate wind | Australian Raven | *Corvus coronoides* | 2 | 100 | | 10 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | Australian Raven | *Corvus coronoides* | 1 | 0 | 0 | 0 | 0 | Heard call |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Black kite | *Milvus migrans* | 3 | 100 | | 75 | located north west of survey point, circling. Adult pair fighting | |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | Black Kite | *Milvus migrans* | 8 | 10 | | 15 | 14 Degrees, Cloudy, Windy | |
| BUS26 | 17/05/2022 | 2:38:00 | | BUS | 16 degrees, sunny, moderate wind | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 150 | | 3 | 16 degrees, sunny, moderate wind | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Bluebonnet | *Northiella haematogaster* | 3 | 100 | | 15 | | |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Bluebonnet | *Northiella haematogaster* | 1 | | | 7 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Common starling | *Sturnus vulgaris* | 1 | 200 | | 10 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Crested pigeon | *Ocyphaps lophotes* | 3 | 100 | | 5 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Eastern Grey-crowned Babbler | *Pomatostomus temporalis temporalis* | 6 | 100 | | 10 | group chattering around trees, flying below canopy | |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | Fairy Martin | *Petrochelidon ariel* | 10 | 20 | | 60 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Galah | *Eolophus roseicapilla* | 2 | 100 | | 7 | | |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | Galah | *Eolophus roseicapilla* | 4 | 20 | | 5 | | |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Little Crow | *Corvus bennetti* | 1 | | | 4 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | Magpie-lark | *Grallina cyanoleuca* | 1 | 0 | 270 | 0 | 0 | Heard call |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | Magpie-lark | *Grallina cyanoleuca* | 1 | 60 | 183 | 0 | 0 | In shrub |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Masked woodswallow | *Artamus personatus* | 6 | 150 | | 50 | | |
| BUS26 | 8/08/2024 | 16:15 | PM | BUS | 17C, moderate breeze,overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 233 | 60 | 320 | Hovering over shrublands |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Nankeen kestrel | *Falco cenchroides* | 1 | | | 50 | | |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | Nankeen Kestrel | *Falco cenchroides* | 1 | 10 | | 15 | | |
| BUS26 | 8/08/2024 | 16:15 | PM | BUS | 17C, moderate breeze,overcast | Noisy Miner | *Manorina melanocephala* | 6 | 120 | 241 | 12 | 300 | In tree/perched |
| BUS26 | 17/05/2022 | 2:38:00 | | BUS | 16 degrees, sunny, moderate wind | Noisy Miner | *Manorina melanocephala* | 3 | 100 | | 6 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Noisy miner | *Manorina melanocephala* | 3 | 150 | | 5 | | |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Noisy Miner | *Manorina melanocephala* | 2 | | | 5 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Pied butcherbird | *Cracticus nigrogularis* | 1 | 150 | | 15 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Red-rumped parrot | *Psephotus heamatonotus* | 2 | 15 | | 10 | | |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | Red-rumped Parrot | *Psephotus heamatonotus* | 4 | 20 | | 10 | | |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Red-rumped parrot | *Psephotus heamatonotus* | 2 | | | 8 | | |
| BUS26 | 17/05/2022 | 2:38:00 | | BUS | 16 degrees, sunny, moderate wind | Red-rumped Parrot | *Psephotus heamatonotus* | 6 | 100 | | 3 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | Southern whiteface | *Aphelocephala leucopsis* | 2 | 40 | 209 | 0 | 0 | In shrub |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | Spotted Harrier | *Circus assimilis* | 1 | 30 | | 20 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Striated pardalote | *Pardalotus striatus* | 1 | 120 | | 5 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Superb Fairy-wren | *Malurus cyaneus* | 4 | | | 1.5 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Tree martin | *Petrochelidon nigricans* | 6 | 150 | | 12 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Wedge-tailed Eagle | *Aquila audax* | 1 | 100 | | 200 | nest nearby, flew as high as 200 m, flying south from nest. | |
| BUS26 | 14/02/2022 | 1621 | | BUS | Sunny, hot 38, degrees | Wedge-tailed Eagle | *Aquila audax* | 2 | | | 100 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Western gerygone | *Gerygone fusca* | 1 | 200 | | 5 | | |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | White-backed swallow | *Cheramoeca leucosternus* | 2 | 200 | | 15 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | White-fronted Chat | *Epthianura albifrons* | 1 | 20 | 231 | 0 | 0 | Heard call |
| BUS26 | 11/08/2022 | 1719 | | BUS | 14 Degrees, Cloudy, Windy | White-winged Chough | *Corcorax melanorhamphos* | 8 | 30 | | 7 | | |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 40 | 215 | 1 | 0 | Foraging, Perched on shrub |
| BUS26 | 6/08/2024 | 8:27 | AM | BUS | 3C, foggy, overcast, no breeze | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 15 | 280 | 0 | 0 | Heard call |
| BUS26 | 8/08/2024 | 16:15 | PM | BUS | 17C, moderate breeze,overcast | White-winged Fairy-wren | *Malurus leucopterus* | 7 | 20 | 227 | 0 | 0 | Heard call |
| BUS26 | 30/10/2021 | 1000 | | BUS | Overcast, 24 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | 175 | | 10 | | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Australian Magpie | *Gymnorhina tibicen* | 4 | 500 | 10 | 20 | 170 | Heard calling |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Australian Magpie | *Gymnorhina tibicen* | 3 | 20 | | 10 | | |
| BUS27 | 19/02/2022 | 1818 | | BUS | Sunny, clear skies, 27 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 8 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Australian Magpie | *Gymnorhina tibicen* | 1 | 25 | | 5 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Australian Magpie | *Gymnorhina tibicen* | 2 | 60 | | 1 | | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 4 | 100 | 240 | 30 | 270 | Heard calling |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Australian Raven | *Corvus coronoides* | 3 | 50 | | 10 | | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 2 | 350 | 120 | 10 | 270 | Heard calling |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Australian Wood Duck | *Chenonetta jubata* | 4 | 15 | | 0 | 14 Degrees, Drizzly Rain, Moderate Winds | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Black Kite | *Milvus migrans* | 9 | 1000 | 115 | 60 | 320 | Flying in group toward woodland |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Black Kite | *Milvus migrans* | 2 | 50 | | 5 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Black-faced woodswallow | *Artamus cinereus* | 1 | 45 | | 5 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Bluebonnet | *Northiella haematogaster* | 2 | 10 | | 6 | | |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Bluebonnet | *Northiella haematogaster* | 6 | 50 | | 2 | | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | 180 | 20 | 290 | Heard calling, perched on bush |
| BUS27 | 19/02/2022 | 1818 | | BUS | Sunny, clear skies, 27 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | | | 8 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Crested pigeon | *Ocyphaps lophotes* | 2 | 15 | | 4 | | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Galah | *Eolophus roseicapilla* | 4 | 0 | 110 | 35 | 310 | Flying overhead, heard calling |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Galah | *Eolophus roseicapilla* | 25 | 50 | | 20 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Galah | *Eolophus roseicapilla* | 50 | 0 | | 10 | | |
| BUS27 | 19/02/2022 | 1818 | | BUS | Sunny, clear skies, 27 degrees | Galah | *Eolophus roseicapilla* | 2 | | | 6 | | |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Little Raven | *Corvus mellori* | 1 | 5 | | 10 | | |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Magpie-lark | *Grallina cyanoleuca* | 1 | 20 | | 8 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Magpie-lark | *Grallina cyanoleuca* | 4 | 100 | | 5 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Masked woodswallow | *Artamus personatus* | 3 | 50 | | 10 | | |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Nankeen Kestrel | *Falco cenchroides* | 6 | 50 | | 12 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 7 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Nankeen kestrel | *Falco cenchroides* | 1 | 40 | | 5 | 17 degrees, sunny | |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Noisy Miner | *Manorina melanocephala* | 1 | 40 | | 10 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Noisy Miner | *Manorina melanocephala* | 1 | 80 | | 4 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Rainbow bee-eater | *Merops ornatus* | 1 | 50 | | 10 | | |
| BUS27 | 19/02/2022 | 1818 | | BUS | Sunny, clear skies, 27 degrees | Red-rumped parrot | *Psephotus haematonotus* | 40 | | | 30 | Sunny, clear skies, 27 degrees | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Red-rumped Parrot | *Psephotus haematonotus* | 2 | 40 | | 4 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Singing honeyeater | *Lichenostomus virescens* | 1 | 45 | | 5 | | |
| BUS27 | 19/02/2022 | 1818 | | BUS | Sunny, clear skies, 27 degrees | Southern whiteface | *Aphelocephala leucopsis* | 10 | | | 9 | | |
| BUS27 | 19/02/2022 | 1818 | | BUS | Sunny, clear skies, 27 degrees | Superb Fairy-wren | *Malurus cyaneus* | 10 | | | 3 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Superb Fairy-wren | *Malurus cyaneus* | 3 | 40 | | 0 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Thornbill | *Acanthiza spp.* | 4 | 40 | | 6 | | |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Variegated Fairy-wren | *Malurus lamberti* | 2 | 60 | | 0 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Wedge-tailed Eagle | *Aquila audax* | 2 | 250 | | 100 | Slight wind, sunny, individual flying south | |
| BUS27 | 11/08/2022 | 1436 | | BUS | 14 Degrees, Drizzly Rain, Moderate Winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 10 | | 12 | | |
| BUS27 | 17/05/2022 | 1:10:00 | | BUS | Slight wind, sunny, individual flying south | Welcome Swallow | *Hirundo neoxena* | 1 | 20 | | 6 | | |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | Whistling Kite | *Haliastur sphenurus* | 2 | 800 | 90 | 70 | 180 | Flying overhead toward woodland |
| BUS27 | 7/08/2024 | 8:00 | AM | BUS | 4C, clear sky (0/8 cloud cover), no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | 6 | 55 | 350 | 3 | 350 | Flying between bushes, heard calling |
| BUS27 | 29/10/2021 | 732 | | BUS | 17 degrees, sunny | Willie wagtail | *Rhipidura leucophrys* | 1 | 40 | | 2 | | |
| BUS28 | 14/02/2022 | 1543 | | BUS | Sunny, warm, 28 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 2 | | | 4 | Sunny, warm, 28 degrees | |
| BUS28 | 17/05/2022 | 10:58:00 | | BUS | 16 degrees, slight wind sunny | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 0 | | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 0 | 15 degrees, overcast, moderate wind | |
| BUS28 | 17/05/2022 | 10:58:00 | | BUS | 16 degrees, slight wind sunny | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | | 4 | 16 degrees, slight wind sunny | |
| BUS28 | 29/10/2021 | 949 | | BUS | 17 degrees, strong winds, sunny | Australian Raven | *Corvus coronoides* | 1 | 250 | | 20 | | |
| BUS28 | 29/10/2021 | 949 | | BUS | 17 degrees, strong winds, sunny | Black falcon | *Falco subniger* | 1 | 100 | | 40 | | |
| BUS28 | 17/05/2022 | 10:58:00 | | BUS | 16 degrees, slight wind sunny | Black kite | *Milvus migrans* | 1 | 400 | | 100 | | |
| BUS28 | 11/08/2022 | 1414 | | BUS | 13 Degrees, Cloudy, Moderate Winds | Black Kite | *Milvus migrans* | 2 | 30 | | 15 | | |
| BUS28 | 29/10/2021 | 949 | | BUS | 17 degrees, strong winds, sunny | Brown falcon | *Falco berigora* | 1 | 10 | | 20 | | |
| BUS28 | 29/10/2021 | 949 | | BUS | 17 degrees, strong winds, sunny | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 0 | 17 degrees, strong winds, sunny | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Common starling | *Sturnus vulgaris* | 60 | 75 | | 5 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS28 | 11/08/2022 | 1414 | | BUS | 13 Degrees, Cloudy, Moderate Winds | Emu | *Dromaius novaehollandiae* | 2 | 20 | | 0 | 13 Degrees, Cloudy, Moderate Winds | |
| BUS28 | 17/05/2022 | 10:58:00 | | BUS | 16 degrees, slight wind sunny | Fairy-wren | *Malurus spp.* | 1 | 30 | | 0 | | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Fairy-wren | *Malurus spp.* | 1 | 75 | | 0 | | |
| BUS28 | 11/08/2022 | 1414 | | BUS | 13 Degrees, Cloudy, Moderate Winds | Little Raven | *Corvus mellori* | 2 | 100 | | 15 | | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Masked woodswallow | *Artamus personatus* | 15 | 75 | | 10 | | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | | 30 | | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Rufous Songlark | *Cincloramphus matthewsi* | 1 | 25 | | 0 | | |
| BUS28 | 20/05/2022 | 2:16:00 | | BUS | 15 degrees, overcast, moderate wind | Stubble Quail | *Coturnix pectoralis* | 1 | 75 | | 0 | | |
| BUS28 | 17/05/2022 | 10:58:00 | | BUS | 16 degrees, slight wind sunny | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | | 400 | rising on thermal south-west of BUS point | |
| BUS28 | 14/02/2022 | 1543 | | BUS | Sunny, warm, 28 degrees | Wedge-tailed Eagle | *Aquila audax* | 4 | | | 250 | | |
| BUS28 | 17/05/2022 | 10:58:00 | | BUS | 16 degrees, slight wind sunny | Wedge-tailed Eagle | *Aquila audax* | 2 | 400 | | 150 | south-west also, but pai flying north-west | |
| BUS28 | 11/08/2022 | 1414 | | BUS | 13 Degrees, Cloudy, Moderate Winds | Welcome Swallow | *Hirundo neoxena* | 1 | 40 | | 1 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Australian Magpie | *Gymnorhina tibicen* | - | - | | - | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 150 | | 12 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 50 | | 10 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 8 | Sunny, hot, 38 degrees | |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 6 | 200 | 285 | 30 | 10 | Calling, perched on tranmission line |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Australian Raven | *Corvus coronoides* | 1 | 150 | | 10 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Australian Ringneck | *Barnardius zonarius var. barnardi* | 6 | 5 | | 10 | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Australian Ringneck | *Barnardius zonarius var. barnardi* | 2 | 50 | | 8 | | |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 4 | 1800 | 210 | 50 | 230 | Flying over woodland, hunting |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Black Kite | *Milvus migrans* | 2 | 5 | | 15 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 15 | | 12 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 50 | | 6 | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Black-faced woodswallow | *Artamus cinereus* | 20 | 45 | | 25 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Black-faced woodswallow | *Artamus cinereus* | 4 | | | 5 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Black-faced woodswallow | *Artamus cinereus* | 23 | 20 | | 1 | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Bluebonnet | *Northiella haematogaster* | 2 | 50 | | 10 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Bluebonnet | *Northiella haematogaster* | 4 | 2 | | 10 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Bluebonnet | *Northiella haematogaster* | 2 | 30 | | 2 | | |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Brown Falcon | *Falco berigora* | 1 | 500 | 300 | 35 | 300 | Perched on transsmission pole, flew toward nearby woodland |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Brown Falcon | *Falco berigora* | 1 | 100 | | 25 | | |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 60 | 345 | 6 | 310 | Flying between shrubs |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Crested pigeon | *Ocyphaps lophotes* | 1 | | | 7 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Crested pigeon | *Ocyphaps lophotes* | 10 | 30 | | 4 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Crested pigeon | *Ocyphaps lophotes* | 5 | 10 | | 2 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Galah | *Eolophus roseicapilla* | 4 | | | 20 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Galah | *Eolophus roseicapilla* | 9 | 15 | | 10 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Galah | *Eolophus roseicapilla* | 3 | 10 | | 4 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Grey Shrike-thrush | *Colluricincla harmonica* | 1 | 100 | | 8 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Little Crow | *Corvus bennetti* | 1 | | | 15 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Little Raven | *Corvus mellori* | 4 | 30 | | 15 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 75 | | |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 2 | 300 | 200 | 50 | 210 | Hovering/hunting overhead |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 40 | 5 | 45 | 140 | Hovering, hunting over shrubland |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 500 | 250 | 25 | 250 | Perched on transmission pole |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Noisy Miner | *Manorina melanocephala* | 1 | 10 | | 4 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Olive-backed Oriole | *Oriolus sagittatus* | 1 | 40 | | 6 | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Rainbow bee-eater | *Merops ornatus* | 1 | 40 | | 5 | 15 degrees, sunny, strong winds | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Red-capped Robin | *Petroica goodenovii* | 1 | 1 | | 5 | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Red-capped robin | *Petroica goodenovii* | 1 | 55 | | 1 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Red-capped Robin | *Petroica goodenovii* | 1 | 20 | | 1 | 16 degrees, moderate wind, sunny | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Red-rumped Parrot | *Psephotus heamatonotus* | 2 | 100 | | 20 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Red-rumped parrot | *Psephotus heamatonotus* | 10 | | | 10 | | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Red-rumped parrot | *Psephotus heamatonotus* | 7 | 60 | | 5 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Red-rumped parrot | *Psephotus heamatonotus* | 24 | 10 | | 0 | 15 Degrees, Cloudy, Moderate Winds | |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Rufous whistler | *Pachycephala rufiventrus* | 1 | 50 | | 10 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Singing Honeyeater | *Lichenostomus virescens* | 1 | 110 | | 4 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Southern whiteface | *Aphelocephala leucopsis* | 4 | 100 | | 0 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Southern whiteface | *Aphelocephala leucopsis* | 2 | 7 | | 1 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Southern whiteface | *Aphelocephala leucopsis* | 3 | | | 7 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Spiny-cheeked Honeyeater | *Acanthegenys rufogularis* | 1 | 40 | | 3 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Wedge-tailed Eagle | *Aquila audax* | 2 | 50 | | 250 | pair, flying west | |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 20 | 150 | 200 | 330 | Circling, hunting overhead - flew toward woodland |
| BUS29 | 5/08/2024 | 13:20 | MID | BUS | 12C, overcast (6/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 2 | 35 | 210 | 150 | 330 | Circling/hunting - flew toward woodland |
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | White-winged triller | *Lalage tricolor* | 5 | 100 | | 10 | | |
| BUS29 | 17/05/2022 | 12:06:00 | | BUS | 16 degrees, moderate wind, sunny | Willie Wagtail | *Rhipidura leucophrys* | 1 | 40 | | 8 | | |
| BUS29 | 16/02/2022 | 1215 | | BUS | Sunny, hot, 38 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | | | 4 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Willie Wagtail | *Rhipidura leucophrys* | 1 | 5 | | 4 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS29 | 29/10/2021 | 820 | | BUS | 15 degrees, sunny, strong winds | Willie wagtail | *Rhipidura leucophrys* | 1 | 100 | | 1 | | |
| BUS29 | 10/08/2022 | 1651 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Yellow-throated Miner | *Manorina flavigula* | 3 | 10 | | 5 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 30 | | 10 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Australian Magpie | *Gymnorhina tibicen* | 1 | | | 6 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Australian Raven | *Corvus coronoides* | 4 | 150 | | 30 | | |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 6 | 500 | 300 | 25 | 50 | Flying over shrubland |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Australian Ringneck | *Barnardius zonarius var. barnardi* | 2 | | | 10 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Australian Ringneck | *Barnardius zonarius var. barnardi* | 4 | 150 | | 5 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Australian Ringneck | *Barnardius zonarius var. barnardi* | 3 | 20 | | 4 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Australian Ringneck | *Barnardius zonarius var. barnardi* | 2 | 20 | | 3 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Black kite | *Milvus migrans* | 2 | 250 | | 100 | Pair circling high, 50-100 metres, in the distance to the north | |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 8 | 1800 | 315 | 85 | 340 | Group hunting nearby treeline |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Black Kite | *Milvus migrans* | 2 | 2 | | 5 | 16 Degrees, Overcast, Moderate Winds | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Black-faced woodswallow | *Artamus cinereus* | 10 | | | 30 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Black-faced woodswallow | *Artamus cinereus* | 25 | 150 | | 5 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Black-faced woodswallow | *Artamus cinereus* | 10 | 80 | | 2 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Bluebonnet | *Northiella haematogaster* | 2 | | | 7 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Bluebonnet | *Northiella haematogaster* | 4 | 100 | | 4 | | |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Brown Falcon | *Falco berigora* | 2 | 400 | 250 | 40 | 280 | Soaring/hunting over shrubland |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Brown Falcon | *Falco berigora* | 2 | 20 | | 5 | 16 degrees, slight wind sunny | |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 305 | 8 | 260 | Heard calling from shrub |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Chestnut-crowned Babbler | *Pomatostomus ruficeps* | 10 | 10 | | 10 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Chestnut-crowned Babbler | *Pomatostomus ruficeps* | 4 | 60 | | 3 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Cockatiel | *Nymphicus hollandicus* | 2 | 150 | | 7 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Crested pigeon | *Ocyphaps lophotes* | 2 | | | 8 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Crested pigeon | *Ocyphaps lophotes* | 2 | 40 | | 5 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Crested pigeon | *Ocyphaps lophotes* | 4 | 30 | | 3 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Galah | *Eolophus roseicapilla* | 2 | 50 | | 20 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Galah | *Eolophus roseicapilla* | 6 | | | 10 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Galah | *Eolophus roseicapilla* | 3 | 5 | | 4 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Little Crow | *Corvus bennetti* | 2 | | | 6 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Little Raven | *Corvus mellori* | 4 | 100 | | 5 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Magpie-lark | *Grallina cyanoleuca* | 2 | 10 | | 4 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Mistletoebird | *Dicaeum hirundinaceum* | 1 | 10 | | 4 | | |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 35 | 100 | 35 | 130 | Hovering/hunting over shrubland |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 6 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Noisy Miner | *Manorina melanocephala* | 4 | | | 8 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Pied Butcherbird | *Cracticus nigrogularis* | 1 | 50 | | 3 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Rainbow bee-eater | *Merops ornatus* | 2 | 45 | | 7 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Rainbow Bee-eater | *Merops ornatus* | 1 | | | 6 | Sunny, clear skies, 24 degrees | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Red-capped Robin | *Petroica goodenovii* | 1 | 60 | | 1 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Red-rumped parrot | *Psephotus heamatonotus* | 15 | 60 | | 8 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Rufous Songlark | *Cincloramphus matthewsi* | 1 | 60 | | 0 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Singing honeyeater | *Lichenostomus virescens* | 2 | | | 5 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Singing Honeyeater | *Lichenostomus virescens* | 1 | 20 | | 5 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Singing Honeyeater | *Lichenostomus virescens* | 1 | 70 | | 1 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Southern whiteface | *Aphelocephala leucopsis* | 3 | 30 | | 1 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Southern whiteface | *Aphelocephala leucopsis* | 4 | | | 5 | | |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Superb Fairy-wren | *Malurus cyaneus* | 3 | 250 | 230 | 2 | 210 | Flying between shrubs, calling |
| BUS30 | 5/08/2024 | 11:45 | MID | BUS | 10C, overcast (6/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1500 | 55 | 100 | 55 | Circling/hunting overhead |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Wedge-tailed Eagle | *Aquila audax* | 1 | | | 80 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | Wedge-tailed Eagle | *Aquila audax* | 2 | 100 | | 50 | Flying east to west, never higher tha 50m. 14 degrees, strong winds | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Welcome Swallow | *Hirundo neoxena* | 2 | | | 4 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Welcome Swallow | *Hirundo neoxena* | 1 | 30 | | 5 | | |
| BUS30 | 29/10/2021 | 715 | | BUS | N/A | White-breasted woodswallow | *Artamus leucorynchus* | 1 | 150 | | 5 | | |
| BUS30 | 16/02/2022 | 800 | | BUS | Sunny, clear skies, 24 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | | | 4 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Willie Wagtail | *Rhipidura leucophrys* | 4 | 10 | | 1 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Willie Wagtail | *Rhipidura leucophrys* | 1 | 60 | | 0 | | |
| BUS30 | 17/05/2022 | 11:20:00 | | BUS | 16 degrees, slight wind sunny | Yellow-rumped Thornbill | *Acanthiza chrysorrhoa* | 3 | 50 | | 2 | | |
| BUS30 | 10/08/2022 | 1605 | | BUS | 16 Degrees, Overcast, Moderate Winds | Yellow-throated Miner | *Manorina flavigula* | 6 | 10 | | 3 | | |
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | Australian Magpie | *Gymnorhina tibicen* | 2 | 120 | 30 | 35 | 220 | Flying over shrubland |
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 3 | 150 | 270 | 50 | 140 | Flying over shrubland |
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | Black Kite | *Milvus migrans* | 4 | 50 | 40 | 75 | 10 | Flying overhead - flew toward treeline |
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | Black Kite | *Milvus migrans* | 1 | 10 | 210 | 60 | 100 | Soaring/hunting |
| BUS31 | 8/08/2024 | 15:06 | PM | BUS | 17C, Moderate wind, 8/8 cloud cover | Black Kite | *Milvus migrans* | 1 | 500 | 63 | 10 | 296 | |
| BUS31 | 8/08/2024 | 15:06 | PM | BUS | 17C, Moderate wind, 8/8 cloud cover | Black-shouldered Kite | *Elanus axillaris* | 3 | 100 | 58 | 10 | 295 | |
| BUS31 | 8/08/2024 | 15:06 | PM | BUS | 17C, Moderate wind, 8/8 cloud cover | Black-shouldered Kite | *Elanus axillaris* | 2 | 1200 | 155 | 10 | | Flying above canopy |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 2 | 200 | 5 | 10 | 300 | Heard calling |
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | Wedge-tailed Eagle | *Aquila audax* | 1 | 850 | 150 | 200 | 180 | Soaring/circling, flew toward woodland |
| BUS31 | 8/08/2024 | 15:06 | PM | BUS | 17C, Moderate wind, 8/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | 100 | | | Perched on ground |
| BUS31 | 5/08/2024 | 12:45 | MID | BUS | 12C, overcast (6/8 cloud cover), no breeze (still) | White-fronted Chat | *Epthianura albifrons* | 4 | 300 | 280 | 5 | 280 | Heard calling, perched nearby fenceline |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 6 | 30 | North | 3 | South | Flying above canopy, flew south |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | Australian Raven | *Corvus coronoides* | 6 | 300 | East | 15 | North | Flying above canopy, flew north |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Australian Raven | *Corvus coronoides* | 1 | 300 | south | 6 | | Perched on post/stump |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Black Falcon | *Falco subniger* | 1 | 800 | south | 12 | | Perched on post/stump |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | Black Kite | *Milvus migrans* | 1 | 80 | North | 20 | | Soaring above canopy |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | south | 20 | South | Flying over canopy, flew south |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | Black-shouldered Kite | *Elanus axillaris* | 2 | 100 | South | 15 | | Hovering overhead |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Black-shouldered Kite | *Elanus axillaris* | 2 | 150 | South | 15 | South | Flying above canopy, flew south |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Brown Falcon | *Falco berigora* | 2 | 250 | south | 30 | west | Perched on post, flew west |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Brown Falcon | *Falco berigora* | 1 | 250 | south | 5 | | Perched on post/stump |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Brown Quail | *Synoicus ypsilophorus* | 2 | 20 | North | 4 | | Flushed out of grass |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Brown Quail | *Synoicus ypsilophorus* | 1 | 20 | south | 3 | | Flushed from grass |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | Brown Songlark | *Cincloramphus cruralis* | 3 | 80 | South | 1 | | Heard calling from grass |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Brown Songlark | *Cincloramphus cruralis* | 1 | 60 | South | 1 | | Heard calling from grass |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 800 | south | 30 | | Hovering above |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Spotted Harrier | *Circus assimilis* | 1 | 80 | East | 10 | South | Flying over canopy, flew south |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | Straw-necked Ibis | *Threskiornis spinicollis* | 40 | 100 | South | 20 | | Flying overhead, landed on grass near cows |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Straw-necked Ibis | *Threskiornis spinicollis* | 30 | 600 | south | 20 | East | Perched on post/stump, flew east |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Straw-necked Ibis | *Threskiornis spinicollis* | 20 | 800 | south | 20 | | Dispersed |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Straw-necked Ibis | *Threskiornis spinicollis* | 7 | 80 | East | 10 | North | Flying above canopy, flew north |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Stubble Quail | *Coturnix pectoralis* | 1 | 20 | North | 2 | | Flushed out of grass |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Swamp Harrier | *Circus approximans* | 2 | 80 | East | 6 | South | Flying over canopy, flew south |
| BUS32 | 23/02/2024 | 10:45 | MID - 2 | | 24C, moderate wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 3000 | south | 150 | | Soaring overhead |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 3 | 800 | West | 100 | | Soaring overhead |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 3000 | south | 100 | | Soaring above |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | North | 5 | East | Flying low, flew east |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | Whistling Kite | *Haliastur sphenurus* | 1 | 250 | East | 20 | East | Flying above canopy, flew east |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | Whistling Kite | *Haliastur sphenurus* | 1 | 250 | East | 4 | | Forgaing, flying overhead |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | White-faced Heron | *Egretta novaehollandiae* | 1 | 800 | North | 5 | | Soaring overhead |
| BUS32 | 23/02/2024 | 7:10 | AM - 1 | | 24C, moderate wind, overcast | White-necked Heron | *Ardea pacifica* | 1 | 100 | South | 5 | | Flying overhead, landed on grass near cows |
| BUS32 | 23/02/2024 | 7:40 | AM - 2 | | 24C, moderate wind, overcast | White-winged Fairy-wren | *Malarus leucopterus* | 2 | 80 | South | 2 | | Perched on post |
| BUS32 | 23/02/2024 | 10:15 | MID - 1 | | 24C, light wind, moderate cloud cover | Zebra Finch | *Taeniopygia guttata* | 3 | 40 | East | 3 | | Perched on post/stump |
| BUS33 | 10/06/2024 | 3:32-3:53 PM | | BUS | 14 c, light Southerly, Overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 270 | 0 | | |
| BUS33 | 30/10/2024 | 10:00-10:20 | MID | | 19 degrees, sunny, clear skies, slight winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | 100 | | | Heard call |
| BUS33 | 10/06/2024 | 3:32-3:53 PM | | BUS | 14 c, light Southerly, Overcast | Australian Raven | *Corvus coronoides* | 2 | 40 | 124 | 40 | 191 | |
| BUS33 | 30/10/2024 | 10:00-10:20 | MID | | 19 degrees, sunny, clear skies, slight winds | Australian Raven | *Corvus coronoides* | 2 | 50 | 88 | | | Heard call |
| BUS33 | 30/10/2024 | 10:00-10:20 | MID | | 19 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | 275 | 10 | 200 | Flying south |
| BUS33 | 30/10/2024 | 10:00-10:20 | MID | | 19 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 5 | 36 | 8 | 5 | Flying up and down |
| BUS33 | 30/10/2024 | 10:00-10:20 | MID | | 19 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 145 | | | Perched in shrubs |
| BUS33 | 10/06/2024 | 3:32-3:53 PM | | BUS | 14 c, light Southerly, Overcast | White-fronted chat | *Epthianura albifrons* | 2 | 50 | 100 | 2 | 193 | |
| BUS34 | 17/05/2022 | 9:27:00 | | BUS | 11 degrees, sunny, slight wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 0 | | |
| BUS34 | 6/08/2024 | 9:20 | AM | BUS | 3C, foggy, overcast, no breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 30 | 251 | 20 | 205 | Flying above canopy |
| BUS34 | 6/08/2024 | 9:20 | AM | BUS | 3C, foggy, overcast, no breeze | Australian Magpie | *Gymnorhina tibicen* | 1 | 0 | 0 | 0 | 0 | Heard call |
| BUS34 | 11/08/2022 | 1619 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Banded Lapwing | *Vanellus tricolor* | 1 | 40 | | 20 | 15 Degrees, Cloudy, Moderate Winds | |
| BUS34 | 8/08/2024 | 13:45 | MID | BUS | 17C, overcast, moderate breeze | Black Kite | *Milvus migrans* | 1 | 200 | 300 | 50 | 350 | Soaring, hunting |
| BUS34 | 30/10/2021 | 1415 | | BUS | 17 degrees, Sunny, light wind | Brown falcon | *Falco berigora* | 1 | 600 | | 50 | Located north east of the survey point, flyin south-east. | |
| BUS34 | 30/10/2021 | 1415 | | BUS | 17 degrees, Sunny, light wind | Brown falcon | *Falco berigora* | 1 | 400 | | 40 | located north of the survey point, flying north. 20 degrees, moderate wind | |
| BUS34 | 17/05/2022 | 9:27:00 | | BUS | 11 degrees, sunny, slight wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 0 | | |
| BUS34 | 11/08/2022 | 1619 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 0 | | |
| BUS34 | 6/08/2024 | 9:20 | AM | BUS | 3C, foggy, overcast, no breeze | Emu | *Dromaius novaehollandiae* | 2 | 80 | 213 | 0 | 335 | Foraging on ground |
| BUS34 | 17/05/2022 | 9:27:00 | | BUS | 11 degrees, sunny, slight wind | Inland Dotterel | *Peltohyas australis* | 10 | 40 | | 1 | | |
| BUS34 | 17/05/2022 | 9:27:00 | | BUS | 11 degrees, sunny, slight wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 30 | 11 degrees, sunny, slight wind | |
| BUS34 | 30/10/2021 | 1415 | | BUS | 17 degrees, Sunny, light wind | Variegated Fairy-wren | *Malurus lamberti* | 1 | 20 | | 0 | | |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 3 | | |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 2 | | |
| BUS35 | 13/11/2023 | 02:30pm | | BUS | 27C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 1 | | perched on fence |
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 100 | 1 | 190 | Shrublands |
| BUS35 | 10/08/2022 | 1515 | | BUS | 16 Degrees, Cloudy, Moderate Breeze | Australian Magpie | *Gymnorhina tibicen* | 30 | 40 | | 100 | 16 Degrees, Cloudy, Moderate Breeze | |
| BUS35 | 17/05/2022 | 10:27:00 | | BUS | 15 degrees, sunny, slight wind | Australian Magpie | *Gymnorhina tibicen* | 14 | 50 | | 20 | 15 degrees, sunny, slight wind | |
| BUS35 | 13/11/2023 | 02:30pm | | BUS | 27C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 200 | | 15 | | |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 400 | 270 | 15 | 270 | Calling from nearby woodland |
| BUS35 | 13/11/2023 | 10:48am | | BUS | 19C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 4 | 500 | | 3 | east | |
| BUS35 | 12/06/2024 | 10:42-11:02 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Australian Raven | *Corvus coronoides* | 3 | 300 | 212 | 20 | 282 | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | Australian Raven | *Corvus coronoides* | 6 | 200 | 359 | 12 | 234 | Heard call / Flying AC |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 3 | 25 | 120 | 2 | 310 | Flying between shrubs, heard calling |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 2 | 350 | 180 | 60 | 220 | Soaring/hunting over woodland |
| BUS35 | 30/10/2021 | 1455 | | BUS | 17 degrees, Sunny, light wind | Black kite | *Milvus migrans* | 1 | 150 | | 50 | located east of the survey point, flying north. 22 degrees, sunny, moderate wind | |
| BUS35 | 8/08/2024 | 15:41 | PM | BUS | 16C, overcast, moderate wind. 8/8 cloud cover | Black Kite | *Milvus migrans* | 1 | 50 | 283 | 40 | 17 | Visual |
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | Black Kite | *Milvus migrans* | 1 | 100 | 108 | 15 | 290 | Soaring over shrublands |
| BUS35 | 10/06/2024 | 2:05-2:25 PM | | BUS | 15 c, Light Southerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 400 | 257 | 80 | 187 | Hunting |
| BUS35 | 13/11/2023 | 10:48am | | BUS | 19C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | | 20 | | hovering |
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | 354 | 15 | 340 | Hovering |
| BUS35 | 8/08/2024 | 15:41 | PM | BUS | 16C, overcast, moderate wind. 8/8 cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 400 | 110 | 10 | | Hovering/foraging |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 30 | | 7 | | hovering |
| BUS35 | 8/08/2024 | 15:41 | PM | BUS | 16C, overcast, moderate wind. 8/8 cloud cover | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | 125 | 0 | | Perched on shrub |
| BUS35 | 17/05/2022 | 10:27:00 | | BUS | 15 degrees, sunny, slight wind | Brown Falcon | *Falco berigora* | 2 | 300 | | 50 | | |
| BUS35 | 8/08/2024 | 15:41 | PM | BUS | 16C, overcast, moderate wind. 8/8 cloud cover | Brown Falcon | *Falco berigora* | 1 | 10 | 299 | 30 | 90 | Flew over us |
| BUS35 | 12/06/2024 | 10:42-11:02 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Brown Falcon | *Falco berigora* | 1 | 100 | 292 | 30 | 225 | Hunting |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | 150 | 20 | 180 | Heard calling, perched on shrub |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 12 | | |
| BUS35 | 13/11/2023 | 10:48am | | BUS | 19C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 6 | | |
| BUS35 | 13/11/2023 | 02:30pm | | BUS | 27C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 3 | | |
| BUS35 | 17/05/2022 | 10:27:00 | | BUS | 15 degrees, sunny, slight wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | 0 | | |
| BUS35 | 10/08/2022 | 1515 | | BUS | 16 Degrees, Cloudy, Moderate Breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | 0 | | |
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | Brown Songlark | *Cincloramphus cruralis* | 3 | 30 | 52 | 0 | 0 | Perched on shrub |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | Common starling | *Sturnus vulgaris* | 20 | 400 | 240 | 15 | 240 | Group perched on stag |
| BUS35 | 13/11/2023 | 10:48am | | BUS | 19C, clear sky, light wind | Emu | *Dromaius novaehollandiae* | 4 | 700 | | 0 | | |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Little Raven | *Corvus mellori* | 2 | 40 | | 5 | north | |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Little Raven | *Corvus mellori* | 2 | 80 | | 1 | | |
| BUS35 | 10/08/2022 | 1515 | | BUS | 16 Degrees, Cloudy, Moderate Breeze | Nankeen Kestrel | *Falco cenchroides* | 2 | 60 | | 20 | | |
| BUS35 | 17/05/2022 | 10:27:00 | | BUS | 15 degrees, sunny, slight wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 2 | | |
| BUS35 | 8/08/2024 | 15:41 | PM | BUS | 16C, overcast, moderate wind. 8/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | 66 | 0 | | Perched on shrub |
| BUS35 | 12/06/2024 | 10:42-11:02 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 150 | 50 | 254 | Hunting |
| BUS35 | 10/06/2024 | 2:05-2:25 PM | | BUS | 15 c, Light Southerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 55 | 15 | 111 | Hunting |
| BUS35 | 8/08/2024 | 15:41 | PM | BUS | 16C, overcast, moderate wind. 8/8 cloud cover | Spotted Harrier | *Circus assimilis* | 1 | 400 | 95 | 2 | | Hovering over shrublands |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 30 | | 1 | | |
| BUS35 | 13/11/2023 | 10:48am | | BUS | 19C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 10 | | 1 | | |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 2 | 1200 | 305 | 100 | 220 | Soaring/circling, flew toward nearby woodland |
| BUS35 | 13/11/2023 | 07:26am | | BUS | 12C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 2000 | | 60 | | circling in north-west |
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | White-fronted Chat | *Epthianura albifrons* | 1 | 50 | 17 | 1 | 230 | Perched on shrub |
| BUS35 | 8/08/2024 | 11:35 | MID | BUS | 14C, strong winds, overcast | White-fronted Chat | *Epthianura albifrons* | 4 | 30 | 355 | 3 | 280 | Shrublands |
| BUS35 | 6/08/2024 | 3:40 | PM | BUS | 13C, partly cloudy (2/8 cloud cover), light breeze | White-fronted Chat | *Epthianura albifrons* | 2 | 15 | 280 | 5 | 320 | Heard calling, flying between shrubs |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 85 | 270 | 20 | 330 | Undulating flight over shrubland |
| BUS36 | 13/11/2023 | 01:01pm | | BUS | 24C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | | 3 | | |
| BUS36 | 13/11/2023 | 09:06am | | BUS | 18C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 50 | | 3 | | |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 50 | | 2 | | |
| BUS36 | 13/11/2023 | 04:50pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 60 | | 2 | north | |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 1 | | |
| BUS36 | 13/11/2023 | 04:50pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | |
| BUS36 | 13/11/2023 | 04:50pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | | 1 | | |
| BUS36 | 13/11/2023 | 09:36am | | BUS | 18C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 75 | | 1 | | |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 60 | | 0 | | |
| BUS36 | 30/10/2024 | 8:05-8:25 | AM | | 14 degrees, sunny, clear skies, slight winds | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 150 | 348 | | | In shrubs |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 5 | 170 | 2 | 224 | |
| BUS36 | 10/06/2024 | 11:30-11:50 AM | | BUS | 14 c, Still, Scattered clouds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | 243 | 0 | | |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | | 5 | south | |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | Australian Magpie | *Gymnorhina tibicen* | 1 | 500 | 222 | 0 | | Heard |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | Australian Raven | *Corvus coronoides* | 5 | 1000 | 65 | 50 | 190 | Flying adjacent to highway |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | Australian Raven | *Corvus coronoides* | 3 | 600 | 89 | 15 | 177 | |
| BUS36 | 31/10/2024 | 10:30-10:50 | MID | | 19 degrees, light winds | Australian Raven | *Corvus coronoides* | 1 | 350 | 4 | 5 | | Hovering |
| BUS36 | 10/06/2024 | 11:30-11:50 AM | | BUS | 14 c, Still, Scattered clouds | Australian Raven | *Corvus coronoides* | 1 | 800 | 280 | 0 | | Heard |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | Australian Raven | *Corvus coronoides* | 10 | 1000 | 177 | 0 | | Heard |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | Australian Raven | *Corvus coronoides* | 4 | 1000 | 317 | 0 | | Heard |
| BUS36 | 31/10/2024 | 10:30-10:50 | MID | | 19 degrees, light winds | Black Kite | *Milvus migrans* | 1 | 20 | 182 | 20 | | Circling |
| BUS36 | 13/11/2023 | 01:01pm | | BUS | 24C, clear sky, light wind | Black Kite | *Milvus migrans* | 1 | 150 | | 15 | south | |
| BUS36 | 13/11/2023 | 09:06am | | BUS | 18C, clear sky, light wind | Brown Falcon | *Falco berigora* | 1 | 200 | | 35 | | |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | Brown Songlark | *Cincloramphus cruralis* | 2 | 75 | 230 | 20 | 280 | Heard calling, perched on shrub |
| BUS36 | 13/11/2023 | 09:06am | | BUS | 18C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 3 | 25 | | 10 | | |
| BUS36 | 13/11/2023 | 01:01pm | | BUS | 24C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS36 | 13/11/2023 | 04:20pm | | BUS | 28C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS36 | 30/10/2024 | 8:05-8:25 | AM | | 14 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 87 | | | Heard call |
| BUS36 | 31/10/2024 | 10:30-10:50 | MID | | 19 degrees, light winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | 9 | | | Heard call |
| BUS36 | 28/10/2024 | 4:00-4:20 | PM | | 27 degrees, moderate breeze, clear skies | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 131 | 70 | 230 | Perched in shrub |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | Brown Songlark | *Cincloramphus cruralis* | 4 | 10 | 328 | 1 | 138 | |
| BUS36 | 10/06/2024 | 11:30-11:50 AM | | BUS | 14 c, Still, Scattered clouds | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 323 | 0 | | |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Little Raven | *Corvus mellori* | 3 | 75 | | 20 | | circling |
| BUS36 | 13/11/2023 | 09:36am | | BUS | 18C, clear sky, light wind | Little Raven | *Corvus mellori* | 1 | 50 | | 5 | | |
| BUS36 | 13/11/2023 | 09:06am | | BUS | 18C, clear sky, light wind | Little Raven | *Corvus mellori* | 3 | 150 | | 2 | north-east | |
| BUS36 | 31/10/2024 | 10:30-10:50 | MID | | 19 degrees, light winds | Magpie-lark | *Grallina cyanoleuca* | 1 | 100 | 9 | 9 | | Heard call |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | 80 | 55 | 100 | Hovering/hunting over shrubland |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | Nankeen Kestrel | *Falco cenchroides* | 1 | 80 | 230 | 40 | 180 | Hovering/hunting over shrubland |
| BUS36 | 28/10/2024 | 4:00-4:20 | PM | | 27 degrees, moderate breeze, clear skies | Nankeen Kestrel | *Falco cenchroides* | 2 | 20 | 40 | 30 | | Hovering |
| BUS36 | 30/10/2024 | 8:05-8:25 | AM | | 14 degrees, sunny, clear skies, slight winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 96 | 30 | | Hovering |
| BUS36 | 31/10/2024 | 10:30-10:50 | MID | | 19 degrees, light winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 122 | 20 | | Hovering |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | | 10 | east | |
| BUS36 | 31/10/2024 | 10:30-10:50 | MID | | 19 degrees, light winds | Horsfield's Bushlark | *Mirafra javanica* | 1 | 30 | 227 | | | Perched in shrub |
| BUS36 | 13/11/2023 | 09:06am | | BUS | 18C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 50 | | 1 | | |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | Wedge-tailed Eagle | *Aquila audax* | 1 | 850 | 20 | 10 | 20 | Perched in tree |
| BUS36 | 13/11/2023 | 04:20pm | | BUS | 28C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 500 | | 5 | | hunting along ground |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | White-fronted Chat | *Epthianura albifrons* | 2 | 300 | 270 | 15 | 250 | Flying between shrubs, foraging |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 75 | | 1 | | |
| BUS36 | 13/11/2023 | 01:31pm | | BUS | 25C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 30 | | 1 | | |
| BUS36 | 13/11/2023 | 04:50pm | | BUS | 28C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 6 | 50 | | 1 | | perched in shrubs |
| BUS36 | 13/11/2023 | 09:06am | | BUS | 18C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 10 | 25 | | 1 | | flying between shrubs |
| BUS36 | 7/08/2024 | 9:40 | AM | BUS | 10C, clear sky (0/8 cloud cover), no breeze (still) | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 125 | 310 | 2 | 310 | Flying between shrubs, foraging |
| BUS36 | 12/06/2024 | 8:20-8:40 AM | | BUS | 11 c, Moderate Northerly | White-winged Fairy-wren | *Malurus leucopterus* | 10 | 20 | 281 | 1 | 209 | |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | 355 | 3 | 310 | Undulating flight over shrubland |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 2 | | |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | perched on shrub |
| BUS37 | 13/11/2023 | 11:28am | | BUS | 20C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 1 | | perched on fence |
| BUS37 | 13/11/2023 | 03:05pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 1 | | perched on fence |
| BUS37 | 13/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 1 | | perched on fence |
| BUS37 | 8/08/2024 | 16:18 | PM | BUS | 16C, overcast 7/8 cloud cover , Light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | 76 | 0 | | Heard call/Aural |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | 350 | - | - | |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 500 | 250 | - | - | heard |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 4 | 50 | 60 | 40 | 320 | Perched in stag in nearby woodland |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Australian Magpie | *Gymnorhina tibicen* | 1 | 200 | 98 | 0 | 0 | Perched on shrub |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Australian Raven | *Corvus coronoides* | 1 | 500 | 80 | - | - | heard |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 8 | 500 | 50 | 30 | 10 | Heard calling |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Australian Raven | *Corvus coronoides* | 2 | 300 | 142 | 25 | 240 | Flying over shrublands |
| BUS37 | 8/08/2024 | 16:18 | PM | BUS | 16C, overcast 7/8 cloud cover , Light wind | Australian Raven | *Corvus coronoides* | 6 | 100 | 311 | 20 | | Visual |
| BUS37 | 8/08/2024 | 16:18 | PM | BUS | 16C, overcast 7/8 cloud cover , Light wind | Australian Raven | *Corvus coronoides* | 1 | 100 | 146 | 20 | | Visual |
| BUS37 | 13/11/2023 | 11:58am | | BUS | 21C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 4 | 100 | | 5 | west | |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Black Kite | *Milvus migrans* | 1 | 800 | 164 | 80 | 200 | Flying over shrublands |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 2 | 150 | 250 | 50 | 290 | Circling/hunting over shrubland |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 2 | 600 | 25 | 50 | 10 | Soaring/circling above shrubland |
| BUS37 | 13/11/2023 | 11:58am | | BUS | 21C, clear sky, light wind | Black Kite | *Milvus migrans* | 1 | 200 | | 50 | | hunting |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 4 | 800 | 280 | 35 | 280 | Circling/hunting |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black Kite | *Milvus migrans* | 1 | 0 | 175 | 30 | 220 | Soaring above, hunting |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Black Kite | *Milvus migrans* | 1 | 300 | 101 | 30 | 125 | Circling |
| BUS37 | 10/06/2024 | 1:01-1:21 PM | | BUS | 15 c, Slight Southerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 2 | 500 | 6 | 80 | 88 | Pair Hunting together |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | | 50 | | hovering |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | | 40 | | hovering |
| BUS37 | 13/11/2023 | 03:05pm | | BUS | 28C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | | 40 | west | |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | 30 | 40 | 50 | Hovering/hunting above shrubland |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 400 | 300 | 35 | 220 | Hunting, perched on shrub |
| BUS37 | 12/06/2024 | 9:20-9:40 AM | | BUS | 14 c, Moderate Northerly, Clear | Black-shouldered Kite | *Elanus axillaris* | 4 | 300 | 339 | 30 | 292 | Two pairs hunting |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | | 30 | | hovering |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 2 | 1000 | | 25 | | |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 30 | | 2 | | hovering |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 25 | | 1 | | perched on fence |
| BUS37 | 10/06/2024 | 1:01-1:21 PM | | BUS | 15 c, Slight Southerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | 194 | 0 | | Perched |
| BUS37 | 8/08/2024 | 16:18 | PM | BUS | 16C, overcast 7/8 cloud cover , Light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 50 | 302 | 0 | | Perched on fence |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 110 | - | - | heard |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 70 | 190 | - | - | heard |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 7 | | |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Brown Songlark | *Cincloramphus cruralis* | 2 | 40 | 100 | 6 | 325 | Flying between shrubs, calling |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS37 | 13/11/2023 | 11:58am | | BUS | 21C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 4 | | |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 75 | | 1 | north-west | |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | 1 | south | |
| BUS37 | 13/11/2023 | 11:28am | | BUS | 20C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | | | heard |
| BUS37 | 13/11/2023 | 11:58am | | BUS | 21C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Common starling | *Sturnus vulgaris* | 3 | 100 | 250 | - | - | perched in shrubs |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Emu | *Dromaius novaehollandiae* | 3 | 400 | 300 | - | - | |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | Emu | *Dromaius novaehollandiae* | 1 | 250 | 170 | - | - | |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Little Raven | *Corvus mellori* | 1 | 70 | | 4 | north-west | |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Little Raven | *Corvus mellori* | 1 | 250 | | 3 | south-west | |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Little Raven | *Corvus mellori* | 1 | 400 | | | | heard |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | 330 | 40 | 20 | Hovering/hunting over shrubland |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 220 | 40 | 220 | Hovering over shrublands |
| BUS37 | 13/11/2023 | 03:05pm | | BUS | 28C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | | 30 | | hovering |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Nankeen Kestrel | *Falco cenchroides* | 2 | 80 | 20 | 20 | 50 | Hovering over shrublands |
| BUS37 | 10/06/2024 | 1:01-1:21 PM | | BUS | 15 c, Slight Southerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 185 | 60 | 108 | Hunting/hovering |
| BUS37 | 10/06/2024 | 1:01-1:21 PM | | BUS | 15 c, Slight Southerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 294 | 50 | 294 | Hunting in surrounding area |
| BUS37 | 30/10/2024 | 11:50 - 12:10 | MID | | 26 degrees, sunny, hot, medium winds | None | | | | | | | |
| BUS37 | 31/10/2024 | 3:20 | PM | | 27 degrees, clear skies, strong winds | None | | | | | | | |
| BUS37 | 13/11/2023 | 11:28am | | BUS | 20C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 15 | | 1 | | |
| BUS37 | 13/11/2023 | 11:28am | | BUS | 20C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 15 | | 1 | | |
| BUS37 | 13/11/2023 | 11:58am | | BUS | 21C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 1 | 30 | | 1 | | |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Wedge-tailed Eagle | *Aquila audax* | 3 | 800 | 186 | 200 | 195 | Flying over shrublands |
| BUS37 | 9/08/2024 | 11:50 | MID | BUS | 15C,2/8 cloud cover, sunny, slight breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | 320 | 200 | 300 | Flying |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1800 | 60 | 75 | 60 | Soaring above, flew toward woodland |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 2000 | | 70 | north | |
| BUS37 | 13/11/2023 | 08:30am | | BUS | 17C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 2000 | | 50 | | |
| BUS37 | 5/08/2024 | 9:40 | AM | BUS | 9C, overcast (7/8 cloud cover), light breeze | Wedge-tailed Eagle | *Aquila audax* | 1 | 1500 | 330 | 50 | 350 | Soaring/circling, flew toward woodland |
| BUS37 | 10/06/2024 | 1:01-1:21 PM | | BUS | 15 c, Slight Southerly, Overcast | Wedge-tailed Eagle | *Aquila audax* | 2 | 1500 | 333 | 15 | 257 | Pair flying West |
| BUS37 | 13/11/2023 | 03:35pm | | BUS | 28C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 1000 | | 10 | | hunting along ground |
| BUS37 | 13/11/2023 | 09:00am | | BUS | 15C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 100 | | 1 | | flying along ground |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 40 | 200 | - | - | heard |
| BUS37 | 29/10/2024 | 7:29am | Morning | | 12 degrees, clear sky, moderate wind | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 50 | 100 | - | - | heard |
| BUS38 | 19/02/2022 | 1407 | | BUS | Sunny, warm, 26 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 25 | | |
| BUS38 | 16/05/2022 | 4:21:00 | | BUS | 18 degrees, moderate wind, sunny | Australian Magpie | *Gymnorhina tibicen* | 3 | 50 | | 6 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Australian Raven | *Corvus coronoides* | 5 | 50 | | 20 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Black kite | *Milvus migrans* | 1 | 60 | | 20 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | 1 | 110 | | 10 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Bluebonnet | *Northiella haematogaster* | 2 | 50 | | 12 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Budgerigar | *Melopsittacus undulatus* | 5 | 140 | | 2 | | |
| BUS38 | 19/02/2022 | 1407 | | BUS | Sunny, warm, 26 degrees | Crested pigeon | *Ocyphaps lophotes* | 2 | | | 12 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Crested pigeon | *Ocyphaps lophotes* | 2 | 120 | | 2 | | |
| BUS38 | 11/08/2022 | 1540 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Crested pigeon | *Ocyphaps lophotes* | 2 | 10 | | 0 | | |
| BUS38 | 19/02/2022 | 1407 | | BUS | Sunny, warm, 26 degrees | Galah | *Eolophus roseicapilla* | 30 | | | 40 | Sunny, warm, 26 degrees | |
| BUS38 | 11/08/2022 | 1540 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Galah | *Eolophus roseicapilla* | 3 | 20 | | 15 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Galah | *Eolophus roseicapilla* | 2 | 15 | | 10 | | |
| BUS38 | 16/05/2022 | 4:21:00 | | BUS | 18 degrees, moderate wind, sunny | Galah | *Eolophus roseicapilla* | 100 | 50 | | 10 | 18 degrees, moderate wind, sunny | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Ground cuckoo-shrike | *Coracina maxima* | 1 | 100 | | 15 | | |
| BUS38 | 11/08/2022 | 1540 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Little Raven | *Corvus mellori* | 3 | 30 | | 20 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Magpie-lark | *Grallina cyanoleuca* | 1 | 50 | | 10 | | |
| BUS38 | 19/02/2022 | 1407 | | BUS | Sunny, warm, 26 degrees | Nankeen kestrel | *Falco cenchroides* | 6 | | | 70 | | |
| BUS38 | 11/08/2022 | 1540 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Nankeen Kestrel | *Falco cenchroides* | 3 | 20 | | 50 | 15 Degrees, Cloudy, Moderate Winds | |
| BUS38 | 16/05/2022 | 4:21:00 | | BUS | 18 degrees, moderate wind, sunny | Nankeen Kestrel | *Falco cenchroides* | 1 | 50 | | 10 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Noisy miner | *Manorina melanocephala* | 4 | 25 | | 5 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Pallid cuckoo | *Cacomantis pallidus* | 1 | 150 | | 5 | | |
| BUS38 | 11/08/2022 | 1540 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Pied Butcherbird | *Cracticus nigrogularis* | 2 | 30 | | 12 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Pied butcherbird | *Cracticus nigrogularis* | 1 | 10 | | 10 | 17 degrees, strong winds, sunny | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Red-rumped parrot | *Psephotus heamatonotus* | 2 | 130 | | 10 | | |
| BUS38 | 29/10/2021 | 1018 | | BUS | 17 degrees, strong winds, sunny | Striated pardalote | *Pardalotus striatus* | 1 | 100 | | 5 | | |
| BUS38 | 16/05/2022 | 4:21:00 | | BUS | 18 degrees, moderate wind, sunny | Wedge-tailed Eagle | *Aquila audax* | 1 | 150 | | 15 | | |
| BUS38 | 19/02/2022 | 1407 | | BUS | Sunny, warm, 26 degrees | White-winged Fairy-wren | *Malurus leucopterus* | 4 | | | 3 | | |
| BUS38 | 11/08/2022 | 1540 | | BUS | 15 Degrees, Cloudy, Moderate Winds | Yellow-throated Miner | *Manorina flavigula* | 1 | 20 | | 1 | | |
| BUS39 | 30/10/2024 | 11:05-11:25 | MID | | 24 degrees, sunny, medium winds | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 5 | 198 | 1 | 202 | Flying south, close to ground |
| BUS39 | 31/10/2024 | 2:55-3:15 | PM | | 27 degrees, clear skies, strong winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 5 | 210 | | | Perched in shrub |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 50 | 260 | 1 | 180 | |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 150 | 81 | 15 | 26 | Flying above canopy |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | Australian Magpie | *Gymnorhina tibicen* | 3 | 150 | 170 | 10 | 260 | |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Australian Magpie | *Gymnorhina tibicen* | 8 | 500 | 210 | 10 | 102 | In Woodland |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Australian Magpie | *Gymnorhina tibicen* | 4 | 500 | 207 | 10 | 207 | Flying between nearby treeline |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Australian Magpie | *Gymnorhina tibicen* | 2 | 300 | 210 | | | Heard call |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 200 | 185 | | | Heard call |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | Australian Raven | *Corvus coronoides* | 2 | 500 | 195 | 20 | 260 | |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Australian Raven | *Corvus coronoides* | 12 | 500 | 207 | 12 | 74 | Flying from nearby treeline |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Australian Raven | *Corvus coronoides* | 4 | 500 | 210 | 0 | | Heard in Woodland |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Black Kite | *Milvus migrans* | 1 | 300 | 150 | 40 | 145 | Circling, flying SW |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 40 | 95 | 10 | 185 | Flying/hovering overhead, hunting |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Brown Quail | *Synoicus ypsilophorus* | 2 | 60 | 95 | 1 | 254 | Flying from grassy patch |
| BUS39 | 28/10/2024 | 3:30-3:50 | PM | | 27 degrees, moderate breeze, clear skies | Brown Songlark | *Cincloramphus cruralis* | 1 | 170 | | | | Heard call |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 260 | | | Heard call |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 292 | | | Perched |
| BUS39 | 30/10/2024 | 11:05-11:25 | MID | | 24 degrees, sunny, medium winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 285 | | | Heard call |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | 219 | | | Heard call |
| BUS39 | 31/10/2024 | 2:55-3:15 | PM | | 27 degrees, clear skies, strong winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 5 | 210 | | | Perched in shrub |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Brown Songlark | *Cincloramphus cruralis* | 4 | 50 | 160 | 0 | | Heard |
| BUS39 | 29/10/2024 | 9:10-9:30 | AM | | 18 degrees, sunny, low winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 240 | | | Heard call |
| BUS39 | 29/10/2024 | 9:10-9:30 | AM | | 18 degrees, sunny, low winds | Eastern Rosella | *Platycercus eximius* | 1 | 50 | 220 | 20 | 133 | Moving SE |
| BUS39 | 28/10/2024 | 3:30-3:50 | PM | | 27 degrees, moderate breeze, clear skies | Emu | *Dromaius novaehollandiae* | 6 | 200 | 31 | | 260 | Moving West |
| BUS39 | 29/10/2024 | 9:10-9:30 | AM | | 18 degrees, sunny, low winds | Emu | *Dromaius novaehollandiae* | 2 | 30 | 300 | | 300 | Moving NW |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Emu | *Dromaius novaehollandiae* | 10 | 200 | 334 | | | Grazing |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Emu | *Dromaius novaehollandiae* | 8 | 200 | 292 | 0 | 292 | Running across shrubland |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | Galah | *Eolophus roseicapilla* | 2 | 500 | 187 | 20 | 280 | |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Galah | *Eolophus roseicapilla* | 13 | 50 | 70 | 20 | 26 | Flying above canopy in flock |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Galah | *Eolophus roseicapilla* | 7 | 200 | 162 | 20 | 256 | Flying West |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Galah | *Eolophus roseicapilla* | 4 | 100 | 175 | 12 | 240 | Flying above canopy |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Galah | *Eolophus roseicapilla* | 2 | 500 | 207 | 8 | 270 | Flying from nearby treeline |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | Galah | *Eolophus roseicapilla* | 4 | 500 | 200 | 5 | 277 | |
| BUS39 | 28/10/2024 | 3:30-3:50 | PM | | 27 degrees, moderate breeze, clear skies | Galah | *Eolophus roseicapilla* | 1 | 200 | | | | Heard call |
| BUS39 | 30/10/2024 | 11:05-11:25 | MID | | 24 degrees, sunny, medium winds | Galah | *Eolophus roseicapilla* | 1 | 100 | 200 | | | Heard call |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Galah | *Eolophus roseicapilla* | 30 | 500 | 210 | 8 | 96 | In Woodland |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Little Raven | *Corvus mellori* | 1 | 100 | 173 | 15 | 76 | Flying East |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | Little Raven | *Corvus mellori* | 3 | 100 | 110 | | | Heard call |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Magpie-lark | *Grallina cyanoleuca* | 2 | 500 | 210 | 30 | 65 | In Woodland |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Magpie-lark | *Grallina cyanoleuca* | 1 | | | | | Heard calling |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 140 | 30 | | Hovering |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 80 | 95 | 10 | 185 | Flying/hovering overhead, hunting |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 220 | 40 | 131 | |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 306 | 0 | | Perched on Shrub |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Noisy Miner | *Manorina melanocephala* | 4 | 500 | 207 | 5 | 70 | Flying between trees at nearby remnant |
| BUS39 | 31/10/2024 | 2:55-3:15 | PM | | 27 degrees, clear skies, strong winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 300 | 333 | 150 | | Circling |
| BUS39 | 28/10/2024 | 3:30-3:50 | PM | | 27 degrees, moderate breeze, clear skies | Wedge-tailed Eagle | *Aquila audax* | 1 | 250 | 310 | 100 | | Circling |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 350 | 145 | 40 | | Circling |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | 210 | 15 | 248 | In Woodland |
| BUS39 | 13/06/2024 | 3:02 PM | | BUS | 10 c, still, overcast | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | 207 | 12 | 207 | Perched in stag |
| BUS39 | 30/10/2024 | 11:05-11:25 | MID | | 24 degrees, sunny, medium winds | Whistling Kite | *Haliastur sphenurus* | 2 | 35 | 269 | 30 | | Circling |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | White-fronted chat | *Epthianura albifrons* | 2 | 40 | 102 | 2 | 155 | |
| BUS39 | 30/10/2024 | 7:25-7:45 | AM | | 12 degrees, sunny, clear skies, slight winds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | 150 | | | Heard call |
| BUS39 | 31/10/2024 | 10:00-10:20 | MID | | 18 degrees, light winds | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 20 | 140 | | | Heard call |
| BUS39 | 10/06/2024 | 12:10-12:30 PM | | BUS | 15 c, Still, Scattered clouds | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 50 | 99 | 1 | 184 | |
| BUS39 | 12/06/2024 | 8:45-9:05 AM | | BUS | 11 c, Moderate Northerly | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 30 | 105 | 0 | | Heard |
| BUS40 | 19/02/2022 | 1545 | | BUS | Sunny, clear skies, 34 degrees | Australasian Pipit | *Anthus novaeseelandiae* | 2 | | | | | |
| BUS40 | 19/02/2022 | 1545 | | BUS | Sunny, clear skies, 34 degrees | Brown Falcon | *Falco berigora* | 1 | | | 60 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Common Bronzewing | *Phaps chalcoptera* | 1 | 50 | | 4 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Common starling | *Sturnus vulgaris* | 2 | 50 | | 20 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Eastern Barn Owl | *Tyto javanica* | 1 | 15 | | 4 | | |
| BUS40 | 19/02/2022 | 1545 | | BUS | Sunny, clear skies, 34 degrees | Galah | *Eolophus roseicapilla* | 4 | | | 30 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Galah | *Eolophus roseicapilla* | 4 | 40 | | 13 | | |
| BUS40 | 19/02/2022 | 1545 | | BUS | Sunny, clear skies, 34 degrees | Little Crow | *Corvus bennetti* | 1 | | | 20 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Masked woodswallow | *Artamus personatus* | 3 | 25 | | 5 | | |
| BUS40 | 19/02/2022 | 1545 | | BUS | Sunny, clear skies, 34 degrees | Nankeen kestrel | *Falco cenchroides* | 4 | | | 80 | Sunny, clear skies, 34 degrees | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Nankeen Kestrel | *Falco cenchroides* | 1 | 80 | | 50 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Rainbow Bee-eater | *Merops ornatus* | 2 | 20 | | 10 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Wedge-tailed Eagle | *Aquila audax* | 1 | 100 | | 80 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | White-breasted Woodswallow | *Artamus leucorynchus* | 4 | 20 | | 6 | | |
| BUS40 | 19/02/2022 | 1545 | | BUS | Sunny, clear skies, 34 degrees | White-winged Fairy-wren | *Malurus leucopterus* | 5 | | | 3 | | |
| BUS40 | 29/10/2021 | 1410 | | BUS | N/A | Willie wagtail | *Rhipidura leucophrys* | 1 | 20 | | 2 | | |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 2 | | |
| BUS41 | 14/11/2023 | 03:45pm | | BUS | 24C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | | 2 | | |
| BUS41 | 14/11/2023 | 04:15pm | | BUS | 24C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 1 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS41 | 29/10/2024 | 12:00-12:20 | MID | | 25 degrees, sunny, moderate winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 132 | | | Perched in bush |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 10 | 80 | | | Heard call |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Australian Magpie | *Gymnorhina tibicen* | 2 | 50 | 156 | | | Heard call |
| BUS41 | 28/10/2024 | 3:00-3:20 | PM | | 27 degrees, moderate breeze, clear skies | Black Kite | *Milvus migrans* | 3 | 400 | 80 | 100 | | Circling |
| BUS41 | 29/10/2024 | 12:00-12:20 | MID | | 25 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 1 | 300 | 233 | 100 | | Circling |
| BUS41 | 29/10/2024 | 12:00-12:20 | MID | | 25 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 1 | 350 | 71 | 100 | | Circling |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Black Kite | *Milvus migrans* | 2 | 5 | 135 | 25 | | Circling |
| BUS41 | 14/11/2023 | 04:15pm | | BUS | 24C, partly cloudy, still | Brown Falcon | *Falco berigora* | 2 | 600 | | 10 | | perched in stag |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 5 | | |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 10 | 81 | 4 | | Flying between bushes |
| BUS41 | 14/11/2023 | 03:45pm | | BUS | 24C, partly cloudy, still | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS41 | 14/11/2023 | 04:15pm | | BUS | 24C, partly cloudy, still | Brown Songlark | *Cincloramphus cruralis* | 1 | 25 | | | | heard |
| BUS41 | 28/10/2024 | 3:00-3:20 | PM | | 27 degrees, moderate breeze, clear skies | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 275 | | | Perched in shrubs |
| BUS41 | 29/10/2024 | 12:00-12:20 | MID | | 25 degrees, sunny, moderate winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | | | | Heard call |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | 270 | | | Perched in Shrubs |
| BUS41 | 28/10/2024 | 3:00-3:20 | PM | | 27 degrees, moderate breeze, clear skies | Emu | *Dromaius novaehollandiae* | 1 | 300 | 250 | | 170 | Moving South |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Galah | *Eolophus roseicapilla* | 4 | 1000 | | 20 | | |
| BUS41 | 14/11/2023 | 04:15pm | | BUS | 24C, partly cloudy, still | Little Raven | *Corvus mellori* | 2 | 500 | | 15 | north | |
| BUS41 | 14/11/2023 | 04:15pm | | BUS | 24C, partly cloudy, still | Little Raven | *Corvus mellori* | 5 | 700 | | 10 | | perched in stag |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Little Raven | *Corvus mellori* | 1 | 300 | 171 | 8 | 300 | Flying above Canopy |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Little Raven | *Corvus mellori* | 1 | 100 | | 5 | | |
| BUS41 | 28/10/2024 | 3:00-3:20 | PM | | 27 degrees, moderate breeze, clear skies | Little Raven | *Corvus mellori* | 1 | 180 | | | | Heard call |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | | 25 | | |
| BUS41 | 29/10/2024 | 12:00-12:20 | MID | | 25 degrees, sunny, moderate winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 112 | 30 | 20 | | Hovering |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 165 | 10 | | Hovering |
| BUS41 | 14/11/2023 | 03:45pm | | BUS | 24C, partly cloudy, still | Rufous Songlark | *Cincloramphus matthewsi* | 1 | 10 | | 1 | | |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 3 | 500 | | 40 | | |
| BUS41 | 14/11/2023 | 12:20pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | | 1 | | |
| BUS41 | 30/10/2024 | 8:05-8:25 | AM | | 18 degrees, sunny, clear skies, slight winds | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 100 | 144 | | | Perched in shrubs |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Australian Magpie | *Gymnorhina tibicen* | 2 | | | 20 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Australian Raven | *Corvus coronoides* | 2 | 100 | | 15 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Bluebonnet | *Northiella haematogaster* | 2 | | | 30 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Common starling | *Sturnus vulgaris* | 4 | 100 | | 40 | | |
| BUS42 | 16/05/2022 | 2:12:00 | | BUS | 18 degrees, moderate wind, sunny | Common starling | *Sturnus vulgaris* | 30 | 100 | | 10 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Crested pigeon | *Ocyphaps lophotes* | 4 | | | 10 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Crested pigeon | *Ocyphaps lophotes* | 1 | 30 | | 4 | | |
| BUS42 | 16/05/2022 | 2:12:00 | | BUS | 18 degrees, moderate wind, sunny | Crested pigeon | *Ocyphaps lophotes* | 4 | 30 | | 4 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Eastern Barn Owl | *Tyto javanica* | 1 | | | 15 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Galah | *Eolophus roseicapilla* | 50 | | | 40 | Sunny, clear skies, 34 degrees | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Galah | *Eolophus roseicapilla* | 3 | 30 | | 25 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Galah | *Eolophus roseicapilla* | 4 | 80 | | 15 | | |
| BUS42 | 16/05/2022 | 2:12:00 | | BUS | 18 degrees, moderate wind, sunny | Galah | *Eolophus roseicapilla* | 3 | 10 | | 5 | 18 degrees, moderate wind, sunny | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Little Crow | *Corvus bennetti* | 2 | | | 20 | | |
| BUS42 | 16/05/2022 | 2:12:00 | | BUS | 18 degrees, moderate wind, sunny | Magpie-lark | *Grallina cyanoleuca* | 2 | 30 | | 10 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Magpie-lark | *Grallina cyanoleuca* | 1 | | | 4 | | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Magpie-lark | *Grallina cyanoleuca* | 1 | 20 | | 2 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Nankeen kestrel | *Falco cenchroides* | 4 | | | 150 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Nankeen Kestrel | *Falco cenchroides* | 1 | 60 | | 15 | | |
| BUS42 | 16/05/2022 | 2:12:00 | | BUS | 18 degrees, moderate wind, sunny | Nankeen Kestrel | *Falco cenchroides* | 1 | 20 | | 6 | | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Nankeen Kestrel | *Falco cenchroides* | 1 | | | 4 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Noisy Miner | *Manorina melanocephala* | 4 | 60 | | 15 | | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Pallid Cuckoo | *Cacomantis pallidus* | 1 | 10 | | 3 | | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Singing Honeyeater | *Lichenostomus virescens* | 2 | 40 | | 1 | | |
| BUS42 | 29/10/2021 | 1202 | | BUS | N/A | Superb Fairy-wren | *Malurus cyaneus* | 2 | 10 | | 2 | | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Wedge-tailed Eagle | *Aquila audax* | 2 | | | 150 | | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Welcome Swallow | *Hirundo neoxena* | 10 | 20 | | 15 | 15 Degrees, Slight Overcast, Moderate Winds | |
| BUS42 | 19/02/2022 | 1630 | | BUS | Sunny, clear skies, 34 degrees | Willie wagtail | *Rhipidura leucophrys* | 4 | | | 2 | | |
| BUS42 | 10/08/2022 | 1353 | | BUS | 15 Degrees, Slight Overcast, Moderate Winds | Willie Wagtail | *Rhipidura leucophrys* | 4 | 5 | | 2 | | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 12 | 400 | | 20 | | startled by raptors |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 20 | | 10 | north | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 5 | 25 | | 8 | | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 5 | 30 | | 3 | | |
| BUS43 | 22/02/2024 | 10:42am | MID - 2 | | 26C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 3 | south | |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 300 | 85 | 3 | 355 | Perched on shrub |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 2 | | |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | 150 | 2 | 260 | Flying between shurbs |
| BUS43 | 29/10/2024 | 12:35-12:55 | MID | | 26 degrees, sunny, moderate winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 220 | 2 | 222 | Flying SW |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | | 1 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 1 | | |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 1 | | |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 1 | | |
| BUS43 | 9/08/2024 | 13:40 | MID | BUS | 18C,5/8 cloud cover,moderate breeze | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 30 | 225 | 1 | 295 | Perched on shrub |
| BUS43 | 30/10/2021 | | | BUS | N/A | Australasian pipit | *Anthus novaeseelandiae* | 1 | 15 | | 0 | | |
| BUS43 | 6/08/2024 | 13:22 | MID | BUS | 14C, Partly cloudy 5/8 | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | 90 | | | Perched in shrub |
| BUS43 | 30/10/2024 | 9:12am | Morning | | 18 degrees, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | 90 | - | - | heard |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australian Magpie | *Gymnorhina tibicen* | 2 | 400 | 285 | 1 | 310 | Heard calling |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 2 | 500 | | 30 | north | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Australian Raven | *Corvus coronoides* | 1 | 200 | | 20 | north | |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 1 | 150 | 35 | 20 | 90 | Perched on shrub |
| BUS43 | 8/08/2024 | 16:48 | PM | BUS | 14C, overcast, no breeze. 8/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | 500 | 287 | 20 | 13 | Visual |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Australian Raven | *Corvus coronoides* | 1 | 0 | | 10 | north-east | |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Australian Raven | *Corvus coronoides* | 2 | 25 | 140 | 10 | 300 | Flying overhead, calling |
| BUS43 | 9/08/2024 | 13:40 | MID | BUS | 18C,5/8 cloud cover,moderate breeze | Australian Raven | *Corvus coronoides* | 1 | 120 | 238 | 8 | 0 | Perched on transmission line |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Australian Raven | *Corvus coronoides* | 4 | 700 | | 5 | south | |
| BUS43 | 22/10/2024 | 7:40-8:00 | AM | | 16 degrees, Sunny, Light wind, scattered clouds | Australian raven | *Corvus coronoides* | 2 | 150 | | | | Heard call |
| BUS43 | 30/10/2021 | | | BUS | N/A | Banded lapwing | *Vanellus tricolor* | 50 | 100 | | 40 | large flock, flew as high as 40m | |
| BUS43 | 23/02/2022 | 745 | | BUS | Clear skies, 20 degrees | Black Falcon | *Falco subniger* | 2 | | | 80 | Clear skies, 20 degrees | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Black Falcon | *Falco subniger* | 1 | 300 | | 5 | | perched on fence |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Black Falcon | *Falco subniger* | 1 | 500 | | 1 | | perched on fence |
| BUS43 | 10/08/2022 | 1436 | | BUS | 16 Degrees, Cloudy, Moderate Breeze | Black Kite | *Milvus migrans* | 1 | 500 | | 80 | | |
| BUS43 | 30/10/2021 | | | BUS | N/A | Black kite | *Milvus migrans* | 2 | 150 | | 50 | Located north west of the survey point, circling. | |
| BUS43 | 29/10/2024 | 12:35-12:55 | MID | | 26 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 3 | 25 | 321 | 40 | 245 | Flying SW |
| BUS43 | 22/10/2024 | 7:40-8:00 | AM | | 16 degrees, Sunny, Light wind, scattered clouds | Black Kite | *Milvus migrans* | 1 | 400 | 80 | 150 | 150 | Flying/soaring |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 800 | | 75 | | |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 250 | | 50 | | |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 700 | 280 | 40 | 200 | Hovering, hunting over shrubland |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | | 30 | south | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 400 | | 25 | | hunting |
| BUS43 | 10/06/2024 | 1:33-1:53 PM | | BUS | 15 c, Light Southerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 10 | 300 | 20 | 233 | Hunting |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | | 20 | | hunting |
| BUS43 | 9/08/2024 | 13:40 | MID | BUS | 18C,5/8 cloud cover,moderate breeze | Black-shouldered Kite | *Elanus axillaris* | 1 | 156 | 40 | 15 | 100 | Hovering over shrublands |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 300 | | 5 | east | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 75 | | 1 | | perched in shrub |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 75 | | 1 | | perched in shrub |
| BUS43 | 30/10/2024 | 9:12am | Morning | | 18 degrees, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | 60 | - | - | heard |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 15 | | |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 10 | | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 75 | | 10 | | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 3 | 30 | | 10 | | |
| BUS43 | 22/02/2024 | 3:16pm | PM - 1 | | 37C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 100 | | 10 | south | |
| BUS43 | 22/02/2024 | 03:46pm | PM - 2 | | 37C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 400 | | 2 | | landed in shrub |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 7 | | |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 5 | | |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | 2 | | |
| BUS43 | 10/08/2022 | 1436 | | BUS | 16 Degrees, Cloudy, Moderate Breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | 1 | 16 Degrees, Cloudy, Moderate Breeze | |
| BUS43 | 8/08/2024 | 16:48 | PM | BUS | 14C, overcast, no breeze. 8/8 cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 0 | | 0 | | Heard call/Aural |
| BUS43 | 9/08/2024 | 13:40 | MID | BUS | 18C,5/8 cloud cover,moderate breeze | Brown Songlark | *Cincloramphus cruralis* | 3 | 20 | 248 | 0 | 0 | Heard call |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | | | | heard |
| BUS43 | 6/08/2024 | 13:22 | MID | BUS | 14C, Partly cloudy 5/8 | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | 280 | | | Heard call/Aural |
| BUS43 | 29/10/2024 | 12:35-12:55 | MID | | 26 degrees, sunny, moderate winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 5 | 347 | | | Flying between bushes |
| BUS43 | 12/06/2024 | 9:45-10:05 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Brown Songlark | *Cincloramphus cruralis* | 2 | 30 | 105 | 10 | 186 | |
| BUS43 | 10/06/2024 | 1:33-1:53 PM | | BUS | 15 c, Light Southerly, Overcast | Brown Songlark | *Cincloramphus cruralis* | 2 | 50 | 359 | 1 | 27 | |
| BUS43 | 22/10/2024 | 7:40-8:00 | AM | | 16 degrees, Sunny, Light wind, scattered clouds | Brown Songlark | *Cincloramphus cruralis* | 6 | 40 | 310 | | | Heard call |
| BUS43 | 30/10/2024 | 9:12am | Morning | | 18 degrees, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 4 | 15 | 90 | | | Heard call |
| BUS43 | 30/10/2021 | | | BUS | N/A | Common starling | *Sturnus vulgaris* | 8 | 150 | | 20 | | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Emu | *Dromaius novaehollandiae* | 7 | 400 | | 0 | | |
| BUS43 | 22/02/2024 | 3:16pm | PM - 1 | | 37C, partly cloudy, light wind | Emu | *Dromaius novaehollandiae* | 4 | 500 | | 0 | | heading west |
| BUS43 | 8/08/2024 | 16:48 | PM | BUS | 14C, overcast, no breeze. 8/8 cloud cover | Emu | *Dromaius novaehollandiae* | 2 | 200 | 35 | 0 | | Visual |
| BUS43 | 29/10/2024 | 12:35-12:55 | MID | | 26 degrees, sunny, moderate winds | Emu | *Dromaius novaehollandiae* | 1 | 150 | 299 | | 235 | Travelling SW |
| BUS43 | 10/06/2024 | 1:33-1:53 PM | | BUS | 15 c, Light Southerly, Overcast | Emu | *Dromaius novaehollandiae* | 1 | 200 | 271 | 0 | | |
| BUS43 | 12/06/2024 | 9:45-10:05 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Emu | *Dromaius novaehollandiae* | 2 | 200 | 293 | 0 | | |
| BUS43 | 22/10/2024 | 7:40-8:00 | AM | | 16 degrees, Sunny, Light wind, scattered clouds | Emu | *Dromaius novaehollandiae* | 5 | 300 | 210 | | 300 | Foraging |
| BUS43 | 10/08/2022 | 1436 | | BUS | 16 Degrees, Cloudy, Moderate Breeze | Little Raven | *Corvus mellori* | 3 | 500 | | 1 | | |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | | 70 | | attacking wedge-tailed eagle |
| BUS43 | 22/02/2024 | 10:42am | MID - 2 | | 26C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 700 | | 60 | south | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | | 40 | west | hunting |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 450 | 240 | 35 | 200 | Hovering, hunting over shrubland |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | | 30 | | |
| BUS43 | 9/08/2024 | 13:40 | MID | BUS | 18C,5/8 cloud cover,moderate breeze | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 246 | 20 | 350 | Hovering over shrublands |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 400 | | 8 | north | |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 600 | | 6 | east | |
| BUS43 | 16/05/2022 | 3:58:00 | | BUS | 18 degrees, moderate wind, sunny | Plains-wanderer | *Pedionomus torquatus* | 1 | 15 | | 0 | 18 degrees, moderate wind, sunny | |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Rufous Songlark | *Cincloramphus matthewsi* | 1 | 10 | | 2 | | |
| BUS43 | 6/08/2024 | 13:22 | MID | BUS | 14C, Partly cloudy 5/8 | Spotted Harrier | *Circus assimilis* | 1 | 200 | 214 | | | Perched on ground |
| BUS43 | 10/06/2024 | 1:33-1:53 PM | | BUS | 15 c, Light Southerly, Overcast | Spotted Harrier | *Circus assimilis* | 1 | 150 | 240 | 4 | 330 | Flying low, hunting in shrubland |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Stubble Quail | *Coturnix pectoralis* | 2 | 20 | | 0 | | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Superb Fairy-wren | *Malurus cyaneus* | 7 | 300 | | 1 | | flying between shrubs |
| BUS43 | 22/02/2024 | 3:16pm | PM - 1 | | 37C, partly cloudy, light wind | Swamp Harrier | *Circus approximans* | 1 | 1000 | | 60 | | soaring |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Swamp Harrier | *Circus approximans* | 2 | 300 | | 5 | | frolicking |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Swamp Harrier | *Circus approximans* | 1 | 350 | | 5 | east | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Swamp Harrier | *Circus approximans* | 1 | 50 | | 2 | south | |
| BUS43 | 12/06/2024 | 9:45-10:05 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Wedge-tailed Eagle | *Aquila audax* | 1 | 700 | 194 | 20-50 | 270 | |
| BUS43 | 9/08/2024 | 13:40 | MID | BUS | 18C,5/8 cloud cover,moderate breeze | Wedge-tailed Eagle | *Aquila audax* | 4 | 400 | 19 | 150 | 355 | Soaring over shrublands |
| BUS43 | 22/02/2024 | 10:42am | MID - 2 | | 26C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 5000 | | 150 | | circling - east |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 2 | 2000 | | 120 | | |
| BUS43 | 30/10/2024 | 9:12am | Morning | | 18 degrees, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 4 | 250 | 350 | 100 | - | circling |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 250 | | 100 | | |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 500 | | 80 | | |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 800 | | 80 | | soaring - east |
| BUS43 | 22/02/2024 | 3:16pm | PM - 1 | | 37C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 2000 | | 80 | | soaring |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 75 | | |
| BUS43 | 22/02/2024 | 10:42am | MID - 2 | | 26C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 800 | | 60 | | soaring - west |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | | 60 | | |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 3 | 800 | | 50 | | |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | | 50 | | |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 2 | 1500 | | 50 | | |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 600 | | 50 | | |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 800 | | 50 | | soaring - west |
| BUS43 | 22/02/2024 | 10:42am | MID - 2 | | 26C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 2 | 500 | | 50 | | circling - north-west |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | | 50 | | |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 4 | 700 | | 40 | | circling |
| BUS43 | 22/02/2024 | 10:42am | MID - 2 | | 26C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 40 | | circling - north |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 2 | 1500 | | 30 | | |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 30 | | |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 20 | | |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | Wedge-tailed Eagle | *Aquila audax* | 2 | 800 | | 3 | west | |
| BUS43 | 8/08/2024 | 16:48 | PM | BUS | 14C, overcast, no breeze. 8/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 300 | 251 | 0 | | Perched on shrub |
| BUS43 | 10/06/2024 | 1:33-1:53 PM | | BUS | 15 c, Light Southerly, Overcast | Wedge-tailed Eagle | *Aquila audax* | 2 | 1000 | 42 | | 88 | Hunting/pair |
| BUS43 | 22/02/2024 | 10:22am | MID - 1 | | 25C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 700 | | 10 | north | |
| BUS43 | 22/02/2024 | 7:15am | AM - 1 | | 20C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 2 | 400 | | 6 | north | |
| BUS43 | 22/02/2024 | 7:45am | AM - 2 | | 22C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 2 | 400 | | 6 | | frolicking |
| BUS43 | 14/11/2023 | 02:30pm | | BUS | 21C, mostly cloudy, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 300 | | 3 | | |
| BUS43 | 30/10/2024 | 9:12am | Morning | | 18 degrees, clear sky, light wind | White-fronted Chat | *Epthianura albifrons* | 1 | 50 | 110 | - | - | heard |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 70 | | 2 | | |
| BUS43 | 14/11/2023 | 01:05pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 25 | | 1 | | |
| BUS43 | 14/11/2023 | 01:35pm | | BUS | 18C, mostly cloudy, light wind, rain clearing | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | | 1 | | |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | | 1 | | perched in shrubs |
| BUS43 | 14/11/2023 | 03:00pm | | BUS | 21C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 30 | | 1 | | |
| BUS43 | 22/10/2024 | 7:40-8:00 | AM | | 16 degrees, Sunny, Light wind, scattered clouds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 80 | 120 | | | Heard call |
| BUS43 | 30/10/2024 | 9:12am | Morning | | 18 degrees, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 30 | 220 | | 210 | Perched on shrub |
| BUS43 | 5/08/2024 | 8:15 | AM | BUS | 8C, overcast (7/8 cloud cover), light breeze | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 35 | 40 | 1 | 20 | Foraging, flying between shrubs |
| BUS43 | 6/08/2024 | 13:22 | MID | BUS | 14C, Partly cloudy 5/8 | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | 248 | | | |
| BUS44 | 29/10/2024 | 2:05-2:25 | PM | | 29 degrees, sunny, moderate winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | | | | Perched |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 52 | | | Perched in shrub |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | 64 | | | Perched in shrub |
| BUS44 | 10/06/2024 | 2:41-3:01 PM | | BUS | 15 c, Light Southerly, Scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 80 | 0 | | |
| BUS44 | 10/06/2024 | 2:41-3:01 PM | | BUS | 15 c, Light Southerly, Scattered cloud | Australian Magpie | *Gymnorhina tibicen* | 1 | 800 | 65 | 0 | | Heard |
| BUS44 | 13/06/2024 | 9:10-9:30 AM | | BUS | 8 c, Light Northerly, Overcast | Australian Magpie | *Gymnorhina tibicen* | 4 | 1200 | 140 | 0 | | Heard |
| BUS44 | 31/10/2024 | 2:30-2:50 | PM | | 28 degrees, strong winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | 205 | | | Heard call |
| BUS44 | 10/06/2024 | 2:41-3:01 PM | | BUS | 15 c, Light Southerly, Scattered cloud | Australian Raven | *Corvus coronoides* | 6 | 800 | 17 | 30 | 122 | |
| BUS44 | 13/06/2024 | 9:10-9:30 AM | | BUS | 8 c, Light Northerly, Overcast | Australian Raven | *Corvus coronoides* | 8 | 50 | 48 | 25 | 14 | |
| BUS44 | 12/06/2024 | 11:10-11:30 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Australian Raven | *Corvus coronoides* | 6 | 600 | 152 | 10 | 240 | |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Australian Raven | *Corvus coronoides* | 5 | 700 | 357 | 10 | 92 | |
| BUS44 | 29/10/2024 | 9:40-10:00 | AM | | 19 degrees, sunny, low winds | Australian Raven | *Corvus coronoides* | 1 | 150 | 180 | 5 | 180 | Flying south |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Australian Raven | *Corvus coronoides* | 3 | 300 | 190 | | | Heard call/Aural |
| BUS44 | 29/10/2024 | 2:05-2:25 | PM | | 29 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 2 | 300 | 120 | 200 | | Circling |
| BUS44 | 29/10/2024 | 9:40-10:00 | AM | | 19 degrees, sunny, low winds | Black Kite | *Milvus migrans* | 3 | 200 | 75 | 60 | | Circling |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Black Kite | *Milvus migrans* | 1 | 400 | 0 | | | Circling |
| BUS44 | 13/06/2024 | 9:10-9:30 AM | | BUS | 8 c, Light Northerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | 75 | 30 | 327 | Hunting |
| BUS44 | 12/06/2024 | 11:10-11:30 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Black-shouldered Kite | *Elanus axillaris* | 2 | 200 | 252 | 20 | 240 | Hunting |
| BUS44 | 12/06/2024 | 11:10-11:30 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Black-shouldered Kite | *Elanus axillaris* | 1 | 600 | 140 | 15 | 228 | Hunting |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 20 | 5 | 110 | Flying east |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 70 | 60 | | | |
| BUS44 | 28/10/2024 | 11:55-12:15 | MID | | 24 degrees, strong winds, sunny | Brown Songlark | *Cincloramphus cruralis* | 2 | 30 | 50 | | | Heard call |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 150 | 203 | | | Perched in shrub |
| BUS44 | 28/10/2024 | 11:55-12:15 | MID | | 24 degrees, strong winds, sunny | Brown Songlark | *Cincloramphus cruralis* | 1 | 80 | 310 | | | Heard call |
| BUS44 | 29/10/2024 | 9:40-10:00 | AM | | 19 degrees, sunny, low winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | Heard call |
| BUS44 | 12/06/2024 | 11:10-11:30 AM | | BUS | 16 c, Moderate Northerly, Scattered clouds | Common starling | *Sturnus vulgaris* | 30 | 600 | 149 | 10 | 59 | |
| BUS44 | 10/06/2024 | 2:41-3:01 PM | | BUS | 15 c, Light Southerly, Scattered cloud | Galah | *Eolophus roseicapilla* | 10 | 1.3 1c | 1c 13 | 25 | 63 | |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Galah | *Eolophus roseicapilla* | 1 | 100 | 100 | 5 | 150 | Flying SE |
| BUS44 | 13/06/2024 | 9:10-9:30 AM | | BUS | 8 c, Light Northerly, Overcast | Galah | *Eolophus roseicapilla* | 4 | 1000 | 215 | 15 | 347 | In Woodland |
| BUS44 | 28/10/2024 | 11:55-12:15 | MID | | 24 degrees, strong winds, sunny | Little Raven | *Corvus mellori* | 2 | 200 | 147 | 5 | 76 | Flying East |
| BUS44 | 29/10/2024 | 9:40-10:00 | AM | | 19 degrees, sunny, low winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 51 | 30 | | Circling |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 2 | 350 | 312 | 10 | 270 | |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 400 | 120 | 10 | | Hovering/foraging |
| BUS44 | 28/10/2024 | 11:55-12:15 | MID | | 24 degrees, strong winds, sunny | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | 150 | 8 | | Hovering |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 312 | | | Perched on shrub |
| BUS44 | 13/06/2024 | 9:10-9:30 AM | | BUS | 8 c, Light Northerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 311 | 30 | 166 | Hunting |
| BUS44 | 30/10/2024 | 10:40 - 11:00 | MID | | 24 degrees, sunny, clear skies, slight winds | Wedge-tailed Eagle | *Aquila audax* | 4 | 500 | 68 | 160 | | Circling |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 1 | 700 | 352 | 5 | 276 | Flying low to ground |
| BUS44 | 31/10/2024 | 8:55-9:15 | AM | | 15 degrees, light winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 150 | 103 | | | Perched in shrub |
| BUS44 | 6/08/2024 | 16:15 | PM | BUS | 14C, Still, dry, 1/8 cloud cover | Whistling Kite | *Haliastur sphenurus* | 3 | 1000 | 15 | 5 | | Flying low to ground |
| BUS45 | 6/08/2024 | 15:38 | PM | BUS | 16C, Light wind, 2/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 2 | | 204 | | | Heard call/Aural |
| BUS45 | 31/10/2024 | 8:15-8:35 | AM | | 15 degrees, light winds | Australian Magpie | *Gymnorhina tibicen* | 2 | 500 | 315 | | | Heard call |
| BUS45 | 10/06/2024 | 9:45-10:05 AM | | BUS | 13 c, Still, Scattered clouds | Australian Raven | *Corvus coronoides* | 2 | 800 | 253 | 50 | 345 | Flying North |
| BUS45 | 13/06/2024 | 11:33-11:53 AM | | BUS | 10 c, Light Northerly, Overcast | Australian Raven | *Corvus coronoides* | 4 | 50 | 108 | 20 | 14 | |
| BUS45 | 10/06/2024 | 9:45-10:05 AM | | BUS | 13 c, Still, Scattered clouds | Australian Raven | *Corvus coronoides* | 20 | 200 | 329 | 10 | 87 | |
| BUS45 | 12/06/2024 | 2:00-2:20 PM | | BUS | 13 c, Moderate Northerly scattered clouds | Australian Raven | *Corvus coronoides* | 3 | 1500 | 224 | 10 | 157 | |
| BUS45 | 31/10/2024 | 8:15-8:35 | AM | | 15 degrees, light winds | Australian Raven | *Corvus coronoides* | 1 | 400 | 241 | 10 | 262 | Scouting, flying W |
| BUS45 | 6/08/2024 | 15:38 | PM | BUS | 16C, Light wind, 2/8 cloud cover | Australian Raven | *Corvus coronoides* | 1 | | 212 | | | Heard call/Aural |
| BUS45 | 29/10/2024 | 2:30-2:50 | PM | | 30 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 1 | 400 | 23 | 40 | | Circling |
| BUS45 | 31/10/2024 | 8:15-8:35 | AM | | 15 degrees, light winds | Black Kite | *Milvus migrans* | 1 | 400 | 315 | 20 | | Circling |
| BUS45 | 13/06/2024 | 11:33-11:53 AM | | BUS | 10 c, Light Northerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | 261 | 40 | 349 | |
| BUS45 | 10/06/2024 | 9:45-10:05 AM | | BUS | 13 c, Still, Scattered clouds | Black-shouldered Kite | *Elanus axillaris* | 1 | 200 | 295 | 5 | 230 | Perched then flew off. |
| BUS45 | 13/06/2024 | 11:33-11:53 AM | | BUS | 10 c, Light Northerly, Overcast | Black-shouldered Kite | *Elanus axillaris* | 2 | 300 | 20 | 0 | | Perched on fence |
| BUS45 | 29/10/2024 | 2:30-2:50 | PM | | 30 degrees, sunny, moderate winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 10 | 38 | 5 | 130 | Flying between bushes |
| BUS45 | 6/08/2024 | 15:38 | PM | BUS | 16C, Light wind, 2/8 cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 260 | | | Heard call/Aural |
| BUS45 | 28/10/2024 | 11:10-11:30 | MID | | 24 degrees, moderate breeze, sunny | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 250 | | | Heard call |
| BUS45 | 28/10/2024 | 11:10-11:30 | MID | | 24 degrees, moderate breeze, sunny | Brown Songlark | *Cincloramphus cruralis* | 3 | 100 | 130 | | | Sheltering in shrubs |
| BUS45 | 31/10/2024 | 8:15-8:35 | AM | | 15 degrees, light winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 285 | | | Perched in shrub |
| BUS45 | 10/06/2024 | 9:45-10:05 AM | | BUS | 13 c, Still, Scattered clouds | Emu | *Dromaius novaehollandiae* | 1 | 300 | 270 | 0 | | |
| BUS45 | 28/10/2024 | 11:10-11:30 | MID | | 24 degrees, moderate breeze, sunny | Little Raven | *Corvus mellori* | 1 | 200 | 55 | 10 | 5 | Flying North |
| BUS45 | 6/08/2024 | 15:38 | PM | BUS | 16C, Light wind, 2/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 100 | 25 | 20 | |
| BUS45 | 6/08/2024 | 15:38 | PM | BUS | 16C, Light wind, 2/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 2 | 500 | 270 | 20 | | Hovering/foraging |
| BUS45 | 28/10/2024 | 11:10-11:30 | MID | | 24 degrees, moderate breeze, sunny | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 35 | 15 | | Hovering |
| BUS45 | 31/10/2024 | 8:15-8:35 | AM | | 15 degrees, light winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 10 | 150 | 15 | 280 | Hovering, flying W |
| BUS45 | 12/06/2024 | 2:00-2:20 PM | | BUS | 13 c, Moderate Northerly scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 800 | 10 | 60 | 229 | Hunting |
| BUS45 | 10/06/2024 | 9:45-10:05 AM | | BUS | 13 c, Still, Scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 11 | 50 | 83 | Hunting in area of Bus point |
| BUS45 | 12/06/2024 | 2:00-2:20 PM | | BUS | 13 c, Moderate Northerly scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 400 | 264 | 40 | 181 | Hunting |
| BUS45 | 13/06/2024 | 11:33-11:53 AM | | BUS | 10 c, Light Northerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 11 | 40 | 91 | Hunting |
| BUS45 | 10/06/2024 | 9:45-10:05 AM | | BUS | 13 c, Still, Scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 175 | 0 | | |
| BUS45 | 13/06/2024 | 11:33-11:53 AM | | BUS | 10 c, Light Northerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 300 | 20 | 0 | | Perched on fence |
| BUS45 | 29/10/2024 | 2:30-2:50 | PM | | 30 degrees, sunny, moderate winds | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | 290 | 90 | | Circling |
| BUS45 | 12/06/2024 | 2:00-2:20 PM | | BUS | 13 c, Moderate Northerly scattered clouds | Wedge-tailed Eagle | *Aquila audax* | 2 | 1500 | 12 | 30 | 100 | Pair Hunting |
| BUS45 | 12/06/2024 | 2:00-2:20 PM | | BUS | 13 c, Moderate Northerly scattered clouds | Wedge-tailed Eagle | *Aquila audax* | 1 | 150 | 211 | 30 | 150 | Hunting |
| BUS45 | 13/06/2024 | 11:33-11:53 AM | | BUS | 10 c, Light Northerly, Overcast | Wedge-tailed Eagle | *Aquila audax* | 1 | 400 | 20 | 0 | | Perched on windmill |
| BUS45 | 6/08/2024 | 15:38 | PM | BUS | 16C, Light wind, 2/8 cloud cover | Whistling Kite | *Haliastur sphenurus* | 1 | 300 | 338 | 25 | 265 | |
| BUS45 | 31/10/2024 | 8:15-8:35 | AM | | 15 degrees, light winds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 80 | 292 | | | Heard call |
| BUS45 | 28/10/2024 | 11:10-11:30 | MID | | 24 degrees, moderate breeze, sunny | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 20 | 108 | | | Flittering in shrubs |
| BUS45 | 28/10/2024 | 11:10-11:30 | MID | | 24 degrees, moderate breeze, sunny | Zebra Finch | *Taeniopygia guttata* | 3 | 20 | 240 | 2 | 150 | Flying between shrubs |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | 150 | | | Heard call/Aural |
| BUS46 | 13/06/2024 | 12:13-12:33 PM | | BUS | 12 c, Light Northerly, overcast | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | 178 | 1 | 170 | |
| BUS46 | 10/06/2024 | 9:15- 9:35 AM | | BUS | 11 c, Light wind, Scattered clouds | Australasian Pipit | *Anthus novaeseelandiae* | 4 | 10 | 62 E | 0 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Australian Magpie | *Gymnorhina tibicen* | 4 | 400 | 260 | | | |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Australian Pelican | *Pelecanus conspicillatus* | 10 | 500 | 205 | 100 | 138 | Flying in V shape |
| BUS46 | 10/06/2024 | 9:15- 9:35 AM | | BUS | 11 c, Light wind, Scattered clouds | Australian Raven | *Corvus coronoides* | 2 | 400 | 150 | 20 | 95 | |
| BUS46 | 31/10/2024 | 7:35-7:55 | AM | | 14 degrees, light winds | Australian Raven | *Corvus coronoides* | 1 | 200 | 65 | 8 | 333 | Flying NW |
| BUS46 | 13/06/2024 | 12:13-12:33 PM | | BUS | 12 c, Light Northerly, overcast | Australian Raven | *Corvus coronoides* | 4 | 1000 | 65 | 0 | | Heard |
| BUS46 | 29/10/2024 | 3:05-3:25 | PM | | 29 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 3 | 550 | 162 | 50 | | Circling |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Black Kite | *Milvus migrans* | 1 | 500 | 215 | 30 | | Circling |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Black Kite | *Milvus migrans* | 1 | 200 | 130 | 20 | 210 | |
| BUS46 | 31/10/2024 | 7:35-7:55 | AM | | 14 degrees, light winds | Black Kite | *Milvus migrans* | 1 | 30 | 83 | 20 | 318 | Flying NW |
| BUS46 | 28/10/2024 | 1:10-1:30 | MID | | 24 degrees, strong winds, sunny | Black Kite | *Milvus migrans* | 1 | 50 | 20 | 15 | 205 | Flying SW, circling |
| BUS46 | 13/06/2024 | 12:13-12:33 PM | | BUS | 12 c, Light Northerly, overcast | Black-faced woodswallow | *Artamus cinereus* | 2 | 200 | 255 | 10 | 39 | Flying/perched on powerline |
| BUS46 | 12/06/2024 | 2:26-2:46 PM | | BUS | 14 c, Moderate Northerly, scattered clouds | Black-faced woodswallow | *Artamus cinereus* | 6 | 100 | 76 | 8 | 129 | Flying/perched around water tank |
| BUS46 | 13/06/2024 | 12:13-12:33 PM | | BUS | 12 c, Light Northerly, overcast | Black-shouldered Kite | *Elanus axillaris* | 1 | 100 | 67 | 30 | 188 | Hunting |
| BUS46 | 13/06/2024 | 12:13-12:33 PM | | BUS | 12 c, Light Northerly, overcast | Brown Falcon | *Falco berigora* | 1 | 300 | 10 | 0 | | Perched in tree |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | 150 | | | Heard call/Aural |
| BUS46 | 29/10/2024 | 3:05-3:25 | PM | | 29 degrees, sunny, moderate winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 100 | | | Perched |
| BUS46 | 31/10/2024 | 7:35-7:55 | AM | | 14 degrees, light winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | 258 | | | Perched in shrub |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Emu | *Dromaius novaehollandiae* | 6 | 300 | 74 | | | |
| BUS46 | 12/06/2024 | 2:26-2:46 PM | | BUS | 14 c, Moderate Northerly, scattered clouds | Galah | *Eolophus roseicapilla* | 4 | 5 | 347 | 6 | 169 | |
| BUS46 | 28/10/2024 | 1:10-1:30 | MID | | 24 degrees, strong winds, sunny | Little Raven | *Corvus mellori* | 2 | 200 | 230 | 5 | 300 | Flying North-west |
| BUS46 | 29/10/2024 | 3:05-3:25 | PM | | 29 degrees, sunny, moderate winds | Little Raven | *Corvus mellori* | 1 | 100 | 276 | | | Perched |
| BUS46 | 12/06/2024 | 2:26-2:46 PM | | BUS | 14 c, Moderate Northerly, scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 1 | 1000 | 224 | 30 | 120 | Hunting |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Nankeen Kestrel | *Falco cenchroides* | 2 | 50 | 96 | 10 | | Circling/hunting |
| BUS46 | 13/06/2024 | 12:13-12:33 PM | | BUS | 12 c, Light Northerly, overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 200 | 184 | 30 | 22 | Hunting |
| BUS46 | 12/06/2024 | 2:26-2:46 PM | | BUS | 14 c, Moderate Northerly, scattered clouds | Nankeen Kestrel | *Falco cenchroides* | 2 | 50 | 200 | 25 | 255 | Pair Hunting |
| BUS46 | 28/10/2024 | 1:10-1:30 | MID | | 24 degrees, strong winds, sunny | Wedge-tailed Eagle | *Aquila audax* | 4 | 150 | 170 | 80-300 | | Circling |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Wedge-tailed Eagle | *Aquila audax* | 3 | 100 | 92 | 150 | | Circling |
| BUS46 | 29/10/2024 | 3:05-3:25 | PM | | 29 degrees, sunny, moderate winds | Wedge-tailed Eagle | *Aquila audax* | 5 | 550 | 162 | 100 | | Circling |
| BUS46 | 6/08/2024 | 15:00 | PM | BUS | 16C, Light wind, 3/8 cloud cover | Whistling Kite | *Haliastur sphenurus* | 1 | 200 | 212 | 70 | 278 | Circling |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 6 | | |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 50 | | 3 | | |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 120 | | 3 | | |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 100 | | 2 | | |
| BUS47 | 16/05/2022 | 1:08:00 | | BUS | 18 degrees, moderate wind, sunny | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 150 | | 0 | | |
| BUS47 | 12/08/2022 | 1610 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 0 | 20 Degrees, 50% Cloud Cover, Windy | |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 10 | | 0 | | |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 0 | | |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 350 | | 0 | | |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 400 | | 0 | | |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | | 0 | | |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 300 | | | | perched in shrub |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | Australian Raven | *Corvus coronoides* | 5 | 1000 | | 15 | west | |
| BUS47 | 28/10/2024 | 9:10-9:30 | AM | | 15 degrees, Sunny, breeze | Black Kite | *Milvus migrans* | 1 | 50 | 180 | 200 | | Circling |
| BUS47 | 28/10/2024 | 9:10-9:30 | AM | | 15 degrees, Sunny, breeze | Black Kite | *Milvus migrans* | 1 | 200 | 110 | 100 | 180 | Cruising/circling |
| BUS47 | 29/10/2024 | 11:00-11:20 | MID | | 23 degrees, sunny, moderate winds | Black Kite | *Milvus migrans* | 1 | 150 | 60 | 70 | | Circling |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 350 | | 15 | | hovering |
| BUS47 | 16/05/2022 | 1:08:00 | | BUS | 18 degrees, moderate wind, sunny | Brown Falcon | *Falco berigora* | 1 | 200 | | 15 | | |
| BUS47 | 29/10/2024 | 11:00-11:20 | MID | | 23 degrees, sunny, moderate winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 30 | 206 | 5 | 280 | Flying from shrub to shrub |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 40 | | 2 | | |
| BUS47 | 12/08/2022 | 1610 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | 1 | | |
| BUS47 | 4/11/2021 | 1325 | | BUS | Sunny, light wind, 28 degrees | Brown Songlark | *Cincloramphus cruralis* | 4 | 25 | | 0 | Sunny, light wind, 28 degrees | |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | | | | heard |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS47 | 28/10/2024 | 9:10-9:30 | AM | | 15 degrees, Sunny, breeze | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 105 | | | Heard call |
| BUS47 | 30/10/2024 | 2:30-2:50 | PM | | 27 degrees, sunny, strong winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 105 | | | Perched |
| BUS47 | 16/05/2022 | 1:08:00 | | BUS | 18 degrees, moderate wind, sunny | Fairy-wren | *Malurus spp.* | 2 | 150 | | 1 | | |
| BUS47 | 28/10/2024 | 9:10-9:30 | AM | | 15 degrees, Sunny, breeze | Galah | *Eolophus roseicapilla* | 21 | 100 | 18 | 15 | 270 | Flying in a flock |
| BUS47 | 12/08/2022 | 1610 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Little Raven | *Corvus mellori* | 8 | 20 | | 10 | | |
| BUS47 | 12/08/2022 | 1610 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Nankeen Kestrel | *Falco cenchroides* | 1 | 30 | | 20 | | |
| BUS47 | 28/10/2024 | 9:10-9:30 | AM | | 15 degrees, Sunny, breeze | Rufous Songlark | *Cincloramphus matthewsi* | 1 | 25 | 200 | 8 | 314 | Flying in and around shrubs |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | Rufous Songlark | *Cincloramphus matthewsi* | 2 | 300 | | 0 | | in dried dam |
| BUS47 | 28/10/2024 | 9:10-9:30 | AM | | 15 degrees, Sunny, breeze | Rufous Songlark | *Cincloramphus matthewsi* | 1 | 20 | 311 | | | Perched on salt bush |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | Whistling Kite | *Haliastur sphenurus* | 1 | 300 | | 50 | | |
| BUS47 | 16/05/2022 | 1:08:00 | | BUS | 18 degrees, moderate wind, sunny | White-fronted Chat | *Epthianura albifrons* | 2 | 50 | | 2 | 18 degrees, moderate wind, sunny | |
| BUS47 | 14/11/2023 | 07:05am | | BUS | 16C, mostly cloudy, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 200 | | 1 | | |
| BUS47 | 14/11/2023 | 04:58pm | | BUS | 24C, partly cloudy, still | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 400 | | 1 | | |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 220 | | 1 | | |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 150 | | | | heard |
| BUS47 | 12/08/2022 | 1610 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 10 | | 1 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS47 | 12/08/2022 | 1610 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Willie Wagtail | *Rhipidura leucophrys* | 2 | 5 | | 0 | | |
| BUS47 | 15/11/2023 | 01:27pm | | BUS | 27C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 1 | 250 | | 7 | south-east | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 15 | | |
| BUS48 | 28/10/2024 | 9:40-10:00 | AM | | 17 degrees, Light breeze, sunny | Australasian Pipit | *Anthus novaeseelandiae* | 5 | 20 | 117 | 5 | | Flying between shrubs |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 20 | | 3 | | |
| BUS48 | 23/02/2022 | 848 | | BUS | Clear skies, 20 degrees | Australasian pipit | *Anthus novaeseelandiae* | 1 | | | 1 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | | 1 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 40 | | 1 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 3 | 25 | | 1 | | |
| BUS48 | 15/11/2023 | 02:35pm | | BUS | 28C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 0 | | |
| BUS48 | 29/10/2024 | 11:25-11:45 | MID | | 22 degrees, sunny, moderate winds | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 90 | 300 | | | Perched |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Australian Magpie | *Gymnorhina tibicen* | 1 | 30 | | 4 | north | |
| BUS48 | 28/10/2024 | 9:40-10:00 | AM | | 17 degrees, Light breeze, sunny | Black Kite | *Milvus migrans* | 1 | 200 | 265 | 100 | 350 | Flying North |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Black Kite | *Milvus migrans* | 1 | 1000 | | 60 | | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Black Kite | *Milvus migrans* | 1 | 100 | | 1 | south-east | |
| BUS48 | 16/05/2022 | 12:35:00 | | BUS | 17 degrees, moderate wind, sunny | Brown Falcon | *Falco berigora* | 3 | 100 | | 50 | 17 degrees, moderate wind, sunny | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Brown Falcon | *Falco berigora* | 1 | 50 | | 10 | north | came from nest in tree |
| BUS48 | 23/02/2022 | 848 | | BUS | Clear skies, 20 degrees | Brown Songlark | *Cincloramphus cruralis* | 1 | | | 20 | | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | 10 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 10 | | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 7 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 6 | | |
| BUS48 | 12/08/2022 | 1535 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 0 | | |
| BUS48 | 15/11/2023 | 12:52pm | | BUS | 27C, clear sky, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 120 | | | | heard |
| BUS48 | 28/10/2024 | 9:40-10:00 | AM | | 17 degrees, Light breeze, sunny | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | 240 | | | Heard call |
| BUS48 | 28/10/2024 | 9:40-10:00 | AM | | 17 degrees, Light breeze, sunny | Brown Songlark | *Cincloramphus cruralis* | 1 | 20 | 130 | | | Perched |
| BUS48 | 15/11/2023 | 12:52pm | | BUS | 27C, clear sky, light wind | Budgerigar | *Melopsittacus undulatus* | 5 | 80 | | 5 | | perched |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Budgerigar | *Melopsittacus undulatus* | 5 | 70 | | 4 | | perched |
| BUS48 | 4/11/2021 | 1525 | | BUS | 29 degrees, moderate wind, sunny | Common starling | *Sturnus vulgaris* | 12 | 30 | | 20 | | |
| BUS48 | 15/11/2023 | 02:35pm | | BUS | 28C, clear sky, light wind | Common starling | *Sturnus vulgaris* | 1 | 40 | | 15 | north-west | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Common starling | *Sturnus vulgaris* | 3 | 70 | | 10 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Common starling | *Sturnus vulgaris* | 5 | 20 | | 3 | south | |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | Common starling | *Sturnus vulgaris* | 2 | 100 | | 3 | south | |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | Common starling | *Sturnus vulgaris* | 2 | 75 | | 3 | | perched |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Common starling | *Sturnus vulgaris* | 1 | 100 | | | | heard |
| BUS48 | 29/10/2024 | 11:25-11:45 | MID | | 22 degrees, sunny, moderate winds | Galah | *Eolophus roseicapilla* | 11 | 50 | 75 | 50 | 6 | Flying north |
| BUS48 | 28/10/2024 | 9:40-10:00 | AM | | 17 degrees, Light breeze, sunny | Galah | *Eolophus roseicapilla* | 2 | 30 | 3 | 10 | 190 | Flying South |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | House Sparrow | *Passer domesticus* | 5 | 80 | | 3 | | |
| BUS48 | 12/08/2022 | 1535 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Inland Dotterel | *Peltohyas australis* | 12 | 10 | | 0 | 20 Degrees, 50% Cloud Cover, Windy | |
| BUS48 | 23/02/2022 | 848 | | BUS | Clear skies, 20 degrees | Nankeen kestrel | *Falco cenchroides* | 1 | | | 30 | | |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | | 30 | | hovering |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Nankeen Kestrel | *Falco cenchroides* | 1 | 40 | | 15 | south-west | |
| BUS48 | 4/11/2021 | 1525 | | BUS | 29 degrees, moderate wind, sunny | Nankeen kestrel | *Falco cenchroides* | 1 | 30 | | 10 | | |
| BUS48 | 12/08/2022 | 1535 | | BUS | 20 Degrees, 50% Cloud Cover, Windy | Nankeen kestrel | *Falco cenchroides* | 1 | 150 | | 5 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Sacred Kingfisher | *Todiramphus sanctus* | 1 | 75 | | 4 | | foraging |
| BUS48 | 15/11/2023 | 02:35pm | | BUS | 28C, clear sky, light wind | Sacred Kingfisher | *Todiramphus sanctus* | 1 | 80 | | 4 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Sacred Kingfisher | *Todiramphus sanctus* | 1 | 50 | | 3 | | perched |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | Sacred Kingfisher | *Todiramphus sanctus* | 1 | 80 | | 3 | | perched |
| BUS48 | 15/11/2023 | 12:52pm | | BUS | 27C, clear sky, light wind | Sacred Kingfisher | *Todiramphus sanctus* | 1 | 75 | | 2 | | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Sacred Kingfisher | *Todiramphus sanctus* | 1 | 50 | | 1 | | perched |
| BUS48 | 30/10/2024 | 2:00 - 2:20 | PM | | 27 degrees, sunny, medium - strong winds | Tree Martin | *Petrochelidon nigricans* | 2 | 50 | 236 | 10 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 50 | | |
| BUS48 | 15/11/2023 | 02:35pm | | BUS | 28C, clear sky, light wind | Welcome Swallow | *Hirundo neoxena* | 1 | 50 | | 10 | | |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Welcome Swallow | *Hirundo neoxena* | 1 | 60 | | 7 | | |
| BUS48 | 29/10/2024 | 11:25-11:45 | MID | | 22 degrees, sunny, moderate winds | White-winged Fairy-wren | *Malurus leucopterus* | 1 | 100 | 255 | 5 | | Flying between bushes |
| BUS48 | 30/10/2024 | 2:00 - 2:20 | PM | | 27 degrees, sunny, medium - strong winds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 40 | 236 | 5 | | Flying from tree to tree |
| BUS48 | 15/11/2023 | 12:52pm | | BUS | 27C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 10 | 60 | | 4 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | White-winged Fairy-wren | *Malurus leucopterus* | 6 | 50 | | 3 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 80 | | 2 | | |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 60 | | 2 | | |
| BUS48 | 15/11/2023 | 02:35pm | | BUS | 28C, clear sky, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 70 | | 2 | | |
| BUS48 | 23/02/2022 | 848 | | BUS | Clear skies, 20 degrees | White-winged Fairy-wren | *Malurus leucopterus* | 2 | | | 2 | | |
| BUS48 | 4/11/2021 | 1525 | | BUS | 29 degrees, moderate wind, sunny | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 25 | | 0 | 29 degrees, moderate wind, sunny | |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | Willie Wagtail | *Rhipidura leucophrys* | 1 | 70 | | 8 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Willie Wagtail | *Rhipidura leucophrys* | 1 | 50 | | 5 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Willie Wagtail | *Rhipidura leucophrys* | 3 | 65 | | 5 | | |
| BUS48 | 15/11/2023 | 12:52pm | | BUS | 27C, clear sky, light wind | Willie Wagtail | *Rhipidura leucophrys* | 3 | 70 | | 5 | | |
| BUS48 | 15/11/2023 | 02:35pm | | BUS | 28C, clear sky, light wind | Willie Wagtail | *Rhipidura leucophrys* | 3 | 60 | | 4 | | perched |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Willie Wagtail | *Rhipidura leucophrys* | 3 | 60 | | 3 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS48 | 4/11/2021 | 1525 | | BUS | 29 degrees, moderate wind, sunny | Willie wagtail | *Rhipidura leucophrys* | 5 | 30 | | 2 | | |
| BUS48 | 23/02/2022 | 848 | | BUS | Clear skies, 20 degrees | Willie wagtail | *Rhipidura leucophrys* | 1 | | | 2 | | |
| BUS48 | 16/05/2022 | 12:35:00 | | BUS | 17 degrees, moderate wind, sunny | Willie Wagtail | *Rhipidura leucophrys* | 1 | 20 | | 1 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Willie Wagtail | *Rhipidura leucophrys* | 2 | 30 | | 1 | | |
| BUS48 | 15/11/2023 | 02:05pm | | BUS | 28C, clear sky, light wind | Willie Wagtail | *Rhipidura leucophrys* | 2 | 75 | | 0 | | |
| BUS48 | 29/10/2024 | 11:25-11:45 | MID | | 22 degrees, sunny, moderate winds | Willie Wagtail | *Rhipidura leucophrys* | 1 | 100 | 300 | | | Perched |
| BUS48 | 15/11/2023 | 07:42am | | BUS | 14C, partly cloudy, still | Zebra Finch | *Taeniopygia guttata* | 3 | 60 | | 5 | | |
| BUS48 | 15/11/2023 | 07:12am | | BUS | 13C, partly cloudy, still | Zebra Finch | *Taeniopygia guttata* | 8 | 50 | | 3 | | |
| BUS48 | 15/11/2023 | 12:22pm | | BUS | 26C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 8 | 60 | | 3 | | |
| BUS48 | 15/11/2023 | 12:52pm | | BUS | 27C, clear sky, light wind | Zebra Finch | *Taeniopygia guttata* | 4 | 70 | | 2 | | |
| BUS48 | 16/05/2022 | 12:35:00 | | BUS | 17 degrees, moderate wind, sunny | Zebra Finch | *Taeniopygia guttata* | 2 | 10 | | 1 | | |
| BUS49 | 16/05/2022 | 11:45:00 | | BUS | 16 degrees, slight wind sunny | Australasian Pipit | *Anthus novaeseelandiae* | 2 | 20 | | 0 | 16 degrees, slight wind sunny | |
| BUS49 | 4/11/2021 | 1430 | | BUS | Sunny, strong wind, 28 degrees | Black kite | *Milvus migrans* | 1 | 50 | | 20 | | |
| BUS49 | 23/02/2022 | 920 | | BUS | Sunny, clear skies, 24 degrees | Brown Songlark | *Cincloramphus cruralis* | 1 | | | 3 | Sunny, clear skies, 24 degrees | |
| BUS49 | 4/11/2021 | 1430 | | BUS | Sunny, strong wind, 28 degrees | Brown Songlark | *Cincloramphus cruralis* | 1 | 25 | | 0 | Sunny, strong wind, 28 degrees | |
| BUS49 | 16/05/2022 | 11:45:00 | | BUS | 16 degrees, slight wind sunny | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 0 | | |
| BUS49 | 12/08/2022 | 1422 | | BUS | 20 Degrees, 50% Cloud Cover, Moderate Winds | Little Raven | *Corvus mellori* | 2 | 100 | | 0 | | |
| BUS49 | 12/08/2022 | 1422 | | BUS | 20 Degrees, 50% Cloud Cover, Moderate Winds | Straw-necked Ibis | *Threskiornis spinicollis* | 10 | 150 | | 30 | | |
| BUS49 | 12/08/2022 | 1422 | | BUS | 20 Degrees, 50% Cloud Cover, Moderate Winds | Welcome Swallow | *Hirundo neoxena* | 1 | 100 | | 2 | | |
| BUS49 | 12/08/2022 | 1422 | | BUS | 20 Degrees, 50% Cloud Cover, Moderate Winds | White-fronted Chat | *Epthianura albifrons* | 4 | 100 | | 1 | | |
| BUS49 | 16/05/2022 | 11:45:00 | | BUS | 16 degrees, slight wind sunny | White-fronted Chat | *Epthianura albifrons* | 1 | 10 | | 4 | | |
| BUS49 | 12/08/2022 | 1422 | | BUS | 20 Degrees, 50% Cloud Cover, Moderate Winds | White-winged Fairy-wren | *Malurus leucopterus* | 8 | 20 | | 0 | 20 Degrees, 50% Cloud Cover, Moderate Winds | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 5 | south | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 50 | | 1 | | |
| BUS50 | 20/02/2024 | 1:20pm | MID - 2 | | 32C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 80 | | 1 | | perched |
| BUS50 | 20/02/2024 | 13:21 | MID - 2 | | 32C, light wind, scattered cloud | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 80 | North | 1 | | Perched on post |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 1 | | perched in shrubs |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 15 | | 1 | | |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 200 | | 1 | | perched on fence |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 20 | | 1 | | perched in shrub |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 120 | | 1 | | perched in shrub |
| BUS50 | 29/10/2024 | 8:00-8:20 | AM | | 10 degrees, sunny, low winds | Australian Magpie | *Gymnorhina tibicen* | 2 | 50 | 326 | | | Perched on fence |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 200 | | 15 | west | |
| BUS50 | 29/10/2024 | 8:00-8:20 | AM | | 10 degrees, sunny, low winds | Australian Raven | *Corvus coronoides* | 4 | 100 | 0 | 7 | 280 | Flying west |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Australian Wood Duck | *Chenonetta jubata* | 45 | 700 | | 10 | west | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Banded Lapwing | *Vanellus tricolor* | 7 | 85 | | 0 | | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Black Kite | *Milvus migrans* | 1 | 300 | | 2 | north-east | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 500 | | 30 | | |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 80 | | 30 | | hunting |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 150 | | 20 | | hunting |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 70 | | 1 | | perched on fence |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 75 | | 10 | | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | 10 | | |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Brown Songlark | *Cincloramphus cruralis* | 2 | 25 | | 2 | | |
| BUS50 | 29/10/2024 | 8:00-8:20 | AM | | 10 degrees, sunny, low winds | Galah | *Eolophus roseicapilla* | 11 | 60 | 15 | 25 | 260 | Flying west |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Galah | *Eolophus roseicapilla* | 3 | 500 | | 15 | | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Galah | *Eolophus roseicapilla* | 2 | 20 | | 7 | south-east | |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Galah | *Eolophus roseicapilla* | 1 | 125 | | 30 | east | |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Galah | *Eolophus roseicapilla* | 2 | 40 | | 5 | south | |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Galah | *Eolophus roseicapilla* | 6 | 300 | | 4 | west | |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Galah | *Eolophus roseicapilla* | 7 | 20 | | 3 | east | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Galah | *Eolophus roseicapilla* | 5 | 10 | | 1 | south | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Great Egret | *Ardea alba* | 1 | 200 | | 1 | | |
| BUS50 | 20/02/2024 | 1:20pm | MID - 2 | | 32C, partly cloudy, light wind | Grey Teal | *Anas gracilis* | 1 | 60 | | 8 | south | |
| BUS50 | 20/02/2024 | 13:21 | MID - 2 | | 32C, light wind, scattered cloud | Grey Teal | *Anas gracilis* | 1 | 60 | East | 8 | South | Flying above canopy, flew south |
| BUS50 | 29/10/2024 | 8:00-8:20 | AM | | 10 degrees, sunny, low winds | Nankeen Kestrel | *Falco cenchroides* | 1 | 150 | 11 | 25 | | Hovering |
| BUS50 | 10/06/2024 | 3:32-3:53 PM | | BUS | 14 c, light Southerly, Overcast | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | 213 | 0 | | Perched |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | Red-kneed Dotterel | *Erythrogonys cinctus* | 1 | 30 | | 0 | | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Red-kneed Dotterel | *Erythrogonys cinctus* | 1 | 100 | | 0 | | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 100 | 250 | | 60 | | large flock startled by nearby raptors |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 6 | 75 | | 25 | north-west | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 1 | 50 | | 20 | west | |
| BUS50 | 20/02/2024 | 12:50pm | MID - 1 | | 30C, partly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 30 | 500 | | 20 | | |
| BUS50 | 20/02/2024 | 12:50 | MID - 1 | | 30C, light wind, scattered cloud | Straw-necked Ibis | *Threskiornis spinicollis* | 30 | 500 | North | 20 | | Large flock nearby canopy |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Straw-necked Ibis | *Threskiornis spinicollis* | 1 | 250 | | 5 | north | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Superb Fairy-wren | *Malurus cyaneus* | 1 | 50 | | 2 | | flying between shrubs |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Superb Fairy-wren | *Malurus cyaneus* | 5 | 15 | | 1 | | perched on fence |
| BUS50 | 20/02/2024 | 1:20pm | MID - 2 | | 32C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 3 | 70 | | 1 | | perched |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS50 | 20/02/2024 | 13:21 | MID - 2 | | 32C, light wind, scattered cloud | Superb Fairy-wren | *Malurus cyaneus* | 3 | 70 | West | 1 | | Perched in shrub |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Superb Fairy-wren | *Malurus cyaneus* | 5 | 50 | | 1 | | flying between shrubs |
| BUS50 | 20/02/2024 | 12:50pm | MID - 1 | | 30C, partly cloudy, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | | 30 | | soaring - north |
| BUS50 | 20/02/2024 | 12:50 | MID - 1 | | 30C, light wind, scattered cloud | Wedge-tailed Eagle | *Aquila audax* | 1 | 500 | North | 30 | | Soaring above canopy |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 600 | | 15 | south-west | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Welcome Swallow | *Hirundo neoxena* | 1 | 20 | | 10 | south | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 2 | 75 | | 120 | | soaring - north-east |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 150 | | 20 | west | |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 250 | | 2 | | |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 300 | | 2 | west | hunting |
| BUS50 | 19/02/2024 | 4:05pm | PM - 1 | | 33C, clear sky, light wind | White-necked Heron | *Ardea pacifica* | 1 | 10 | | 20 | north | |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | White-necked Heron | *Ardea pacifica* | 6 | 50 | | 20 | south-west | |
| BUS50 | 14/11/2023 | 07:56am | | BUS | 17C, overcast, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | | | | heard |
| BUS50 | 14/11/2023 | 08:26am | | BUS | 17C, overcast, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | | | | heard |
| BUS50 | 21/02/2024 | 7:50pm | PM - 2 | | 32C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 100 | | | | heard |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 30 | | 1 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 75 | | 1 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Australasian Pipit | *Anthus novaeseelandiae* | 1 | 25 | | 0 | | |
| BUS51 | 12/08/2022 | 1343 | | BUS | 14 Degrees, Overcast, Light Winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | | 50 | | |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Australian Magpie | *Gymnorhina tibicen* | 4 | 30 | | 20 | north | |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | | 0 | | |
| BUS51 | 29/10/2024 | 7:25-7:45 | AM | | 10 degrees, sunny, low winds | Australian Magpie | *Gymnorhina tibicen* | 1 | 100 | 230 | | | Heard call |
| BUS51 | 21/10/2024 | 12:20-12:40 | MID | | 25 degrees, Sunny, Light wind | Australian Magpie | *Gymnorhina tibicen* | 2 | 100 | 260 | | | Heard call |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 2 | 150 | | 25 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Australian Raven | *Corvus coronoides* | 1 | 50 | | 1 | | |
| BUS51 | 21/10/2024 | 12:20-12:40 | MID | | 25 degrees, Sunny, Light wind | Australian Raven | *Corvus coronoides* | 2 | 150 | 260 | | | Heard call |
| BUS51 | 22/10/2024 | 4:17-4:37 | PM | | 31 degrees, Sunny, Light breeze | Australian Raven | *Corvus coronoides* | 1 | | 243 | | | Heard calls |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 120 | | 50 | | flying over treeline |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Black Kite | *Milvus migrans* | 1 | 500 | | 40 | | |
| BUS51 | 29/10/2024 | 7:25-7:45 | AM | | 10 degrees, sunny, low winds | Black Kite | *Milvus migrans* | 1 | 200 | 45 | 10 | 110 | Getting swooped by other birds |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Black-faced woodswallow | *Artamus cinereus* | 2 | 30 | | 15 | | hovering |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Black-faced woodswallow | *Artamus cinereus* | 4 | 30 | | 5 | | hovering |
| BUS51 | 22/10/2024 | 4:17-4:37 | PM | | 31 degrees, Sunny, Light breeze | Black-shouldered Kite | *Elanus axillaris* | 2 | 800 | 350 | 80 | 20 | Cicrling |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Black-shouldered Kite | *Elanus axillaris* | 1 | 50 | | 10 | | |
| BUS51 | 12/08/2022 | 1343 | | BUS | 14 Degrees, Overcast, Light Winds | Brown Songlark | *Cincloramphus cruralis* | 6 | 50 | | 30 | | |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 4 | 30 | | 15 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Brown Songlark | *Cincloramphus cruralis* | 5 | 20 | | 10 | | |
| BUS51 | 4/11/2021 | 1400 | | BUS | 28 degrees, sunny, slight winds | Brown Songlark | *Cincloramphus cruralis* | 2 | 20 | | 0 | 28 degrees, sunny, slight winds | |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 50 | | | | heard |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Brown Songlark | *Cincloramphus cruralis* | 1 | 100 | | | | heard |
| BUS51 | 21/10/2024 | 12:20-12:40 | MID | | 25 degrees, Sunny, Light wind | Brown Songlark | *Cincloramphus cruralis* | 3 | 80 | 240 | | | Heard call |
| BUS51 | 29/10/2024 | 7:25-7:45 | AM | | 10 degrees, sunny, low winds | Brown Songlark | *Cincloramphus cruralis* | 1 | 60 | 260 | | | Heard call |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Common starling | *Sturnus vulgaris* | 60 | 300 | | 5 | north-west | |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Common starling | *Sturnus vulgaris* | 20 | 200 | | 5 | | circling |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Crested pigeon | *Ocyphaps lophotes* | 2 | 200 | | 2 | | perched in shrub |
| BUS51 | 29/10/2024 | 7:25-7:45 | AM | | 10 degrees, sunny, low winds | Galah | *Eolophus roseicapilla* | 3 | 80 | 270 | 10 | 180 | Travelling South |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Galah | *Eolophus roseicapilla* | 2 | 20 | | 7 | south | |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Galah | *Eolophus roseicapilla* | 2 | 40 | | 7 | north | |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Galah | *Eolophus roseicapilla* | 1 | 75 | | 1 | | perched on fence |
| BUS51 | 12/08/2022 | 1343 | | BUS | 14 Degrees, Overcast, Light Winds | Little Raven | *Corvus mellori* | 12 | 100 | | 80 | 14 Degrees, Overcast, Light Winds | |
| BUS51 | 29/10/2024 | 7:25-7:45 | AM | | 10 degrees, sunny, low winds | Little Raven | *Corvus mellori* | 1 | 60 | 200 | | | Perched in shrub |
| BUS51 | 30/10/2024 | 3:00-3:20 | PM | | 28 degrees, sunny, strong winds | Little Raven | *Corvus mellori* | 1 | 10 | 175 | | | Perched in shrub |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 300 | | 60 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Nankeen Kestrel | *Falco cenchroides* | 2 | 150 | | 30 | | |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 80 | | 30 | | hovering |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 100 | | 2 | | in nest in tree |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Nankeen Kestrel | *Falco cenchroides* | 1 | 250 | | 2 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Southern whiteface | *Aphelocephala leucopsis* | 6 | 70 | | 1 | | perched on fence |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Southern whiteface | *Aphelocephala leucopsis* | 6 | 50 | | 2 | west | |
| BUS51 | 23/02/2022 | 953 | | BUS | Sunny, clear skies, 26 degrees | Wedge-tailed Eagle | *Aquila audax* | 2 | | | 100 | Sunny, clear skies, 26 degrees | |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Wedge-tailed Eagle | *Aquila audax* | 1 | 1000 | | 45 | | |
| BUS51 | 16/11/2023 | 07:42am | | BUS | 14C, partly cloudy, light wind | Welcome Swallow | *Hirundo neoxena* | 2 | 50 | | 15 | | |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Welcome Swallow | *Hirundo neoxena* | 1 | 70 | | 10 | | |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | Whistling Kite | *Haliastur sphenurus* | 1 | 50 | | 2 | | hunting along ground |
| BUS51 | 12/08/2022 | 1343 | | BUS | 14 Degrees, Overcast, Light Winds | White-fronted Chat | *Epthianura albifrons* | 2 | 30 | | 0 | | |
| BUS51 | 14/11/2023 | 09:10am | | BUS | 18C, overcast, light wind | White-winged Fairy-wren | *Malurus leucopterus* | 3 | 50 | | | | heard |
| BUS51 | 30/10/2024 | 3:00-3:20 | PM | | 28 degrees, sunny, strong winds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 20 | 213 | | | Heard call |
| BUS51 | 4/11/2021 | 1400 | | BUS | 28 degrees, sunny, slight winds | White-winged Fairy-wren | *Malurus leucopterus* | 4 | 50 | | 0 | | |

**BUS Data - 2021 - 2024**

**Project Name** **The Plains (066792)**
**Location** **NSW**

| Site | Date | Time | Time Period | Type | Weather | Common Name | *Scientific Name* | Number of Individuals | Distance (m) from point | Direction (degrees) from observer | Flight Height (m) | Direction of travel | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUS51 | 29/10/2024 | 7:25-7:45 | AM | | 10 degrees, sunny, low winds | White-winged Fairy-wren | *Malurus leucopterus* | 2 | 50 | 340 | | | Heard call |
| BUS51 | 14/11/2023 | 09:40am | | BUS | 18C, overcast, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 100 | | 1 | | perched |
| BUS51 | 16/11/2023 | 07:12am | | BUS | 13C, partly cloudy, light wind | Zebra Finch | *Taeniopygia guttata* | 2 | 50 | | | | heard |
| Opportunistic | 16/05/2022 | 11:00:00 | | Opportunistic | N/A | Australian Hobby | *Falco longipennis* | 1 | 10 | | 3 | Entrance to site (north of eaastern side off jerliderie rd) | |

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Level 14, 207 Kent Street
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