[

# Bank Australia Conservation Reserve: Monitoring Program Results FY23

*August 2023*

## Contents

## Glossary

| | |
|---|---|
| **Canopy Cover** | The upper tree biomass captured from hemispherical imagery (skyward view of tree canopy). |
| **Counterfactual Control** | A site where no active management activities have been undertaken to enable comparison and impact of management activities at revegetated and remnant sites. |
| **Diameter at Breast Height (DBH)** | The diameter of the main trunk of a tree measured at 1.3 m above ground level. |
| **Ecological Vegetation Class (EVC)** | Native vegetation classification system based on vegetation community composition and structure, and landform and landscape attributes. |
| **Percentage Cover** | The proportion of the ground that is covered by above ground vegetation. |
| **Proportion Presence** | The frequency of occurrence (as a proportion) of native understorey life forms derived from presence absence transects. |
| **Recruitment** | Evidence of young plants or seedlings that have survived approximately one year or summer since germination. |
| **Reference Condition** | A benchmark for vegetation condition, often an intact remnant patch of vegetation that has been measured, or EVC. |
| **Vegetation Condition** | A measure of the state of a patch of vegetation using targeted attributes that are assessed against a benchmark (e.g. reference condition). |

*This is a controlled document. Details of the document ownership, location, distribution, status and revision history are listed below. All comments or requests for changes to content should be addressed to the document owner.*

*The document is provided 'as is' without warranty of any kind. Greening Australia hereby disclaims all warranties and conditions with regard to this information, including all implied warranties and conditions of merchantability, fitness for particular purpose, title and non-infringement. In no event shall Greening Australia be liable for any special, indirect or consequential damages or any damages whatsoever resulting from the loss of use, data or profits, whether in an action of contract, negligence or other tortious action, arising out of or in connection with the use of information available in this document. The document or material related to this document could include technical inaccuracies or typographical errors.*

**DOCUMENT OWNER**

GREENING AUSTRALIA LTD
1 Underwood Ave, Shenton Park, WA 6008
TEL +61 (08) 9287 8300

Cover image: Western Pygmy Possum, credit: Nature Glenelg Trust 2022

**QUALITY STATEMENT**

| PROJECT MANAGER | PROJECT TECHNICAL LEAD |
|---|---|
| J Gardner | Z Birnie |

| PREPARED BY |
|---|
| Z Birnie |

| CHECKED BY |
|---|
| B Parsons |

| REVIEWED BY | APPROVED FOR ISSUE BY |
|---|---|
| B Parsons, M Lewis, J Gardner | B Parsons |

**REVISION SCHEDULE**

| Rev No | Date | Description | Prepared by | Checked by | Reviewed by | Approved by |
|---|---|---|---|---|---|---|
| 0.1 | 03/08 | Draft for internal review | ZB | BP | BP | N/A |
| 1.0 | 04/08 | Draft for client comment | ZB | BP | BP, ML, JG | BP |
| 1.1 | 06/09 | Second draft issued for client | ZB | ML | ML | ML |
| 1.2 | 18/10 | Final issued for client (maps updated) | ZB | ML | ML | ML |

*Greening Australia acknowledges the Traditional Owners of the lands on which we work, and we pay our respect to Elders past, present, and emerging.*

# Executive Summary

## Monitoring Program

In FY23, a large-scale Monitoring Program was undertaken at the Bank Australia Conservation Reserve (the Reserve). The objective of the Monitoring Program was to:

- Assess the current ecological diversity and condition of Minimay, Ozenkadnook and Booroopki five years on from baseline surveys in FY17;
- Assess the baseline ecological diversity and condition of Salvana (purchased by Bank Australia in 2021);
- Compile a database of the animal and plant species present at the Reserve; and
- Assess Reserve progress against management goals outlined in the Reimagining our Future Strategic Plan (2017).

Between September 2022 and May 2023, vegetation condition, wetland condition, bird, pitfall trapping (targeting reptiles and mammals), frog and invertebrate surveys were undertaken across several revegetated and remnant sites within the Reserve. Control sites in cleared and remnant areas surrounding the Reserve were also surveyed as counterfactuals, to help identify the effectiveness of management activities for providing the condition of the vegetation within the Reserve boundary.

## Vegetation Condition

The results of vegetation condition surveys reveal that the number of native species and their relative abundance in revegetated areas is low in comparison to remnant areas, and that other attributes such as logs, and large trees are also low. However, importantly, these attributes are higher in comparison to cleared control sites. This tells us that the revegetation undertaken at the Reserve has helped to progress from a cleared, grazed paddock state to native vegetation. These vegetation condition survey findings are broadly consistent with our expectations, particularly in revegetated areas, due to the lag time between revegetation approaching remnant or reference conditions and delivering biodiversity outcomes. With continued management in these revegetation areas, we expect them to improve in condition towards the reference ecosystem state. However, in some areas, we have identified that low native understorey cover and life form diversity is likely driven by the low diversity plantings in those areas (e.g. where the objective was to revegetate low diversity Eucalypts species for informal carbon sequestration). These areas would benefit from future restoration works to increase understorey plant diversity and ensure they are on a trajectory towards reference ecosystem condition.

Surveyed wetlands across the Reserve in FY23 were in the same or slightly improved condition compared to FY17 baseline. The improvement in condition scores for catchment, hydrology and biota categories at site Minimay wetland 36 highlights the positive impact of the Dams to Wetlands project undertaken in 2021. Wetland sites with a low biota score (e.g. Salvana wetlands) or poor physical form (e.g. Minimay wetland 37, a man-made dam) should be considered for future restoration activities to improve the overall condition of these sites.

## Flora and Fauna Diversity

The results of our surveys indicate that we observed more native plant and animal species in FY23 compared to FY17 baseline survey. The integration of the Salvana land parcel into the Reserve (in 2021) was a significant source of new native plant and animal species detected in FY23.

A total of 251 native plant species were recorded at Salvana, and 128 native plant species at Minimay, Ozenkadnook and Booroopki, including 10 species of conservation significance. Threatened plant species were predominantly recorded in remnant areas across the Reserve.

A total of 283 native animal species were recorded in FY23 (206 species were sighted at Minimay, Ozenkadnook and Booroopki and 163 at Salvana), an overall increase on the 229 native animal species detected in FY17 despite fewer species observed at Minimay, Ozenkadnook and Booroopki. Nine threatened animal species were sighted during FY23 surveys including new species since the baseline surveys, such as the Little Eagle and an unconfirmed sighting of the Swift Parrot. This sighting has been queried and should be confirmed by future survey effort.

Furthermore, the FY23 results revealed sightings of new species since the FY17 baseline surveys including the Silky Mouse, Western Pygmy Possum, Painted Dragon, Shy Heathwren and Painted Burrowing Frog. With the exception of birds, on average, fauna species richness was lower in revegetated areas in comparison to remnant areas. This is likely driven by the lack of understorey cover and structural complexity observed in these areas compared to neighbouring remnant areas. Considering the young age class of the revegetation at the Reserve (between 1-13 years old), this result is not unexpected. In the very young sites, continuing strategic weed control (to reduce competition) and pest animal control (to reduce browsing) will help to improve understorey cover over time. Infill planting to increase understorey diversity may be required in older sites (e.g. planted in 2009-2012).

### Progress towards achieving the Strategic Goals

Based on the results of the FY23 surveys, and the inventory of management activities undertaken at the Reserve since FY17, we have assessed that the Reserve is on track to meeting Goals 1.1, 1.2 and 1.3 from the Reimagining our Future Strategic Plan (2017) (**Table 1**). Achieving restoration in line with reference or remnant ecosystems can take long timescales. Considering the age class of the revegetation at the Reserve we believe that the flora and fauna species richness recorded provides a positive outlook on the condition trajectory.

Significant revegetation has been undertaken across the Reserve since 2009 (Minimay, Ozenkadnook and Booroopki) and by Greening Australia since 2015 at Salvana. Early plantings undertaken before Greening Australia and Trust for Nature began managing the Reserve were largely low diversity plantings with a focus on establishing overstorey vegetation at Minimay, Ozenkadnook and Booroopki. Revegetation activities from FY17 onwards and earlier works undertaken at Salvana by Greening Australia have focussed on biodiverse habitat restoration and reinstating ecologically significant species. In addition to revegetation activities, managing the Reserve to support native species establishment and promote recruitment of native species is equally important. Significant pest plant and animal control in addition to log reinstatement and cultural burning practices have been undertaken to reduce exotic species and promote recruitment and establishment of native plant species.

Continuing to manage the Reserve with an adaptive management framework and in line with the Implementation Plan (Jellinek et al, 2017) will ensure strategic management activities can be implemented in areas that are not progressing as well as others. For example, improving understorey condition within low diversity Eucalypt plantings at Ozenkadnook.

**Table 1:** Summary of progress towards goals of the Bank Australia Reimagining our Future Strategic Plan (2017)

| Goal | Assessed progress | FY23 Survey Outcomes | Commentary |
|---|---|---|---|
| 1.1 By 2026, we will maintain or improve the quality of 600 ha of remnant native vegetation to increase the availability of food and habitat resources for priority threatened species | **On Track** | • Mean native flora species richness in remnant areas was 15 compared to 20-25 in remnant control areas **Figure 13**.<br>• Mean proportion native groundcover in remnant areas was 28% compared to 37% in remnant control areas. | Since FY17, pest plant and animal control activities have been undertaken across the Reserve to improve establishment and recruitment of native vegetation and remove exotic species.<br><br>60 ha of Buloke restoration at Minimay and Ozenkadnook will help to reestablish the threatened Buloke Grassy Woodland vegetation community.<br><br>Stringybark enhancement at Minimay (24 ha), Booropki (50 ha), and Salvana (95 ha) will help to provide future food resources for the threatened Red-tailed Black Cockatoo. |
| 1.2 By 2026, we will manage our Conservation Reserve to support and increase the populations of five threatened animals and five threatened plants | **On Track** | • 286 native animal species including 11 threatened species were detected in FY23 compared to 227 species in FY17.<br>• 11 threatened animal species detected in FY23 and FY17 surveys.<br>• 10 threatened plant species detected in FY23. | In comparison to FY17 baseline, we identified more native plant and animal species at the Reserve in FY23.<br><br>Importantly, we have identified the same threatened species in addition to new threatened animal species including the Little Eagle and threatened plant species including Small Milkwort and Pink Ziera. The new species (threatened and non-threatened) identified in FY23 are mostly attributed to Salvana becoming part of the Reserve. |
| 1.3 By 2026, we will enhance the condition of existing revegetation across 200 ha of previously degraded land in the Reserve to provide habitat for at least five other animal species | **On Track** | • On average, revegetated sites had lower native flora cover and richness in comparison to remnant sites, but greater richness compared to cleared sites.<br>• On average, revegetated sites had higher bird species richness compared to remnant areas.<br>• With the exception of birds, other taxa richness was on average higher in remnant areas.<br>• Threatened birds including Diamond Firetail and Hooded Robin observed in revegetated areas. | Since FY17, revegetation activities have been undertaken at the Reserve, primarily at Salvana (167 ha) where cleared areas remained. The objective of this revegetation is biodiverse habitat restoration for native species.<br><br>In addition, log reinstatement activities have been undertaken across 115 ha at Minimay to improve habitat availability for invertebrates, reptiles and ground dwelling species.<br><br>Cultural burning in partnership with Barengi Gadjin Land Council and CFA has occurred across 30 ha of revegetated buloke grassy woodland at Minimay with the objective of promoting recruitment of native grasses. |

# 1 Background

Greening Australia and Trust for Nature have been jointly managing the Bank Australia Conservation Reserve (the 'Reserve') in the Wimmera, Victoria since financial year 2016-2017 (FY17) on behalf of Bank Australia. At the commencement of management, the Reserve was made up of three properties – Minimay, Ozenkadnook and Booroopki. Between 2009–2016, these properties were managed by Landcare Australia, who undertook extensive pest and weed management and revegetation activities. In 2021, Bank Australia acquired a fourth conservation property: Salvana, also located in the Wimmera Mallee region of Victoria.

In FY17, a baseline monitoring project was conducted on the original three properties by Nature Glenelg Trust on behalf of Greening Australia and Trust for Nature, to assess ecological diversity and condition and inform an adaptive management framework. The Implementation Plan (Jellinek et al, 2017) outlines the results of the baseline surveys and cascading objectives aligned with the strategic goals of the Reserve (Reimagining out Future Strategic Plan, 2017). Management activities and recommendations were provided in a series of plans including the Bank Australia Restoration Plan (Jellinek, Raulings & Gardner, 2017), Bank Australia Conservation Reserve Pest Animal Management Plan (Greening Australia and Trust for Nature, 2017) and the Bank Australia Conservation Reserve Weed Management Strategy (Greening Australia and Trust for Nature, 2017). The objectives of baseline monitoring were to:

1. Compile a database of the animal and plant species present on the parcels of land that make up the Reserve;
2. Understand patterns of occurrence of flora and fauna across the Reserve and how this relates to revegetated/remnant areas, occurrence of Ecological Vegetation Classes (EVCs), and wetlands; and
3. Establish a baseline to underpin implementation of a long-term monitoring program to assess how management actions, such as restoration activities (e.g. revegetation), influence animal and plant communities in comparison to remnant areas.

In 2021, Bank Australia purchased a fourth land parcel, Salvana to became part of the Reserve. Following purchase of the property, a scoping study was conducted to provide recommendations for immediate and priority actions (e.g. fire management, cultural heritage, preliminary vegetation mapping etc). The results of the FY23 Monitoring Program included in this report provide a more complete baseline assessment of the flora and fauna at Salvana.

The objectives of the repeat Monitoring Program (this document) were to:

- Assess the current ecological diversity and condition of Minimay, Ozenkadnook and Booroopki five years on from baseline surveys in FY17;
- Assess the baseline ecological diversity and condition of Salvana (purchased by Bank Australia in 2021);
- Compile a database of the animal and plant species present at the Reserve; and
- Assess Reserve progress against management goals outlined in the Reimagining our Future Strategic Plan (2017).

The Monitoring Program (FY17) was originally designed to understand how native flora and fauna was distributed across the three land parcels of the Reserve. A secondary objective was to compare indexes of vegetation condition for remnant and revegetated areas at the Reserve, to see how they were performing. Thus, permanent survey sites were chosen to be representative of their remnant/revegetated status as at FY17 and were selected prior to knowledge of where subsequent management actions would be conducted. What this practically means is that our survey sites, although a good representative sample, do not cover all areas of the Reserve where management activities have been undertaken between FY17 and FY23.

Therefore, a limitation of our repeat survey effort in FY23 is that where management activities (e.g. weed control, log enhancement, tree and shrub enhancement, fencing) have occurred outside of our permanent survey sites, the resulting changes in condition are not captured in the results presented in this study. However, this data will be referred to as incidental records for the purpose of this report.

The results from the FY23 Monitoring Program will be used to report on progress against the ecological goals from the Reimagining our Future Strategic Plan (**Table 2).**

**Table 2:** Subset of Action Areas and Goals from the Bank Australia Reimagining our Future Strategic Plan (2017) that the FY23 Monitoring Program will report against in this document. The management activities that are *italicised* will not be discussed in this report as these are better described in other documents such as the Fire Management Plan.

| Action Area | Goal | Management Activities | Indicators of Success | Monitoring Program Component |
|---|---|---|---|---|
| 1: Conservation of wildlife and wildlife places | By 2026, we will maintain or improve the quality of 600 ha of remnant native vegetation to increase the availability of food and habitat resources for priority threatened species | a. *Reduce the risk of fire*<br>b. Reduce browsing pressure of exotic animals<br>c. Reduce weed cover<br>d. Plant overstorey species<br>e. Add logs<br>f. Revegetate with understorey food and habitat plants | • Native flora species richness<br>• Native groundcover % cover | • Plot A –trees<br>• Native groundcover pointing transects (Survey Unit C)<br>• Native understorey presence/absence transects (Survey Unit F) |
| | By 2026, we will manage our Conservation Reserve to support and increase the populations of five threatened animals and five threatened plants | | • Fauna species richness<br>• Fauna species abundance<br>• Presence/absence threatened species | • Bird surveys<br>• Pitfall trapping<br>• Invertebrate searches<br>• Amphibian surveys<br>• Native groundcover pointing transects (Survey Unit C) |
| | By 2026, we will enhance the condition of existing revegetation across 200 ha of previously degraded land in the Reserve to provide habitat for at least five other animal species | *a. Reduce fire risk to revegetated areas*<br>b. Plant native grasses and shrubs in revegetated habitats<br>c. Add logs and other understorey elements<br>d. Undertake weed control at selected sites<br>e. Maintain the hydrology of wetland areas<br>f. Add nest boxes in revegetated areas | • Native flora species richness<br>• Native groundcover % cover<br>• Species presence/absence | • Native groundcover pointing transects (Survey Unit C)<br>• Native understorey presence/absence transects (Survey Unit F)<br>• Pitfall trapping<br>• Amphibian surveys<br>• Invertebrate searches |

# 2 Methods

## 2.1 Field surveys

### 2.1.1 Vegetation Condition: Minimay, Ozenkadnook and Booroopki

The methods for the FY23 vegetation surveys were revised from the previous Vegetation Quality Assessment (VQA) methodology employed at the baseline surveys in FY17 (DSE, 2004). The VQA (Habitat Hectare scoring) method is well suited to providing a comparative snapshot of conditions across a wide-ranging area but less suited to measuring changes in condition over time at a local spatial scale because of its reliance on categorical, qualitative data collation (McCarthy *et al.*, 2004; Duncan and Vesk, 2013) . Hence, for the repeat surveys conducted in FY23, we designed a complementary survey method to enable quantitative assessment of change in key habitat hectare components which can then link to and demonstrate impacts of management actions (revegetation in particular) and support decision-making for future actions. Revised vegetation condition surveys were undertaken at all baseline survey sites from FY17 at Minimay, Ozenkadnook and Booroopki (sites 1-34) as well as four new revegetated sites at Booroopki (sites 50-53) and nine control sites surrounding the Reserve (sites 60-65, 67-68 and 71).

The FY17 baseline surveys were conducted in two ha circular plots (~80 m radius), using the Waypoint ID (WptID) as a centre point of the survey plot. The FY23 surveys used a 100 m x 40 m quadrat survey unit (A), delineated by the 100 m central transect line. Survey unit A had several sub-sampling units including: B – five randomly placed 20 m x 20 m sub-quadrats; C – five 20 m long point quadrat sub-transects, sampled each 20 cm; D – ten hemispherical canopy photographs (every 10 m along the 100 m transect); E – reference photograph points along main and sub-transects (arrow direction indicates direction of photograph); F – thirty (10 per sub-quadrat) 1 m x 10 m understorey plots on alternating sides of the sub-transects (Appendix A, Figure A1).

Within the sub-sampling units, several vegetation attributes in were recorded including the number of large trees (including sub-measures), tree canopy cover, understorey (presence of native life forms), recruitment of native trees, groundcovers and logs (Appendix A, Table A1). These attributes provide a metric for each of the habitat hectares components categorised in the baseline surveys. In FY23, we included control plots (cleared and unvegetated and un-managed remnants) outside of each reserve to account for variation in our indicators that were not attributable to management actions and to assist in interpreting results. The locations of all survey sites are shown **Figure 1**, **Figure 2**, and **Figure 3** and full details of survey sites can be found in Appendix C.

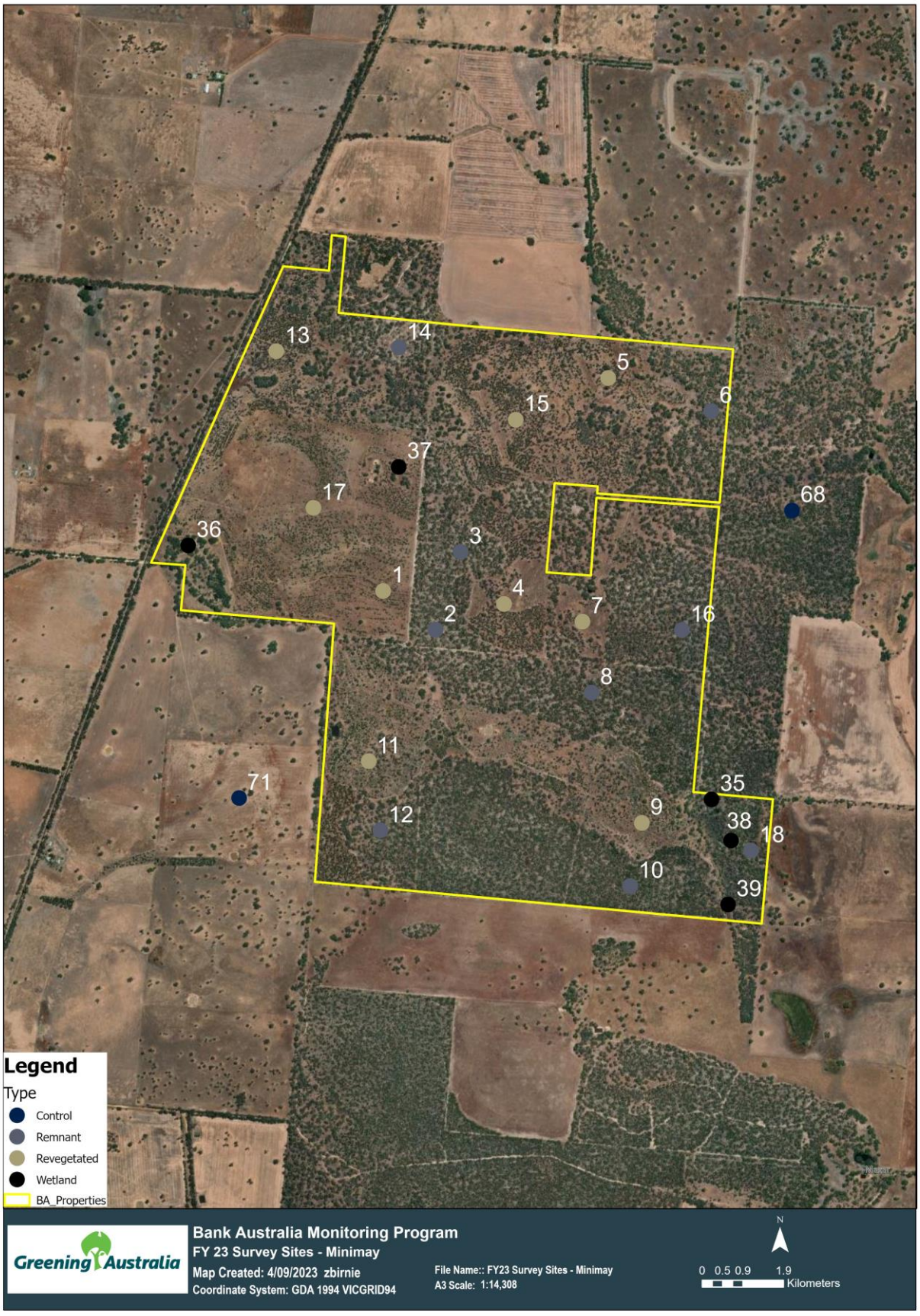



**Figure 1**: Monitoring Program FY23 survey sites, Minimay


**Figure 2:** Monitoring Program FY23 survey sites, Ozenkadnook

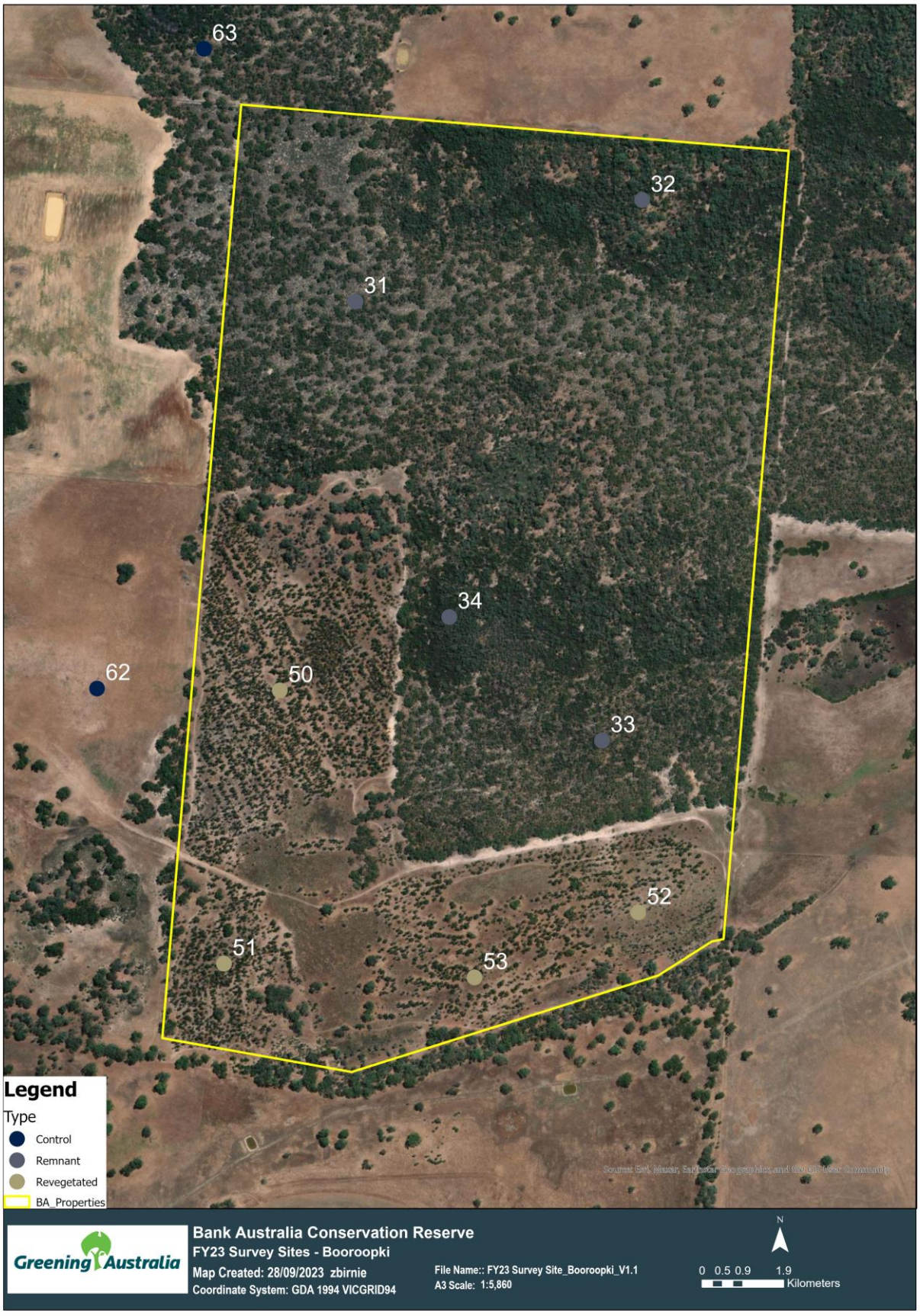



**Figure 3**: Monitoring Program FY23 survey sites, Booroopki

### 2.1.2 Baseline Vegetation Condition: Salvana

Baseline vegetation condition surveys were undertaken at Salvana, using a paired design (revegetated and remnant sites) and stratified across the Ecological Vegetation Classes (EVCs) (**Figure 4**). Due to the size of Salvana and the environmental variation therein, significant effort would be required to undertake vegetation condition surveys at all 29 of the revegetated, remnant and control sites. To maximise effectiveness, relevé surveys were undertaken at a subset of the Salvana sites in place of the detailed vegetation condition surveys. Thus, vegetation condition surveys were undertaken at 16 revegetated and remnant sites (sites 101-116) and two control sites (sites 127-128) (**Figure 4**), and followed the methods described in section 2.1.1.

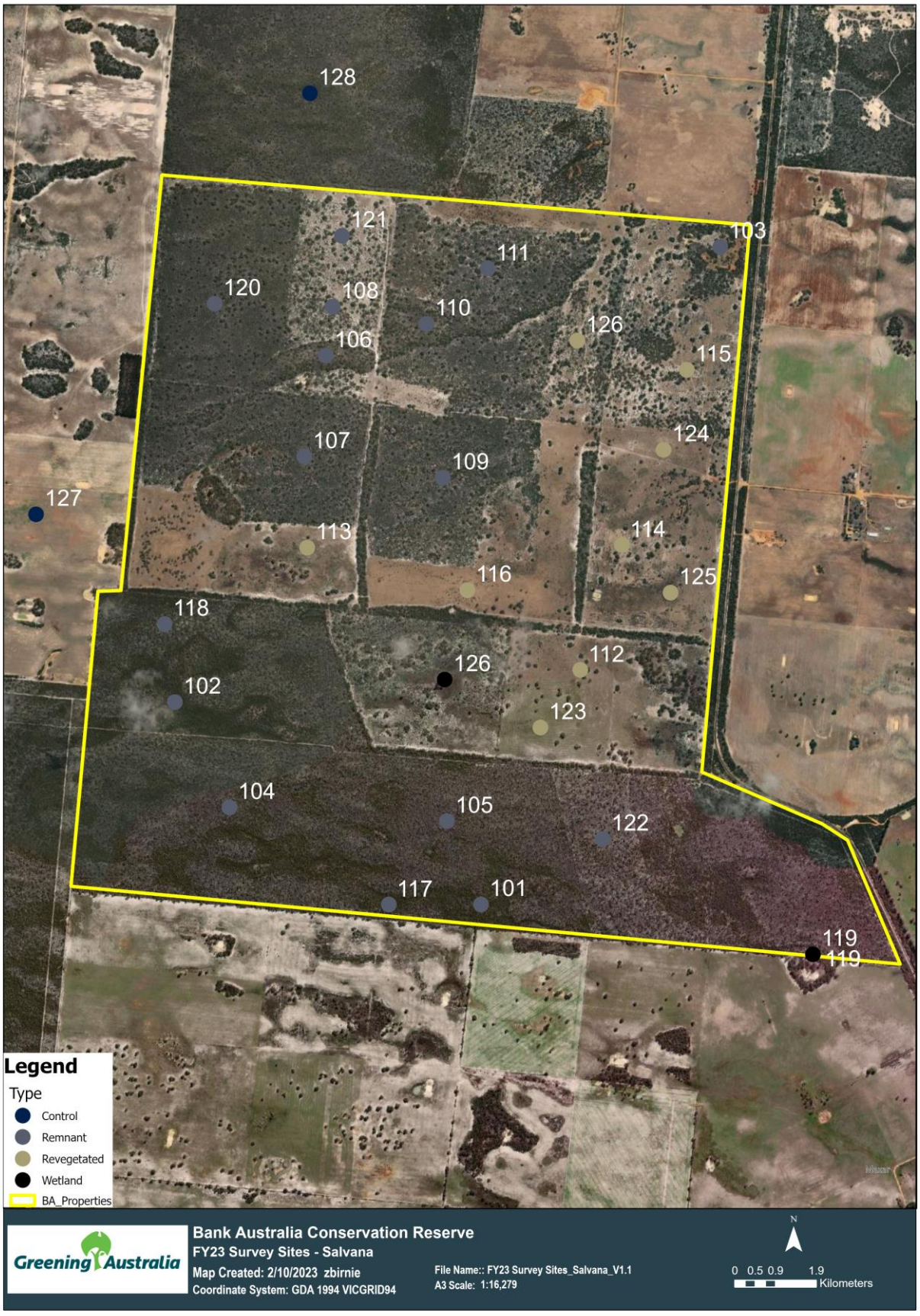



**Figure 4**: Monitoring Program FY23 survey sites, Salvana

### 2.1.3 Vegetation Relevé Surveys (subset of Salvana sites only)

Vegetation relevé surveys (Environmental Protection Authority, 2015) were undertaken at a subset of the Salvana sites in place of the detailed vegetation condition surveys. The objective of the relevé survey was to ground truth the EVC (in reference to the modelled pre-European EVC) and assess vegetation condition using visual assessments. Sites were chosen based on their representativeness of the condition and EVC of a given modelled extent. Relevé surveys were undertaken at nine survey sites at Salvana (117-126) using a proforma in the ESRI Survey 123 application (**Figure 4**). At each survey site, vegetation attributes were measured via visual assessment methods within three key categories: land type (aspect, slope, landform), vegetation (EVC) and condition (overall condition assessment, presence of disturbance factors, evidence of browsing, weed cover including presence of noxious species, cover estimates of vegetation strata (tree, shrub, herb, tufted and non-tufted graminoid) and estimation of age class. Refer to Appendix B, Table B1 for detailed descriptions of the vegetation attributes measured.

### 2.1.4 Wetlands

The Index of Wetland Condition (IWC) assessment is a standard method developed in Victoria used to assess the extent and condition of wetlands. IWC assessments were undertaken at nine pre-identified wetland sites across the Reserve (**Table 3**), recording the measures outlined in Appendix D (DEPI, 2013). IWC assessments were uploaded to the Index of Wetland Condition Data Management System.

**Table 3:** FY23 wetlands surveyed using IWC assessment.

| Property | WptID | Reference |
|---|---|---|
| Minimay | 35, 36 ,37, 38, 39 | **Figure 1** |
| Ozenkadnook | 40, 41 | **Figure 2** |
| Salvana | 119, 126 | **Figure 4** |

### 2.1.5 Bird Surveys

Bird surveys were undertaken at all 2016 bird survey baseline sites (sites 1-34) as well as four new revegetated sites at Booroopki (sites 50-53), 18 new sites at Salvana (sites 101-116) and eleven new control sites surrounding the Reserve (sites 60-65, 67-68, 71, and 127-128). At each survey site, the survey point acted as the centrepoint for a 2-ha search area. The Birdlife Australia 2-ha, 20-minute survey methodology was adopted, with data entry via the Birdata Application (Birdata). The field team aimed to visit each survey site on three separate days between October – December 2022, when conditions were considered suitable for bird detection, i.e. in the morning four hours after sunrise, or two hours before sunset, calm days with no wind/rain. However, due to the survey effort required, conditions were not always optimal when surveys were undertaken. For example, surveys undertaken at Ozenkadnook on the 14/12/2022 experienced moderate-gusty winds.

### 2.1.6 Amphibian Surveys

Targeted frog surveys were undertaken at nine of the pre-identified wetlands within the Reserve (**Table 3**). At each wetland, call recorders were established from October to November 2022 and subsequently used to identify species at each wetland. On-ground surveys were also undertaken by experienced ecologists using a call-playback method to identify frog species. Due to technical issues, the call recorders failed and therefore the amphibian results presented in this report are from on-ground call-playback surveys and pitfall trapping survey results only.

### 2.1.7 Threatened Invertebrate Searches

Walked transect searches were undertaken in grassy woodland and grassland habitats across the Reserve with the aim of detecting the Fiery Jewel Butterfly (*Hypochrysops ignites*) and other conservation-listed

invertebrate species. The methodology used involved a meandering survey and point observations (refer to EPBC Act Golden Sun Moth Survey Guidelines, DEWHA 2009). Whenever a species was detected, the observer would record the location using a handheld GPS. Walked searches were undertaken by an expert environmental scientist on two days in November – December 2022 when conditions were favorable for detection (clear, sunny days). The same search areas at Minimay, Ozenkadnook and Booroopki surveyed in 2016 were revisited, with a focus on areas where Fiery Jewel Butterfly was detected. Additionally, the search area at Salvana was informed by mapped EVCs and ground truthing. All invertebrates observed during walked searches were recorded.

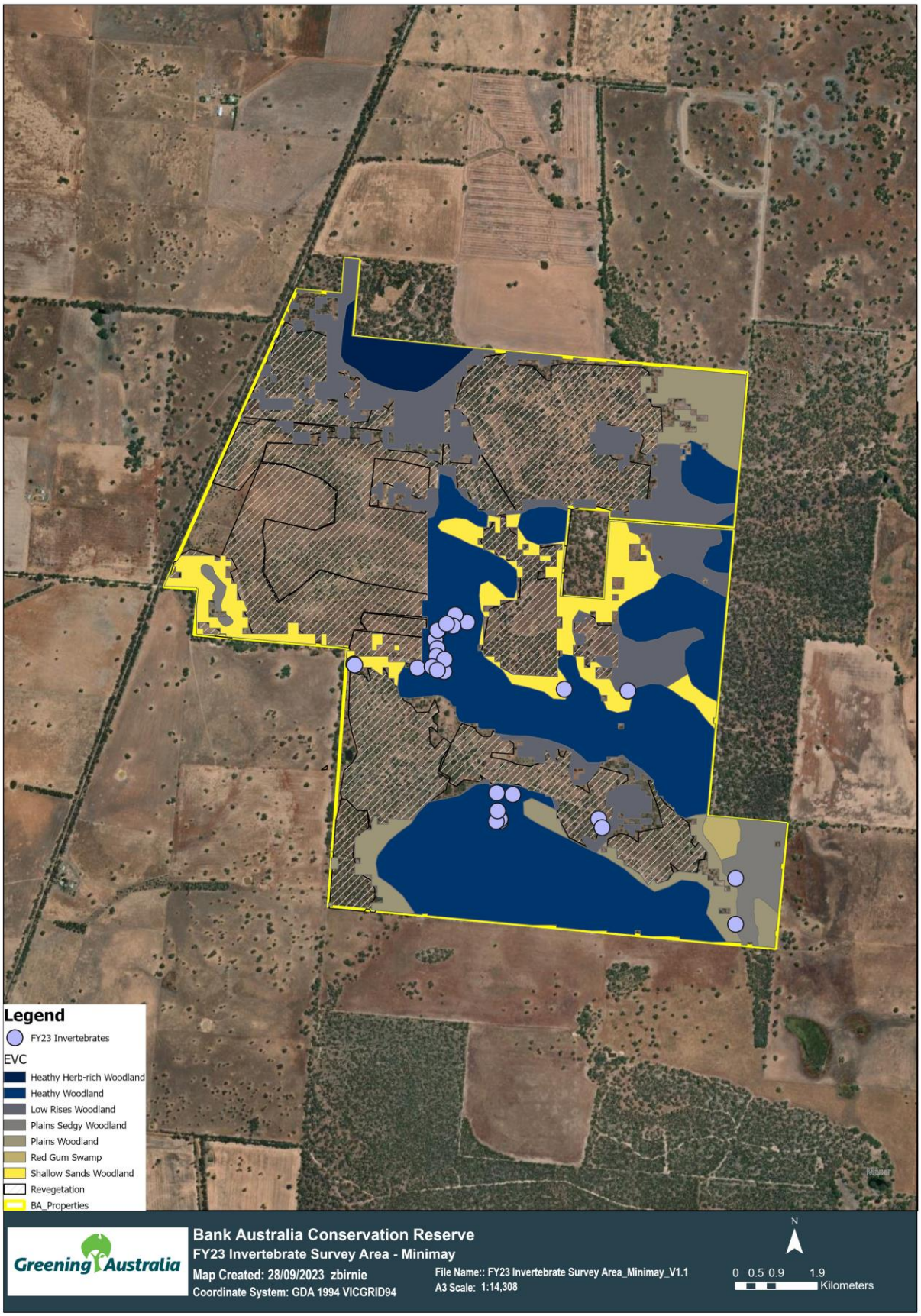



**Figure 5:** Invertebrate search area, indicated by FY17 records, Minimay

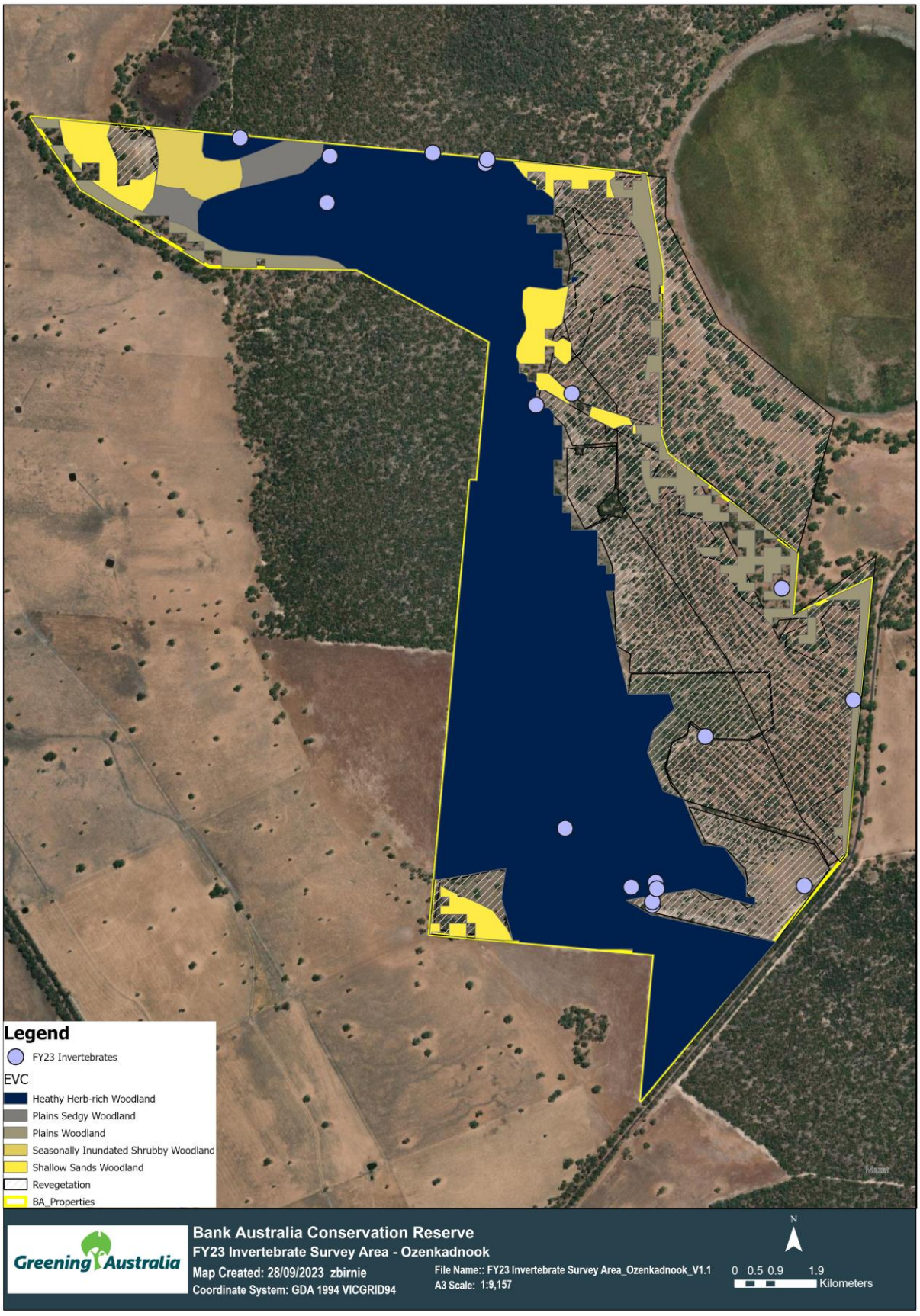



**Figure 6**: Invertebrate search area, indicated by FY17 records, Ozenkadnook.

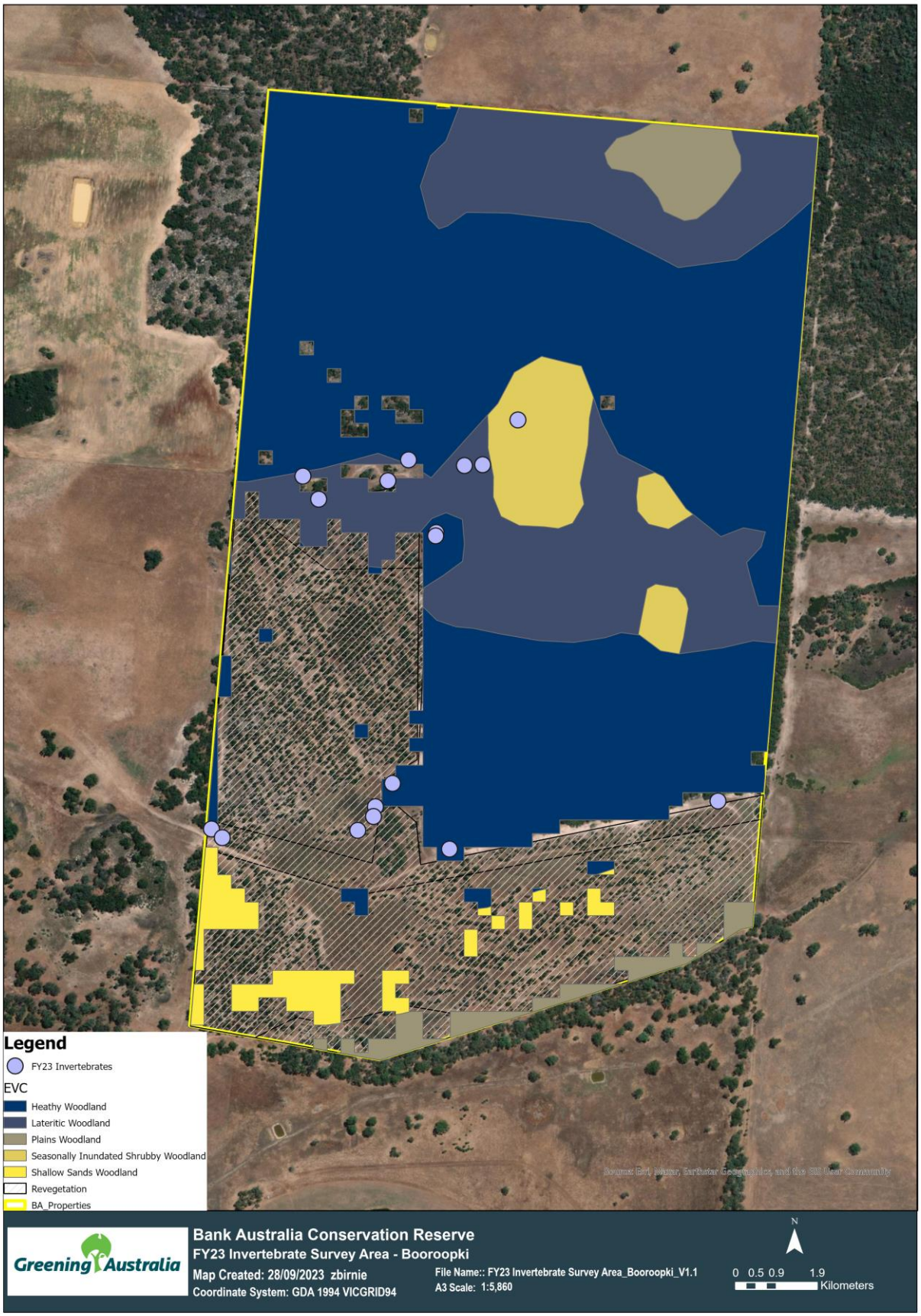



**Figure 7:** Invertebrate search area, indicated by FY17 records, Booroopki.

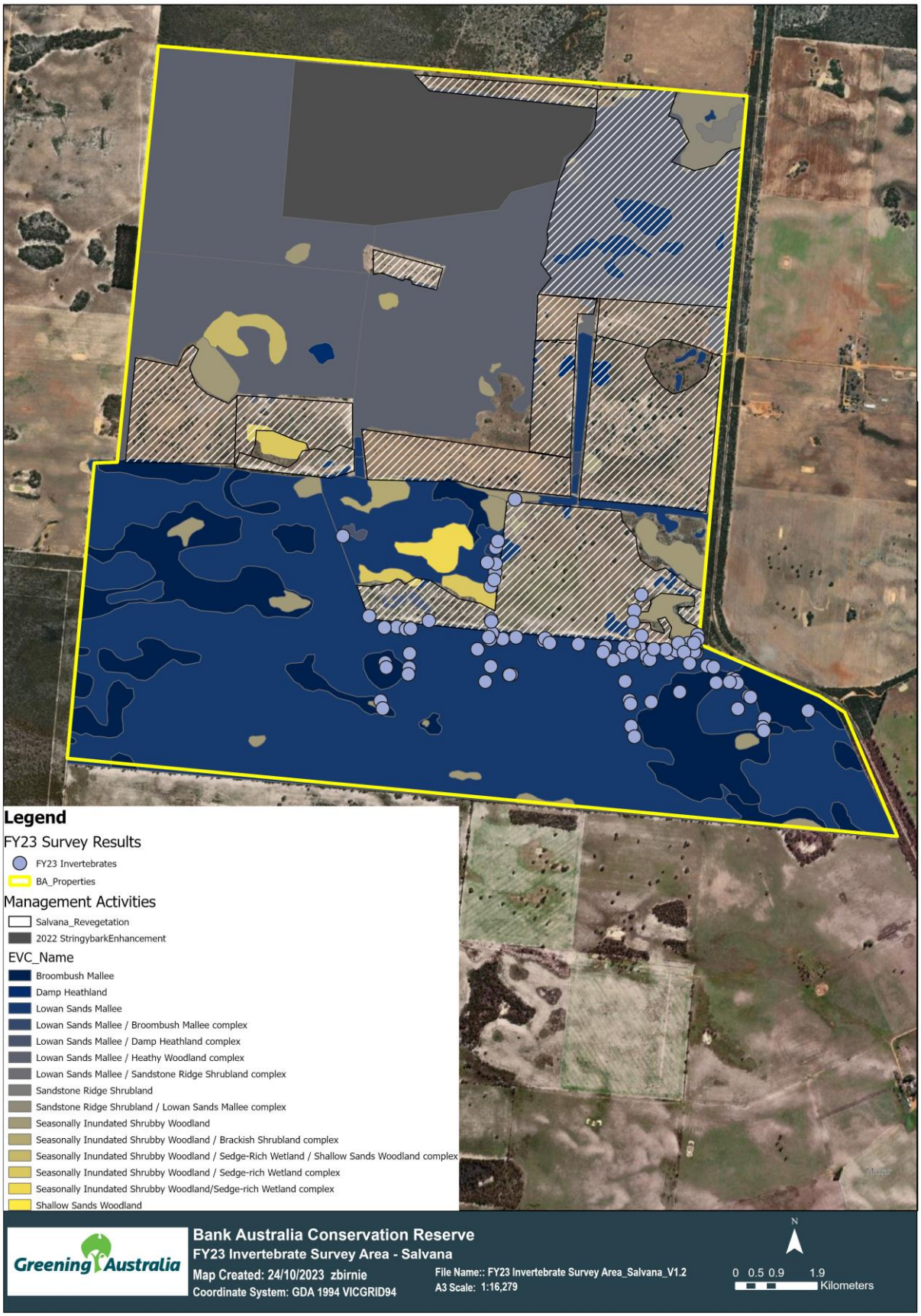



**Figure 8:** Invertebrate search area, indicated by FY23 records, Salvana.

### 2.1.8 Reptile and Mammal Pitfall Trapping

Pitfall trapping is a common method of conducting fauna surveys to determine species richness and abundance at a given location. Pitfall traps specifically target small-sized ground dwelling animals such as reptiles, frogs, invertebrates but can also capture arboreal mammals such as possums as they traverse along the ground. Pitfall trapping for the FY23 Monitoring Program were undertaken by trained ecologists with animal ethics approval from the Wildlife and Small Institutions Animal Ethics Committee (WSIAEC) for Fauna Surveys by Nature Glenelg Trust in Victoria from 10 March 2021 until 9 March 2024.

Pitfall lines were established in remnant and revegetated habitats (paired assessments), clustered around the vegetation survey point with the specific locations optimised for detection probability. Each pitfall line consisted of two 20 L buckets joined by a 15m long, 30cm high (approx.) drift fence (made of 200um black polyurethane plastic or mosquito netting). Buckets were dug into the ground such that the rim of the bucket was level with the top of the soil. The drift fence bisected the top of each bucket and was kept perpendicular to the ground with two wooden stakes at either end and smaller metal stakes along its length. Each bucket contained 3–4cm of soil/sand and leaf litter, a 10x10x2cm block of untreated pine, and a 10cm long piece of halved 90mm PVC pipe to protect any captured animals until the traps were checked. Where frogs were likely to be caught, a wet sponge was placed in each bucket. To avoid mortalities caused by ants, the rims of the buckets were coated with a permethrin-based insecticide.

Each pitfall line was surveyed twice daily (early morning and late afternoon) for five consecutive days (four nights) in March and April 2023. Captured reptiles and mammals were identified to species level and released near the site of capture (ensuring that they were unlikely to fall into the traps immediately after release). Beetle species (Coleoptera) were identified to Family level.

The pitfall lines established in FY17 at Minimay, Ozenkadnook and Booroopki were re-opened and used for the FY23 surveys. Additionally, new pitfall lines were established at Salvana. The locations of the pitfall lines were designed to cluster around the survey points where vegetation condition surveys occurred but were optimised for detection based on expert on-ground knowledge (**Figure 9**).

At Salvana, mammals were targeted in additional to reptiles, given this was a baseline assessment and desktop assessments indicate the past occurrence of small ground mammals in and around Salvana (e.g. Silky Mouse *Pseudomys apodemoides*) (Bank Australia Conservation Reserve: Salvana Scoping Study, 2022). Two Elliot traps (or similar mammal traps) were placed at either end of the drift-fence to capture mammals and large reptile species. These were checked at the same time as the pitfall traps. Mammal traps were baited in the evenings using rolled oats and honey to increase the likelihood of capture. Mammals were not targeted at Minimay, Ozenkadnook and Booroopki due to the low detections of mammals in the FY17 baseline surveys.

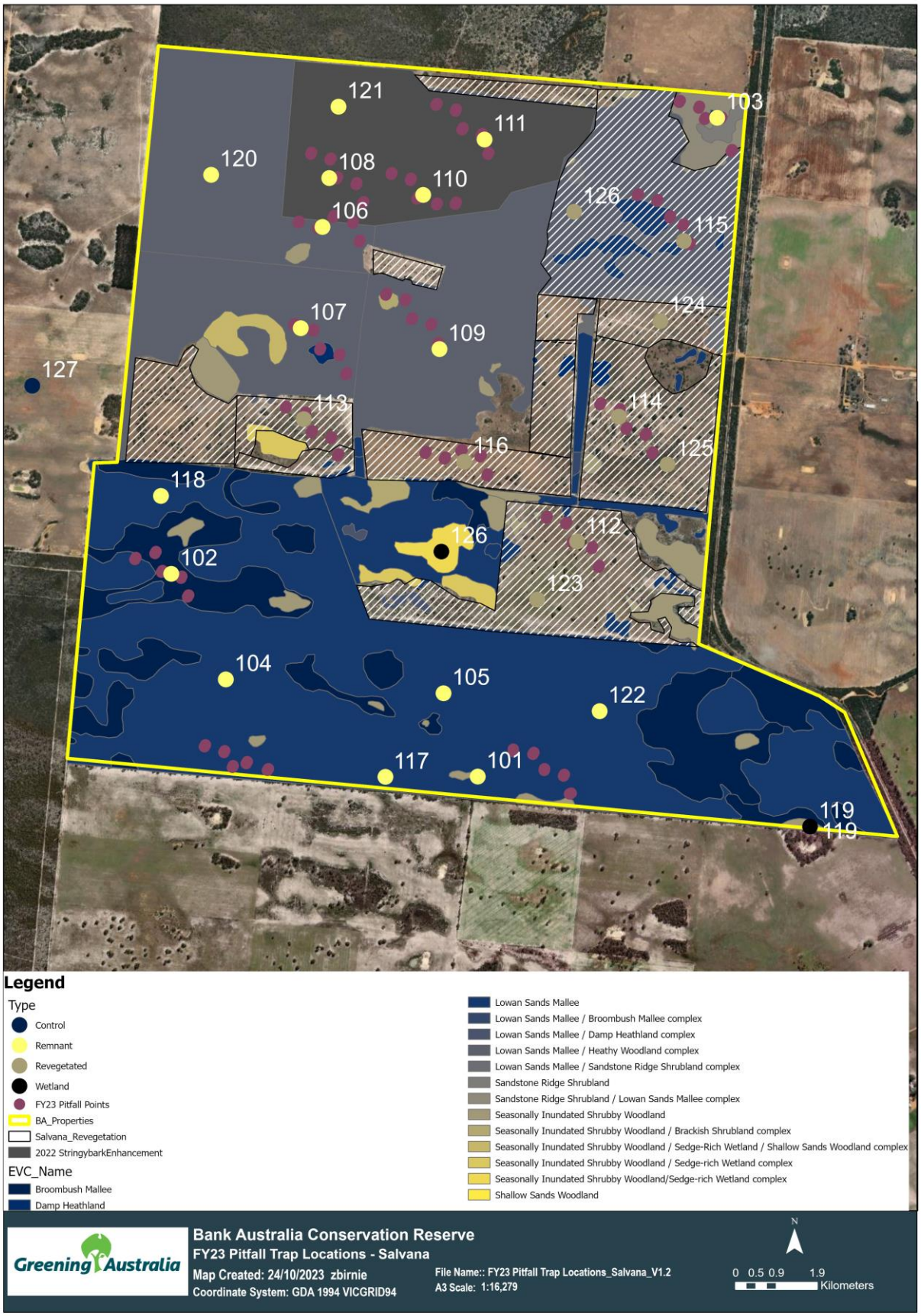



**Figure 9:** Pitfall trap locations 2022, Salvana

## 2.2 Data analysis

Data analysis was undertaken in R Studio version 4.1.3, Python and Microsoft Excel. Maps were produced using ArcGIS Pro version 3.0.3 and coordinate system GDA 1990 MGA Zone 54 or GDA 1994 VICGRID94.

Analysis methods can be viewed in Appendix E.

# 3 Monitoring Program Financial Year 2023 Results

## 3.1 Vegetation Surveys

The FY23 baseline vegetation surveys at Salvana (relevé and condition monitoring) recorded 251 native plant species, including six species of conservation significance such as the Slender Cup Flower (**Figure 10**), across 28 survey sites (**Table 4**). The FY23 repeat vegetation condition surveys at Minimay, Ozenkadnook and Booroopki (48 sites) recorded 128 native plants including, six plant species of conservation significance. This compares to FY17, baseline vegetation surveys recorded 226 native plants including 11 plant species of conservation significance across these three Reserve. However, it should be noted that compiling a detailed flora list was not a primary objective of the repeat survey approach. In addition to the 10 threatened species observed in FY23, the critically endangered Colourful Spider-orchid has been included as an incidental record due to its significance and known population at Salvana.

Threatened flora were predominantly recorded in remnant areas throughout the Reserve (**Figure 11**,**Figure 12**).

**Table 4:** Summary of threatened flora records from FY23 surveys at Minimay, Ozenkadnook, Booroopki and Salvana. Extinction Risk and Category of Threat listed according to the 2023 Flora and Fauna Guarantee Act 1988 Threatened List.

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Minimay | Ozenkadnook | Booroopki | Salvana |
|---|---|---|---|---|---|---|---|
| *Gnephosis drummondii* | Slender Cup Flower* | Victoria | Endangered | Y | | | Y |
| *Thomasia petaloxalyx* | Paper Flower | Victoria | Endangered | Y | | | |
| *Cardamine lineariloba* | Western Bitter-Cress | Victoria | Endangered | Y | | | |
| *Senecio hispidissimus* | Sand Fireweed | Victoria | Endangered | Y | Y | | |
| *Leucopogon virgatus var. brevifolius* | Common Beard-heath | Victoria | Endangered | | Y | | |
| *Xanthorrhoea caespitosa* | Tufted Grass-tree | Victoria | Vulnerable | | | Y | |
| *Allocasuarina luehmannii* | Buloke | Victoria | Critically Endangered | | | | Y |
| *Comesperma polygaloides* | Small Milkwort | Victoria | Critically Endangered | | | | Y |
| *Pterostylis ferruginea* | Bangham Rustyhood | Victoria | Endangered | | | | Y |
| *Zieria veronicea subsp. veronicea* | Pink Zieria | Victoria | Endangered | | | | Y |
| *Caladenia colorata*(1) | Colourful Spider-orchid | Victoria | Critically Endangered | | | | Y |

*See **Figure 10**

Note: (1) Incidental record

**Figure 10:** Slender Cup Flower (*Gnephosis drummondii*), Salvana. (Photo credit – Nature Glenelg Trust 2022)

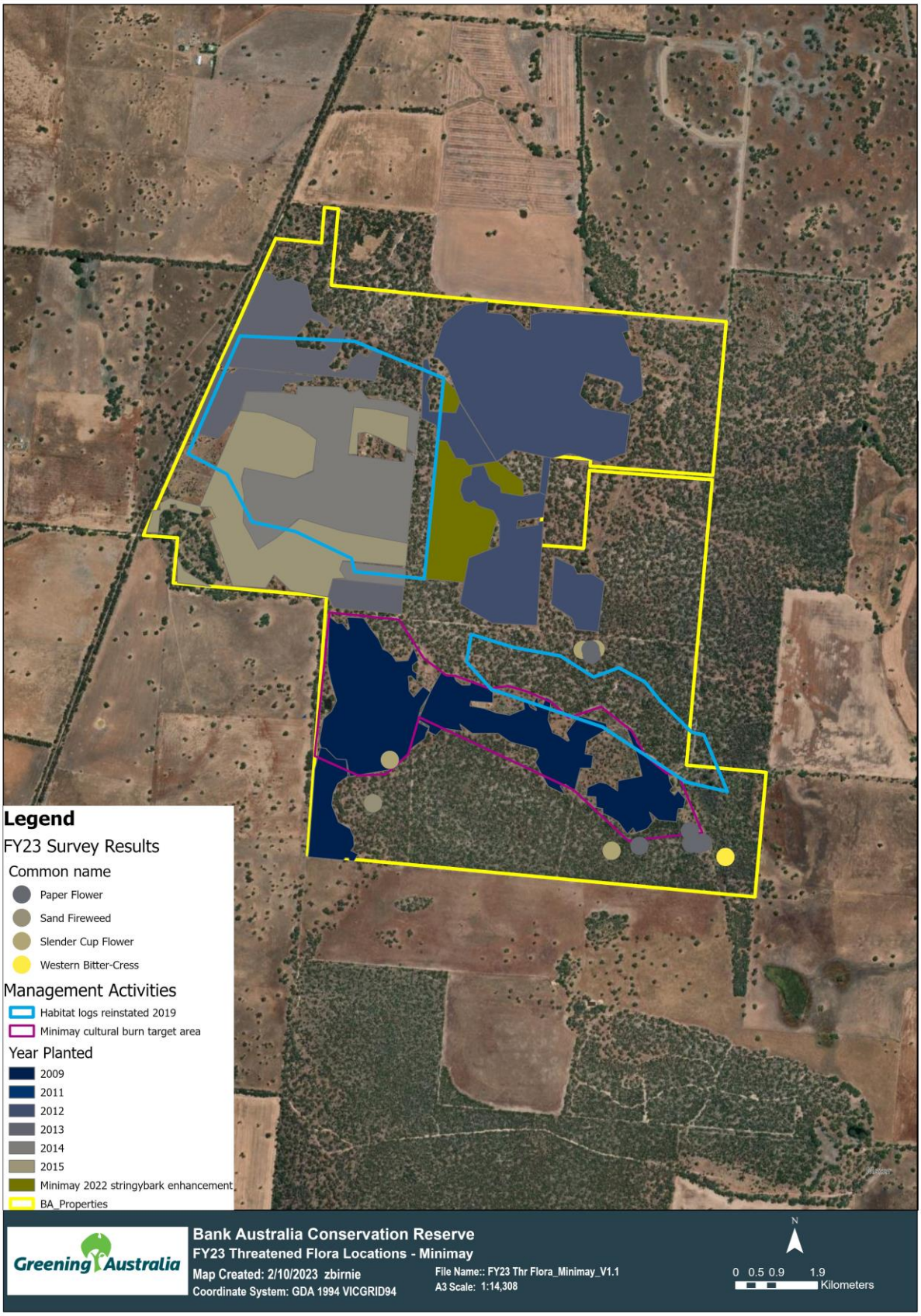



**Figure 11:** FY23 threatened flora records at Minimay highlighting occurrence predominantly in remnant areas

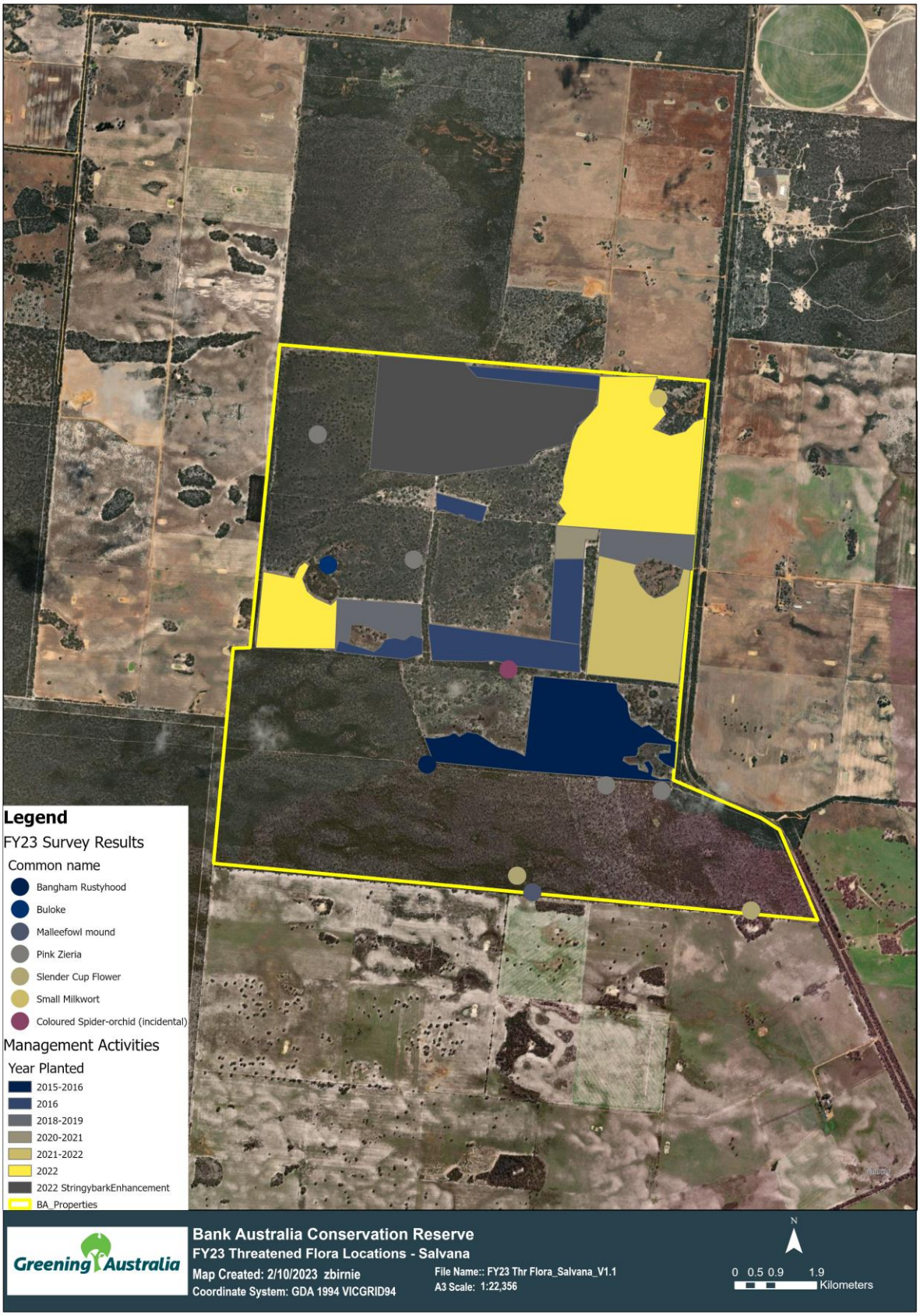
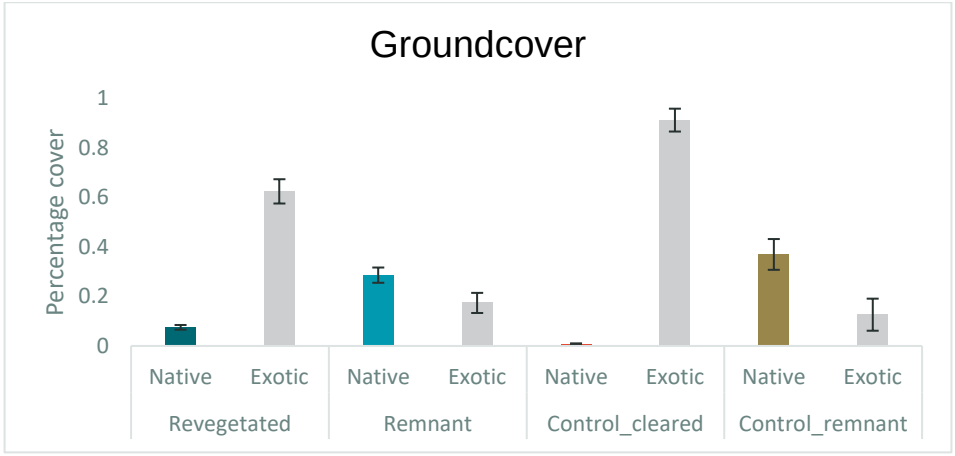



**Figure 12**: FY23 threatened flora records at Salvana highlighting occurrence predominantly in remnant areas

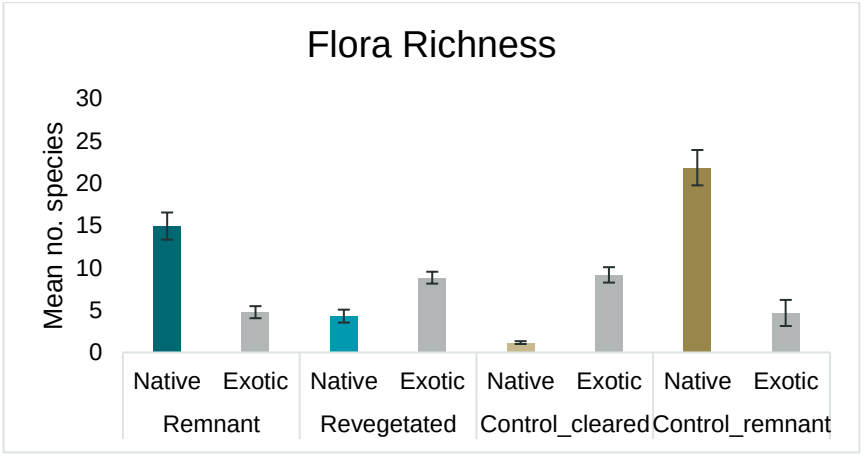
## 3.2 Vegetation Condition - all properties

### 3.2.1 Groundcover and Understorey

Abundance and number of native groundcover species was lower in revegetated areas compared to remnant sites (FY23 vegetation condition surveys including remnant controls), but greater compared to cleared controls (**Figure 13**). The percent cover and number of exotic groundcover species was much higher in revegetated areas (~65% and 12 species respectively) compared to remnant sites (~20% and four species respectively) (**Figure 13**). The occurrence of native understorey life forms was generally equal or higher in remnant sites compared to revegetated sites, with the exception of large shrubs (LS) which occurred ~20% of time in revegetated sites compared to ~3% in remnant sites (**Figure 14**). Medium shrubs (MS), small shrubs (SS), prostrate shrubs (PS) and tufted graminoids (TG) had the lowest occurrence in revegetated sites whilst medium-tufted graminoid had the highest (**Figure 14**). Variability in the occurrence of understorey life forms was higher in revegetated areas compared to remnant sites (**Figure 14**; larger error bars). This may be partly because of the differences in revegetation inputs at revegetated sites. Earlier revegetation plantings were focused on re-establishment of a low diversity of overstorey Eucalypts, with understorey plants only beginning to be included in plantings five years after the Reserve was managed. The number and abundance of understorey species increased each planting season as biodiversity objectives became more important. This results in bigger differences in the occurrence of understorey plants among revegetated sites compared to remnant sites, with some having no understorey plants at all and others well-represented.




(a)




(b)

**Figure 13:** Outputs of vegetation pointing transects (survey unit C) showing (a) native and exotic groundcover percentage cover and (b) average number of native and exotic species.

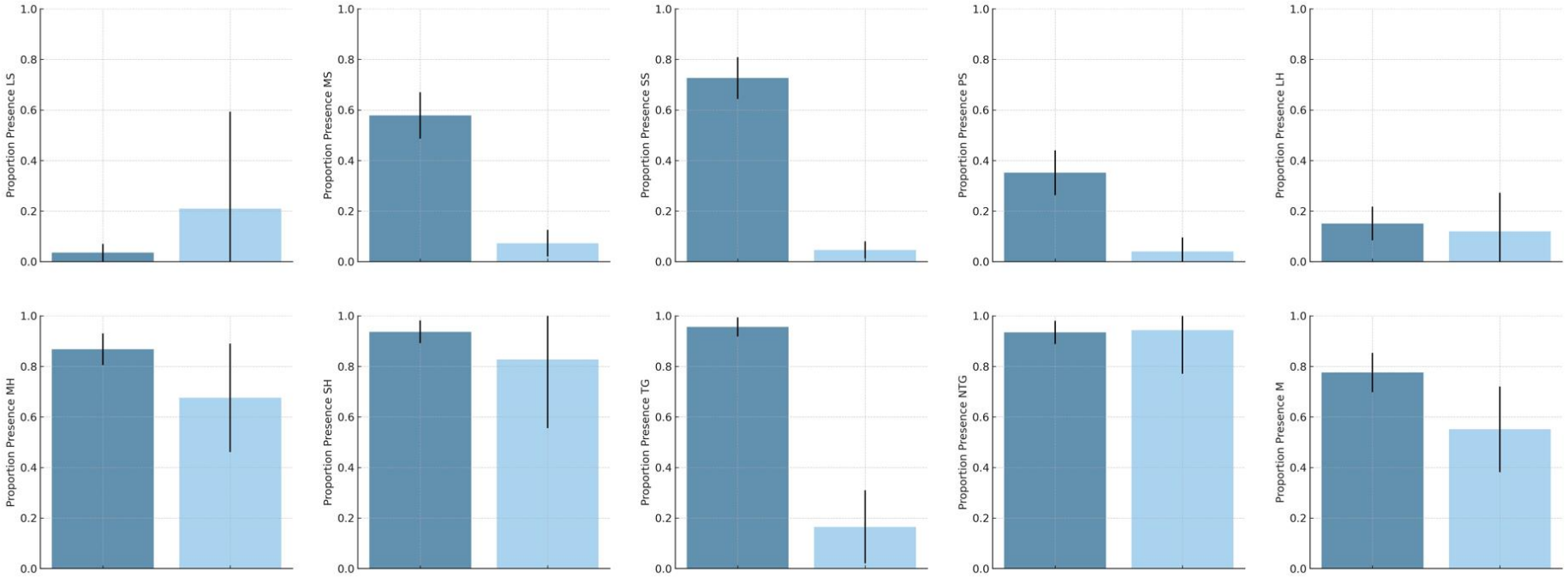



**Figure 14:** Frequency of occurrence (as a proportion) of native understorey life forms derived from presence absence transects (survey unit F) in remnant (dark blue) and revegetated areas (light blue). LS=large shrub, MS=medium shrub, SS=small shrub, PS=prostrate shrub, LH=large herb, MH=medium herb, SH=small herb, TG=tufted graminoid, NTG=non-tufted graminoid, M=miscellaneous (bracken, climbers). Life form definitions provided in Appendix B, Table B2.

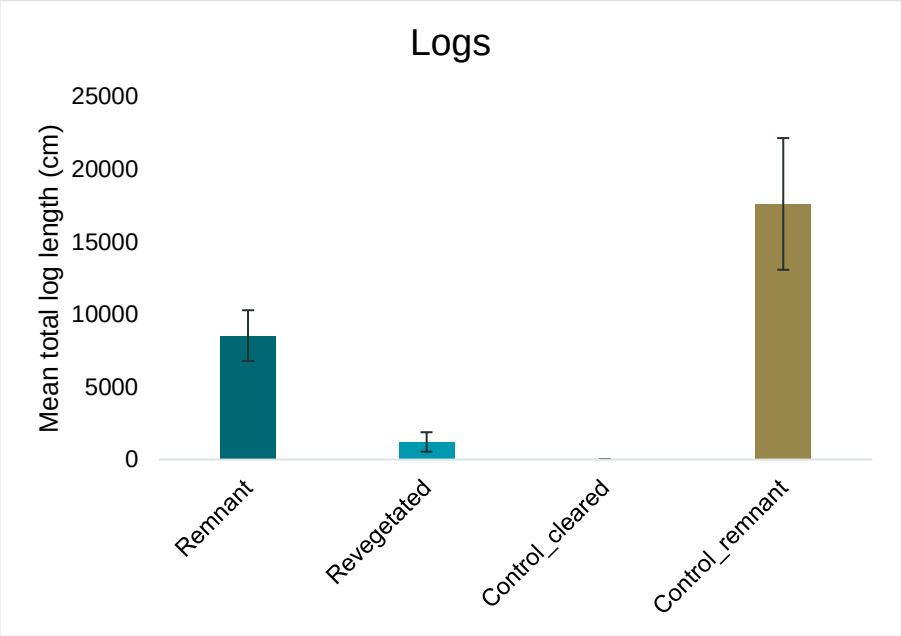
### 3.2.2 Tree structure: Logs, Recruitment, Large trees, and Canopy Cover

The availability and size of logs in revegetated areas was lower compared to remnant areas across the Reserve and remnant control sites outside of the reserve with an average total log length of 1,213 cm, 8,539 cm and 17,609 cm respectively (**Figure 15**a). On average, no logs were present in cleared control sites. Meanwhile, the number of recruiting trees in revegetated areas was closer to remnant sites, but lower than observed in remnant control sites (**Figure 15**b). Zero recruits were detected in cleared control sites surrounding the Reserve.

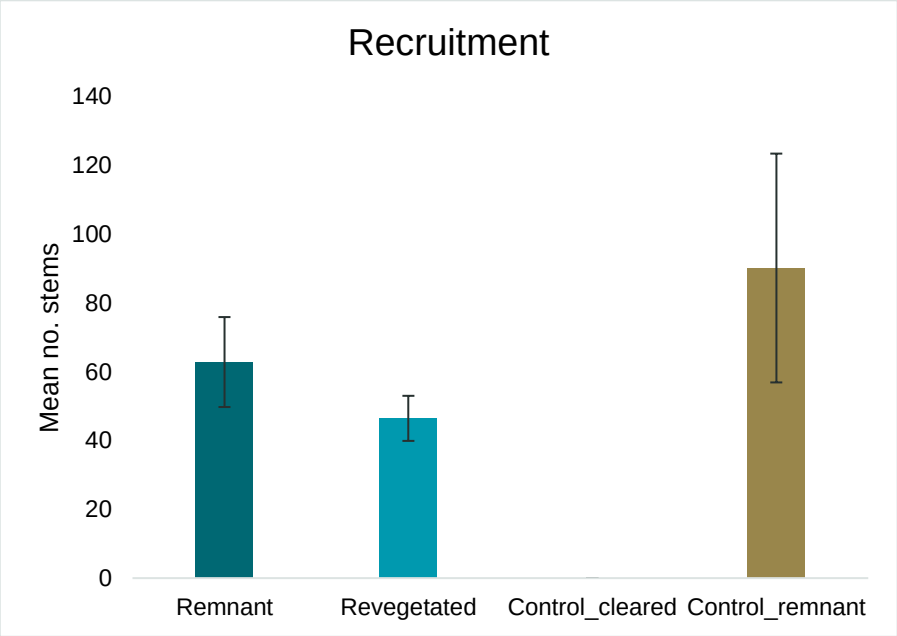
Furthermore, revegetated sites had fewer large trees on average (0.5) compared to remnant sites (3) and remnant control sites (10) (**Figure 15**c). Cleared control sites often had zero or one large tree. In sites where large trees were present (predominantly remnant areas), the proportion of tree hollows was high.

For example, at Minimay all remnant sites where large trees were present, the proportion of tree hollows was between 87-100% across all EVCs except Plains Woodland where despite a lower number of large trees, revegetated sites had a higher proportion of hollows (100%) compared to the remnant (67%) (Appendix H). Similarly at Ozenkadnook, in the Plains Woodland EVC, revegetated sites had fewer large trees but a higher proportion of hollows (100%) compared to remnant sites (75%).

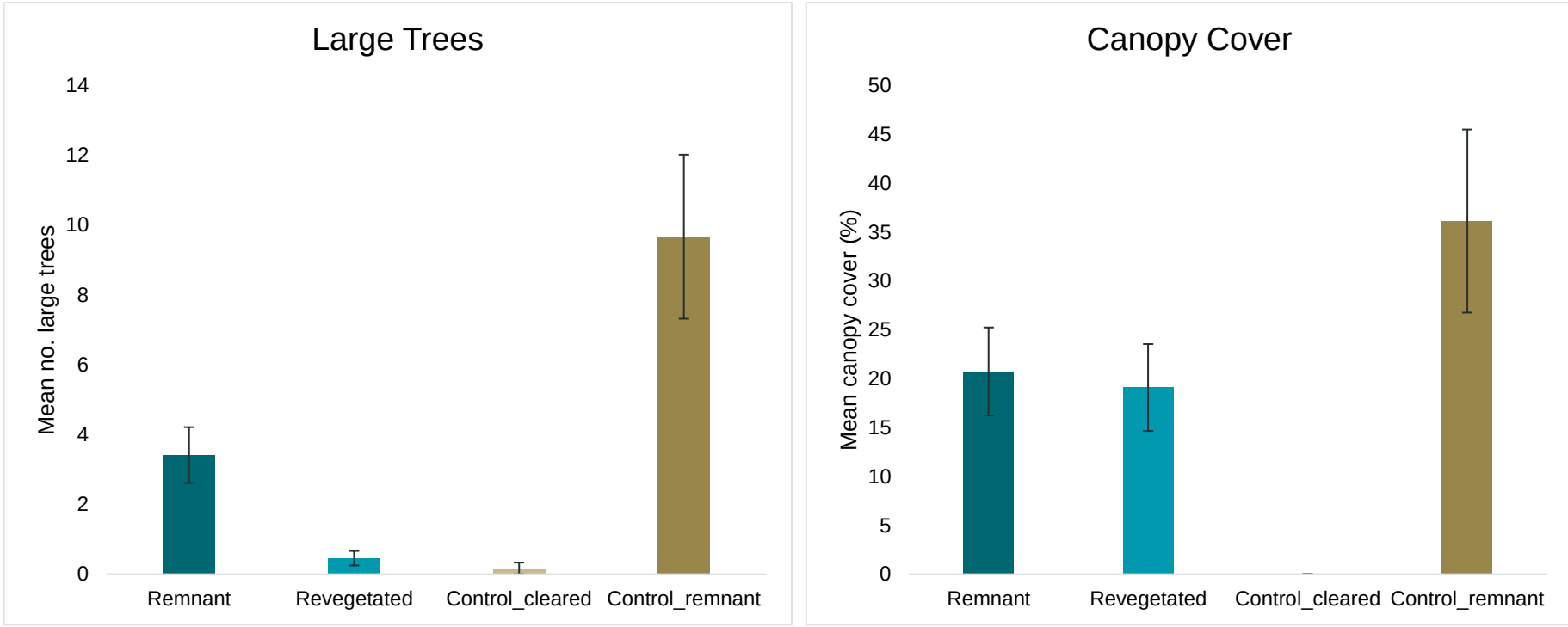
Canopy cover is on average similar at revegetated sites (19%) as remnant sites (21%) but both are lower than in remnant control sites surrounding the Reserve (36%) (**Figure 15**d). Canopy cover at cleared control sites was consistently very low or zero (visual assessment).




(a)




(b)




(c) (d)

**Figure 15**: Summary of vegetation condition attributes.

### 3.2.3 Vegetation Relevé Surveys (Salvana only)

The vegetation relevé assessments at sites 117-126 at Salvana indicate that vegetation condition is variable across the site. Sites 117-120 were in excellent condition with a lack of browsing pressure and weed cover low or absent (Appendix I, Table I1). Conversely, sites 121, 122 and 126 were in good condition and sites 123-125 in poor condition. At these sites there was evidence of disturbance (commonly partial clearing), high weed cover with sites 123 and 125 containing noxious weed species, and low canopy cover (0-10%). The relevé survey data has been used to refine EVC mapping at Salvana and reveals high variation in vegetation type in the southern block of the land parcel, which is not easily categorized using EVC benchmarks (Appendix I, Figure I1). These areas have been mapped as EVC complex (i.e. characteristic of multiple EVCs) or EVC mosaic (i.e. distinct EVCs that could be mapped at a finer scale with future survey effort).

### 3.2.4 Wetland Condition

Wetlands re-surveyed in FY23 were in a similar condition to the FY17 reference, or slightly improved. Minimay wetland 36 improved in condition across all category scores with notable improvements to hydrology and biota (**Table 5**). Conversely, Minimay wetland 37 had decreased condition scores for physical form and biota (**Table 5**). The newly surveyed wetlands at Salvana were in close to excellent condition with the exception of the biota scores.

Frog detection at wetlands was consistently low in the FY23 surveys, with zero species detected at wetlands 38, 39, 40 and 119 (**Table 6**). However, bird detections at the wetlands were more favourable with Ozenkadnook wetlands (40 and 41) having 24 and 30 species observed respectively, the highest of all wetlands surveyed.

**Table 5:** Summary Index of Wetland Condition Score where 20 represents the maximum score for a given category (i.e. excellent condition).

| Property Name | WptID | EVC | Catchment | | Physical | | Hydrology | | Soils | | Biota | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 |
| Minimay | 36 | Plains sedgy woodland | 12 | 17.5 | 19 | 19 | 10 | 20 | 20 | 20 | 11.4 | 19 |
| Minimay | 37 | Plains sedgy woodland | 10 | 17.5 | 16.75 | 10.75 | 5 | 5 | 19 | 20 | 9 | n/a Insufficient data |
| Minimay | 38 | Plains sedgy woodland | 16 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Minimay | 39 | Plains sedgy woodland | 18 | 18 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Ozenkadnook | 40 | Plains sedgy woodland | 10 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19.5 | 19.5 |
| Ozenkadnook | 41 | Plains sedgy woodland | 10 | 20 | 16.5 | 20 | 15 | 20 | 20 | 19.9 | 12.6 | 19.5 |
| Salvana | 126 | Plains sedgy woodland | n/a | 18 | n/a | 18.5 | n/a | 10 | n/a | 19.6 | n/a | 13.5 |
| Salvana | 119 | Seasonally inundated shrubby woodland | n/a | 20 | n/a | 20 | n/a | 20 | n/a | 20 | n/a | 14.5 |

**Table 6:** Summary of amphibian and bird survey data at pre-identified wetlands at the Reserve

| Reserve | Survey point | No. frog species | No. bird species |
|---|---|---|---|
| Minimay | 36 | 2 | 17 |
| Minimay | 37 | 1 | 12 |
| Minimay | 38 | 0 | 10 |
| Minimay | 39 | 0 | 16 |
| Ozenkadnook | 40 | 0 | 24 |
| Ozenkadnook | 41 | 2 | 30 |
| Salvana | 119 | 0 | Not surveyed |
| Salvana | 126 | 2 | Not surveyed |

## 3.3 Fauna Diversity

In FY23, 206 native animal species were detected at Minimay, Ozenkadnook and Booroopki, and 163 native animal species at Salvana. Across all four land parcels, a total of 283 native animal species were recorded including nine threatened species (

**Table 7**). This included two opportunistic records for the Lace Monitor and Australasian Bittern. The Swift Parrot sighting has been queried due to limitations in the accuracy of the sighting (e.g. no photo, bird spotted flying away) and will therefore be considered carefully in the discussion. Additionally, old Malleefowl mounds were observed at Salvana, although no active mounds or Malleefowl themselves were detected during our surveys.

Threatened birds recorded in FY23 were observed across both remnant and revegetated areas (**Figure 16**, **Figure 17**, **Figure 18**). For example, the Diamond Firetail and Hooded Robin were observed in revegetated areas. An updated species list can be viewed in Appendix G. In comparison to the FY17 surveys, more animal species were detected in FY23. However, for some taxa, predominantly invertebrates, detections decreased at Minimay and Ozenkadnook (**Figure 19a and b**). Invertebrate and bird species detections at Booroopki were higher in FY23 compared to baseline (**Figure 19c**). Reptile detections were consistently low across all Reserve in FY23 but similar to the detections in baseline surveys. Detections of reptiles was highest at Salvana in FY23 (**Figure 19d**).

**Table 7:** Summary of threatened fauna records from FY23 surveys including *opportunistic and **queried records. Extinction Risk and Category of Threat listed according to the 2023 Flora and Fauna Guarantee Act 1988 Threatened List.

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxonomic Group | Minimay | Ozenkadnook | Booroopki | Salvana |
|---|---|---|---|---|---|---|---|---|
| *Melanodryas cucullata* | Hooded Robin | Victoria | Vulnerable | Bird | Y | Y | | Y |
| *Stagonopleura guttata* | Diamond Firetail | Victoria | Vulnerable | Bird | Y | Y | | |
| *Calyptorhynchus banksii* | Red-tailed Black-Cockatoo | Victoria | Endangered | Bird | | Y | | Y |
| *Lathamus discolor*** | Swift Parrot | Australia | Critically Endangered | Bird | | Y | | |
| *Hieraaetus morphnoides* | Little Eagle | Victoria | Vulnerable | Bird | | | | Y |
| *Hypochrysops ignitus ignitus* | Fiery Jewel (butterfly) | Victoria | Endangered | Invertebrate | Y | | | Y |
| *Pogona barbata* | Bearded Dragon | Victoria | Vulnerable | Reptile | | | | Y |
| *Varanus varius** | Lace Monitor | Victoria | Vulnerable | Reptile | | | | |
| *Botaurus poiciloptilus** | Australasian Bittern | Victoria | Critically Endangered | Bird | | Y(1) | | |

Note: (1) The Australasian Bittern was observed at Lake Morea, which is just outside of the Ozenkadnook Reserve boundary.

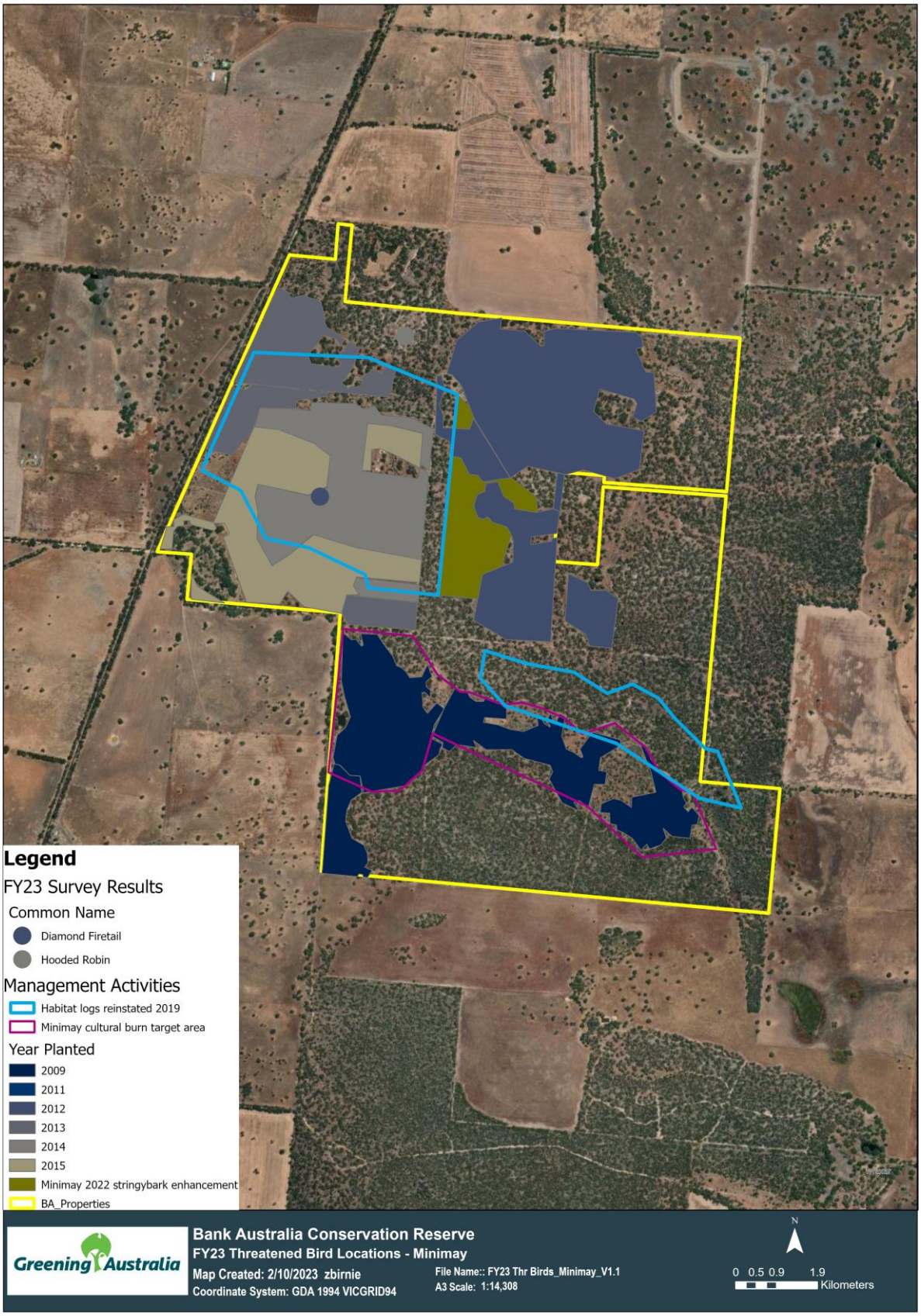



**Figure 16:** FY23 records of threatened birds at Minimay, highlighting occurrence in remnant areas versus revegetated areas

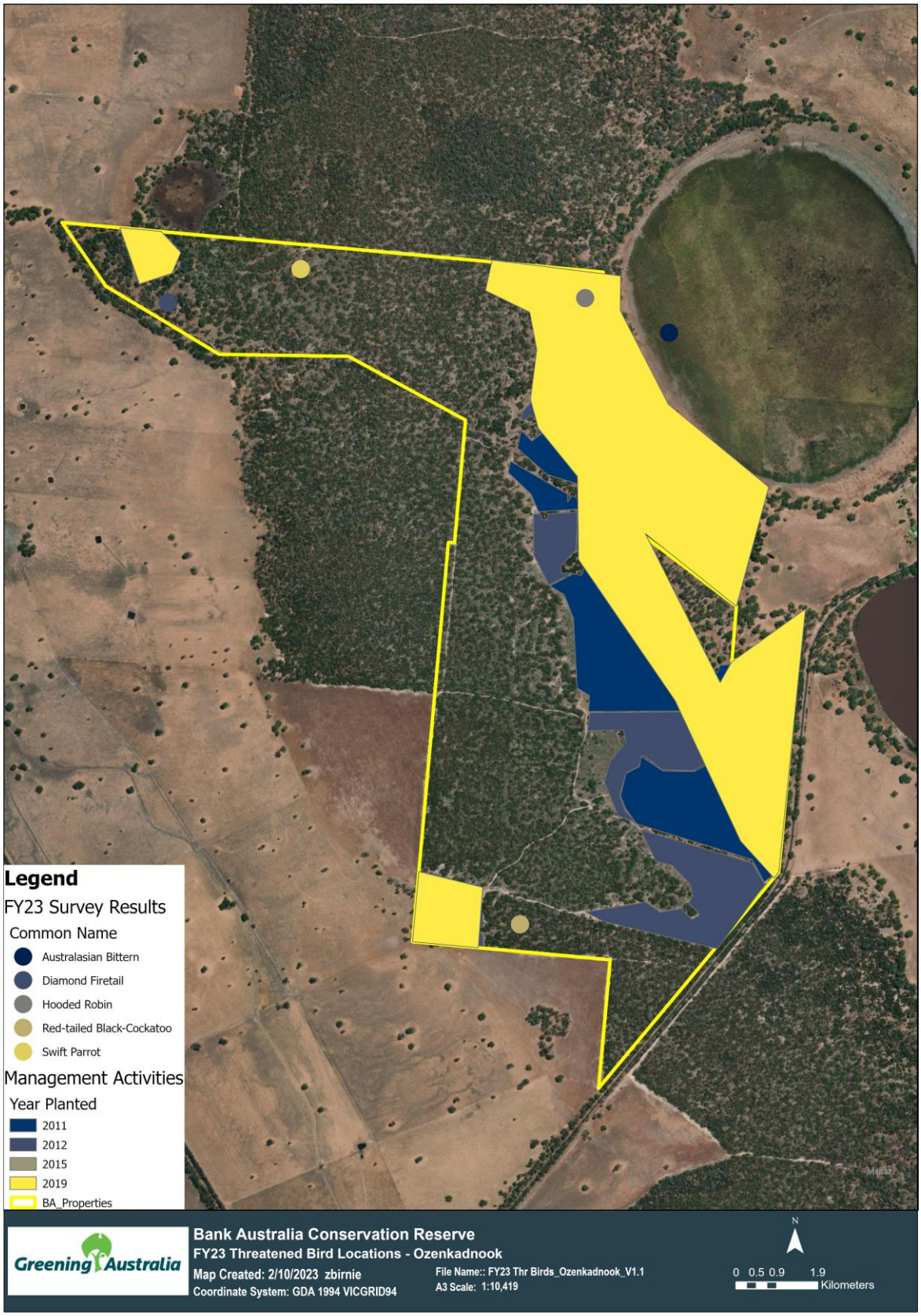



**Figure 17:** FY23 records of threatened birds at Ozenkadnook, highlighting occurrence in remnant areas versus revegetated areas

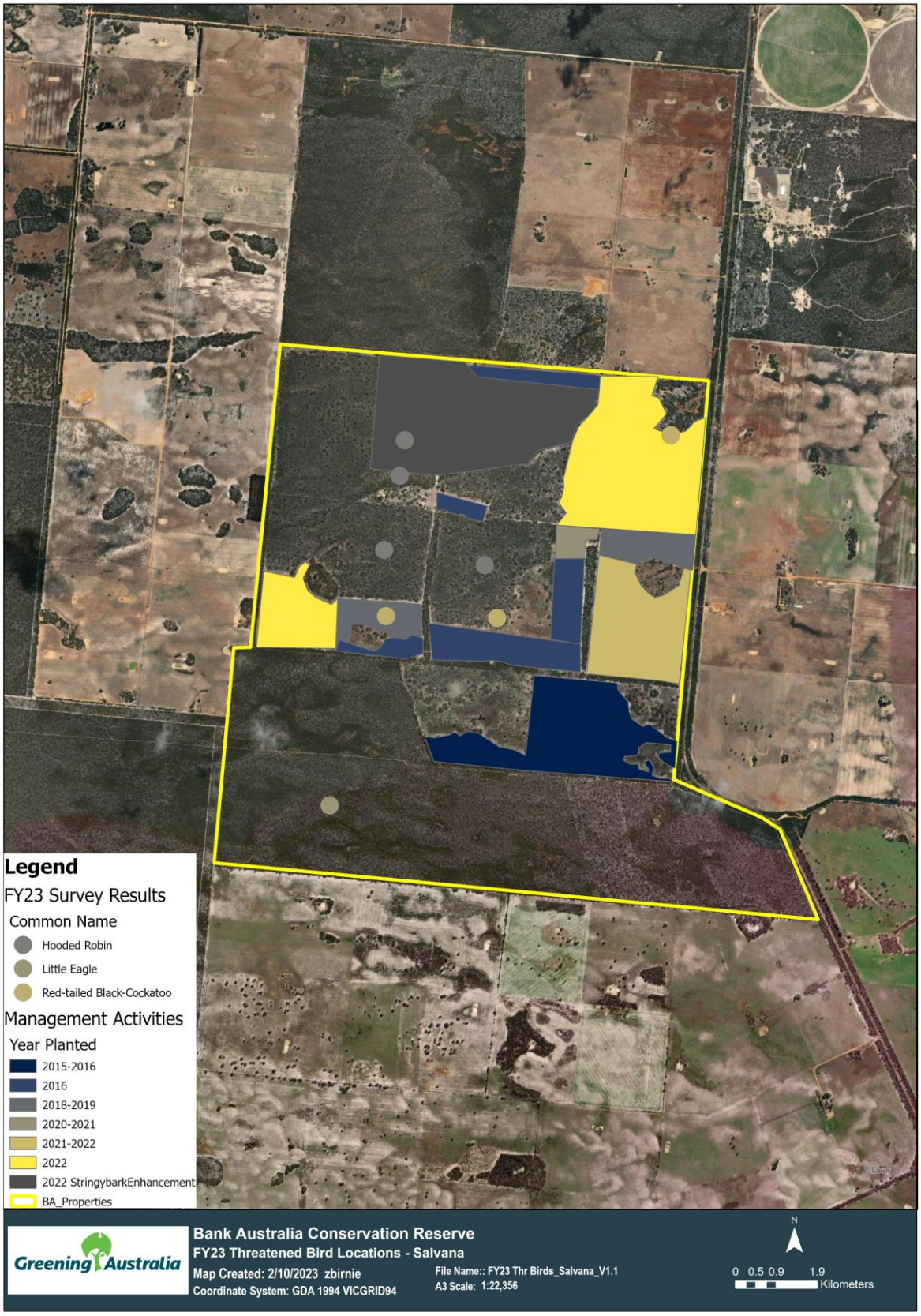
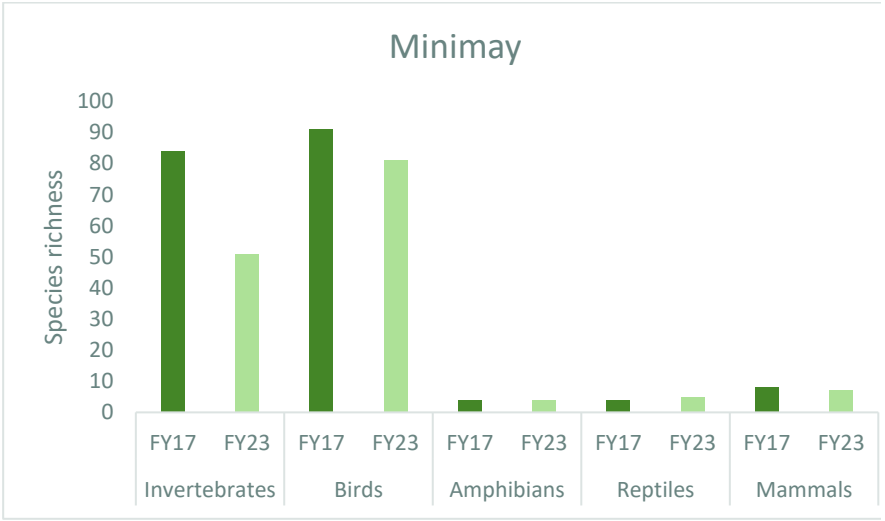
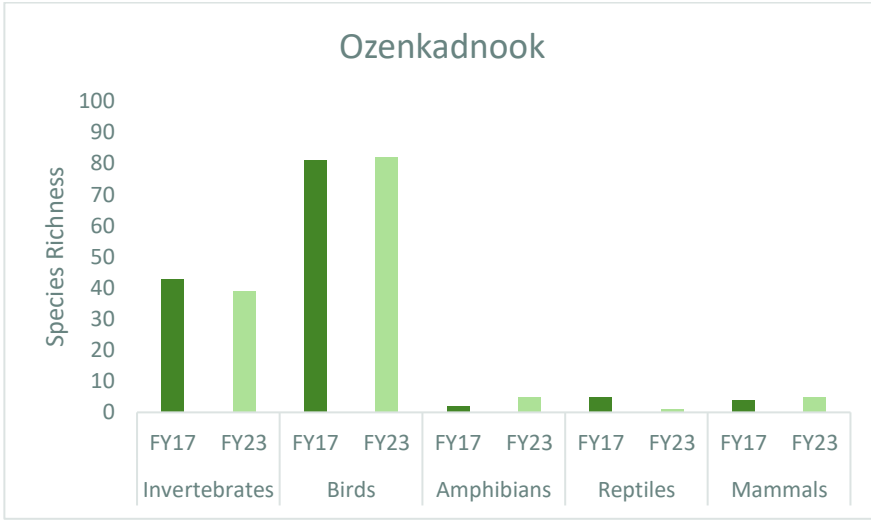


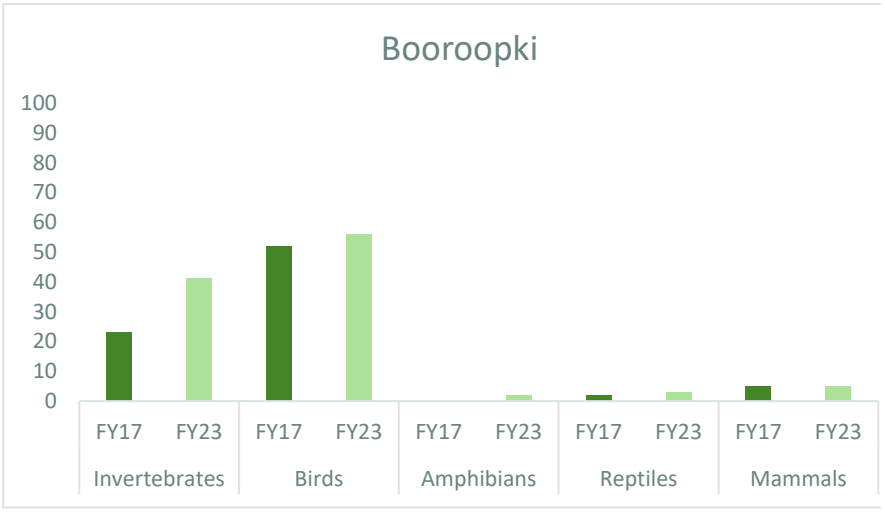

**Figure 18:** FY23 records of threatened birds at Salvana, highlighting occurrence in remnant areas versus revegetated areas



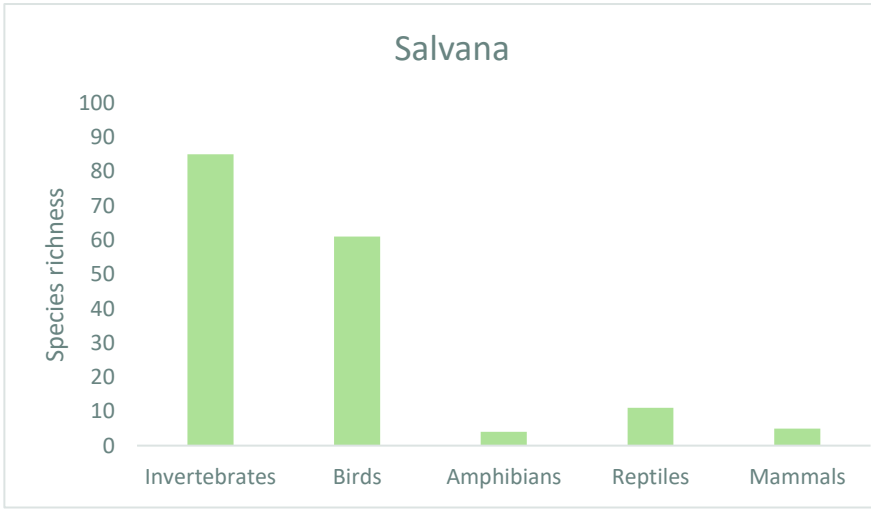

(a)




(b)




(c)




(d)

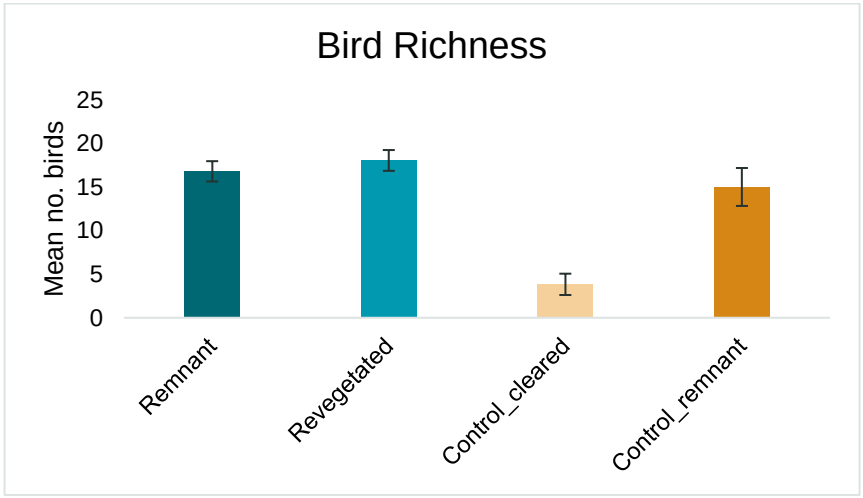
**Figure 19**: Summary change in fauna diversity from FY17 baseline surveys to FY23 repeat surveys for Minimay, Ozenkadnook and Booroopki. Baseline surveys FY23 at Salvana.

### 3.3.1 Birds

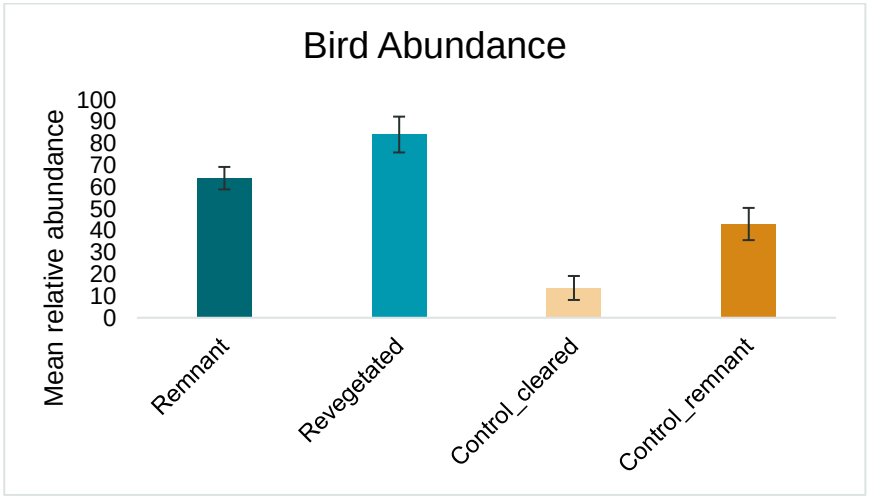
In the FY23 bird surveys, a total of 113 bird species were detected across the Reserve, from 1,814 bird occurrences (including opportunistic records). This included 22 new species and six species of conservation significance (

**Table 7**). An additional 429 bird observations were recorded as opportunistic records during the walked invertebrate searches, including threatened species Little Eagle, Red-tailed Black Cockatoo, Hooded Robin and Diamond Firetail which were also identified in the targeted bird surveys.

The results of the FY23 2-ha, 20-minute surveys indicate that bird species richness and relative abundance was greatest in revegetated areas in comparison to paired remnant and remnant control sites (**Figure 20**).




(a)




(b)

**Figure 20:** Summary bird diversity (a) and relative abundance (b) across paired remnant and revegetation sites and control sites surrounding the Reserve.

### 3.3.2 Amphibians

A total six frog species were detected from 650 frog observations across the Reserve in the FY23 surveys, an increase on four species observed during the baseline surveys. Of the 650 observations, 638 were observed during the pitfall trapping surveys and 12 during call-playback surveys. The Growling Grass Frog, which was detected in FY17, was not detected in this round of monitoring. The three new species detected were Painted Burrowing Frog, Sudells Frog, and Striped Marsh Frog. Two opportunistic amphibian observations were recorded during the walked invertebrate searches. An updated species list can be viewed in Appendix G.

On average, frog species richness (from pitfall trap surveys) was higher in revegetated areas compared to paired remnant sites (**Figure 26)** with the highest number of frog species detected at Ozenkadnook (five species) (**Figure 19**). Furthermore, frog detections were also greater from pitfall surveys where species observation counts ranged between one to over 500 (**Table 8**). Due to technical issues with the call recorders installed at the nine wetlands where IWC were undertaken, species could not be detected via this survey method. Call-playback surveys were conducted at these sites by experienced ecologists, however, detection of species was very low with zero species detected at five out of the nine sites and a high of two species detected at three sites (sites 36, 41 and 126) (**Table 6**).

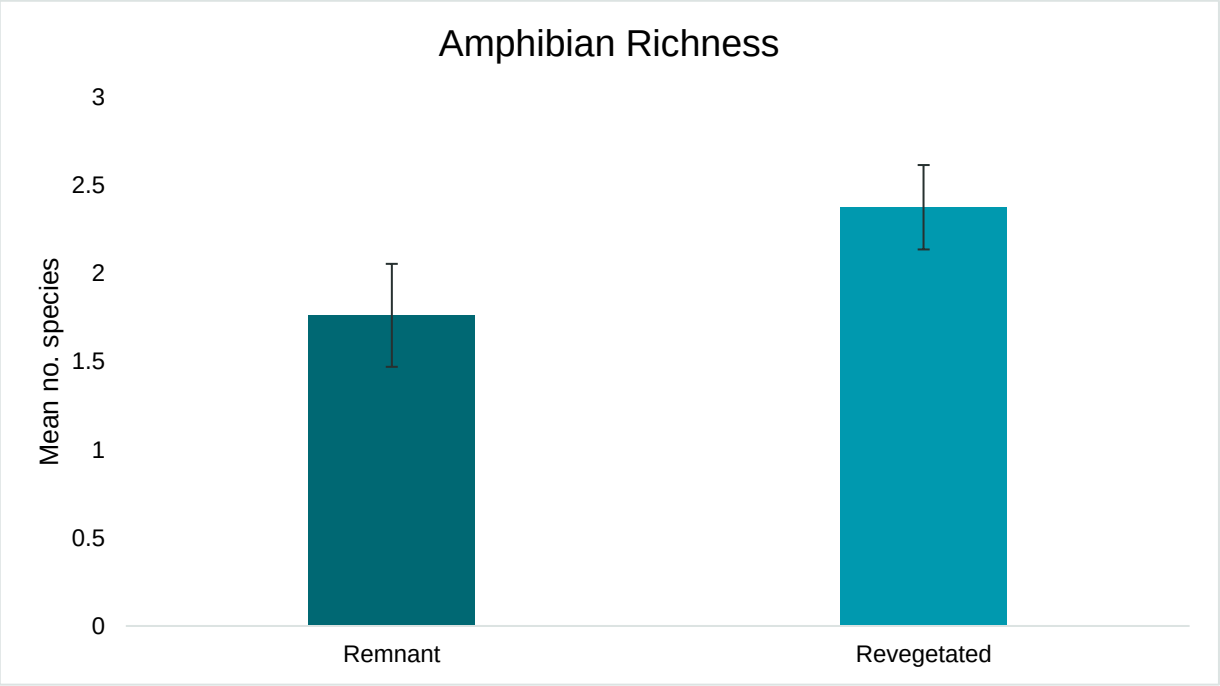



**Figure 21:** Summary amphibian richness from pitfall trapping surveys across paired remnant and revegetation sites

**Table 8:** Summary of amphibian detection at pitfall locations including the number of times a frog species was detected and the number of sites those detections occurred.

| Scientific name | Common name | Count observations | No. sites |
|---|---|---|---|
| *Limnodynastes dumerilii* | Eastern Banjo Frog | 534 | 34 |
| *Limnodynastes tasmaniensis* | Spotted Grass Frog | 48 | 15 |
| *Limnodynastes peronii* | Striped Marsh Frog | 7 | 4 |
| *Neobatrachus pictus* | Painted Burrowing Frog | 40 | 19 |
| *Crinia signifera* | Eastern Common Froglet | 1 | 1 |
| *Neobatrachus sudellae* | Sudells Frog | 8 | 6 |

### 3.3.3 Threatened invertebrates

In the FY23 walked invertebrate searches, 143 unique invertebrate species were detected from 710 observations during the study, an increase on the baseline surveys where 106 species were detected. Invertebrate searches were not confined to revegetated and remnant sites in the same way as the other taxa surveys, as the objective was to preference areas that are likely to provide habitat for threatened species such as the Fiery Jewel Butterfly. The Fiery Jewel Butterfly was detected for the first time at Salvana (**Figure 23**) and again at Minimay but not Ozenkadnook (

**Table 7, Appendix G**).

The greatest detections of invertebrates occurred at Salvana, double the number of species observed at Minimay and Ozenkadnook (**Figure 22**a), and the observation of insects (Insecta) was significantly higher than other invertebrate classes including Arachnida, Chilopoda, Diplopoda and Gastropoda (**Table 9**).

Moths and butterflies (*Lepidoptera*) were predominantly observed in remnant areas or edges or revegetated areas (**Figure 24**, **Figure 25**) where the proportion of groundcover and canopy cover were higher (**Figure 13a**, **Figure 15d**).

**Table 9:** Invertebrate observations from FY23 monitoring program by Class

| Class | No. observations |
|---|---|
| Arachnida | 6 |
| Chilopoda | 1 |
| Diplopoda | 1 |
| Gastropoda | 1 |
| Insecta | 701 |

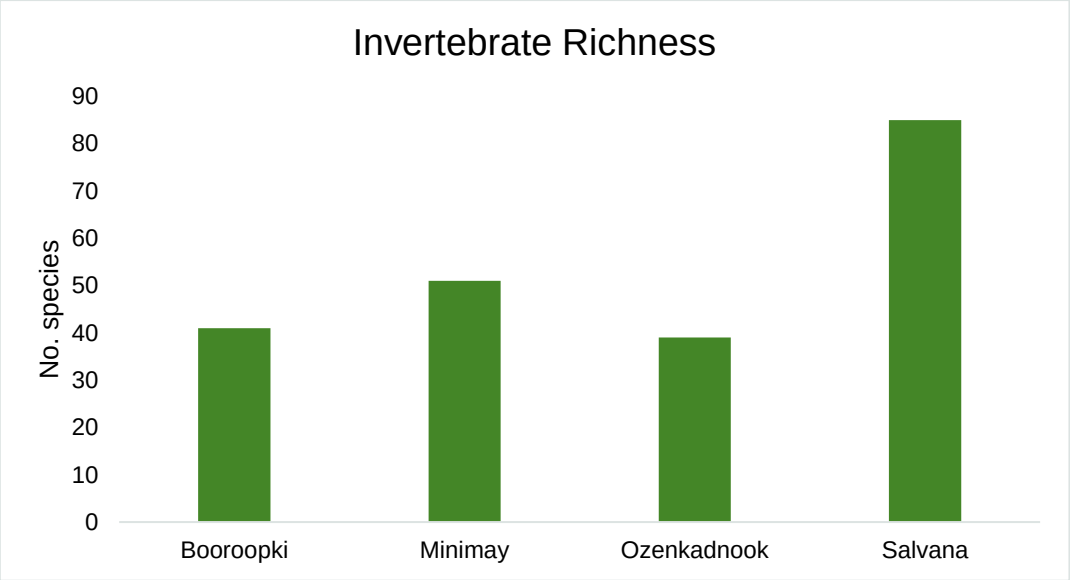



**Figure 22:** Summary invertebrate richness across the Reserve

**Figure 23:** Fiery Jewel Butterfly (*Hypochrysops ignites*), Salvana (Photo credit – Fabian Douglas 2022)

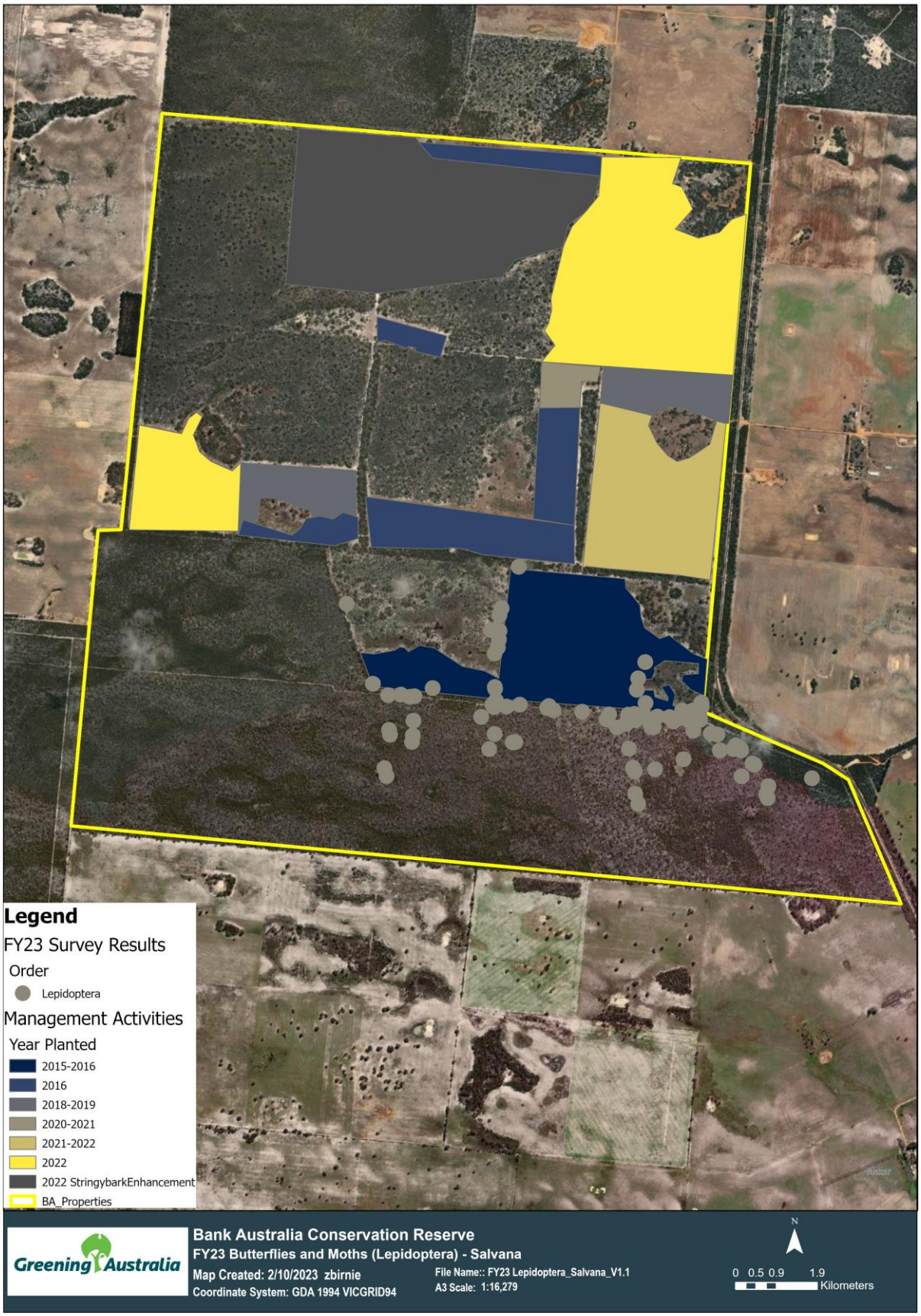



**Figure 24:** Occurrence of butterflies and moths (*Lepidoptera*) in FY23 invertebrate searches at Salvana.

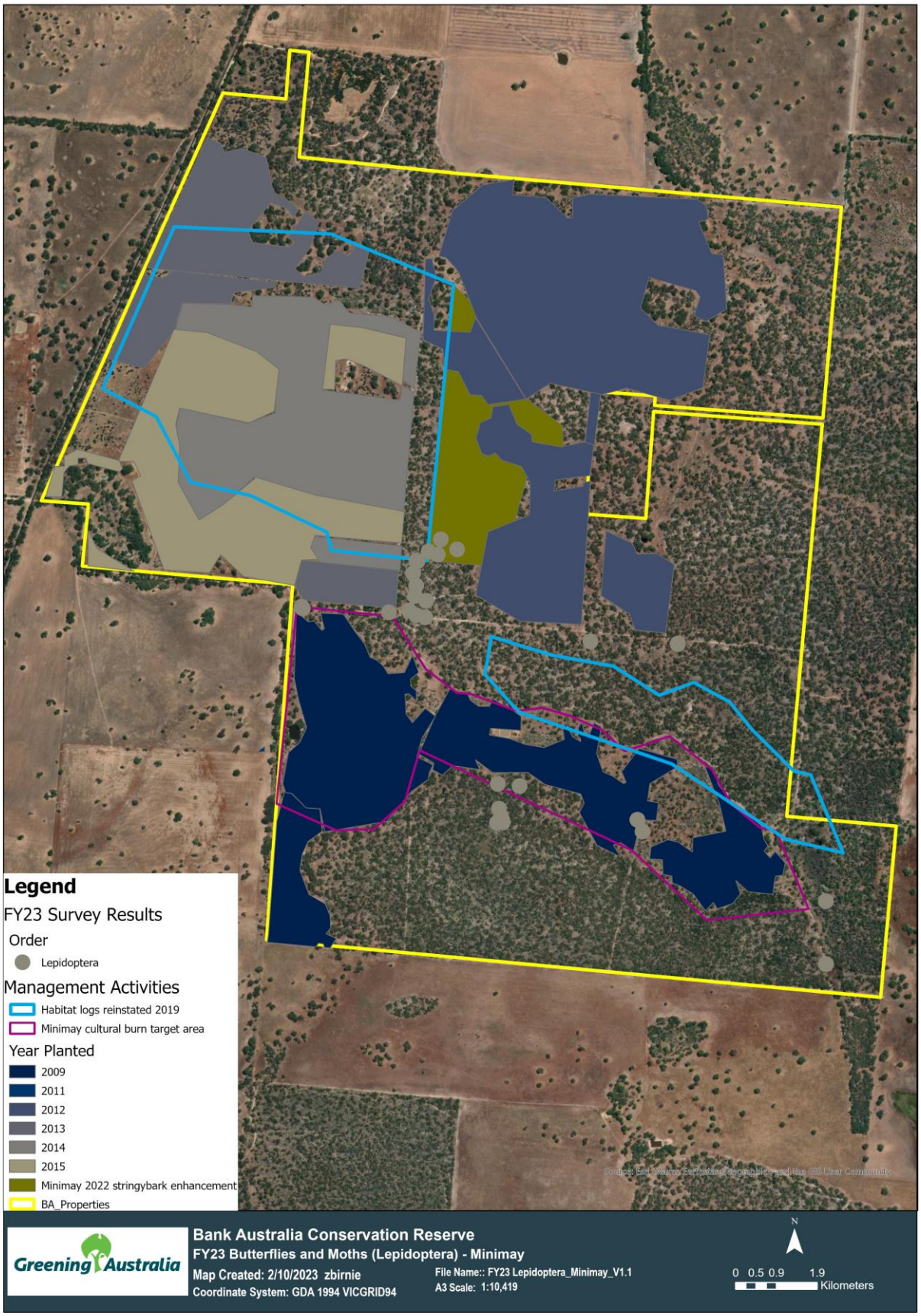


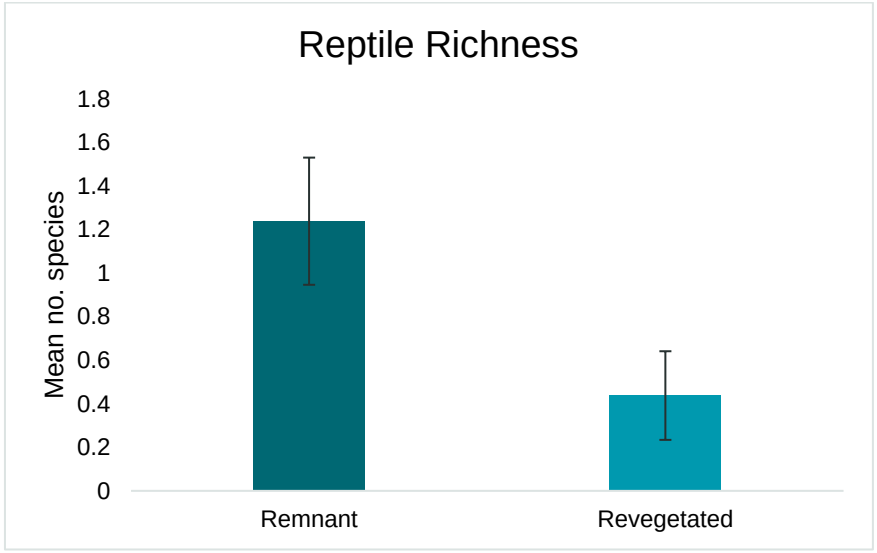

**Figure 25:** Occurrence of butterflies and moths (*Lepidoptera*) in FY23 invertebrate searches at Minimay.

### 3.3.4 Reptile and mammal pitfall trapping

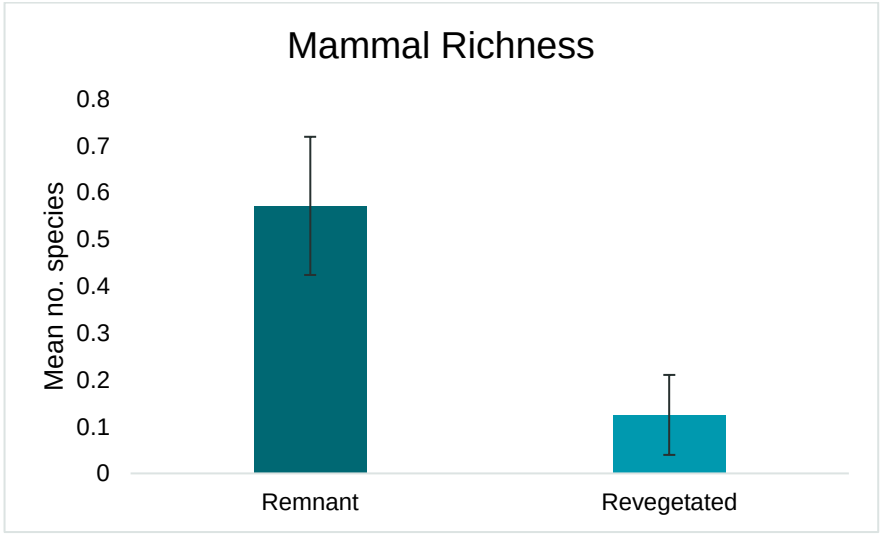
In the FY23 pitfall trapping surveys, a total of 17 native reptile species and two native mammal species were detected, from 68 and 64 native sightings respectively. This is an increase from the baseline surveys where nine native reptiles and eight native mammals were recorded. Seven of the new reptile species, were detected at Salvana, including the Painted Dragon (**Figure 26**), Jacky Lizard, Mallee Tree Dragon, and Common Scaly-foot.

The two native mammals detected are both new additions to the Reserve species list, the Western Pygmy Possum (*Cercartetus concinnus*) which was recorded at Minimay, Ozenkadnook and Salvana and the Silky Mouse (Pseudomys apodemoides) which was recorded at Salvana. Additionally, five reptile and 26 mammal observations were recorded as opportune records during the walked invertebrate searches. These were common species such as Echidna and Western Grey Kangaroo and a reptile not detected in the pitfall trapping, the Eastern Shingleback Skink. An updated species list can be viewed in Appendix G.

On average, reptile and mammal species richness was lower in revegetated sites compared to remnant, however, the overall detection of these taxa was very low, particularly for mammals (**Figure 26**).




(a)




(b)

**Figure 26:** Summary reptile, mammal and amphibian richness from pitfall trapping surveys across paired remnant and revegetation sites. Pictured; Painted Dragon (*Ctenophorus* pictus), Salvana. Photo credit: Nature Glenelg Trust, 2022

# 4 Discussion

Overall, a higher number of plant and animal species were recorded at the Reserve in the FY23 monitoring program in comparison to the baseline surveys. A total of 283 native animal species were detected across the Reserve (all four land parcels), an increase on the baseline surveys where 233 native animals were detected at Minimay, Ozenkadnook and Booroopki. This includes a number of new animal species which had not previously been recorded in the Reserve such as the conservation listed Little Eagle (Vulnerable) and Swift Parrot (Critically Endangered, *queried)* (**Table 7**) and non-listed species such as the Silky Mouse, Western Pygmy Possum, Painted Dragon, Common Scaly Foot, Tawny-crowned Honeyeater, Shy Heathwren, and Painted Burrowing Frog. The Reserve team are inclined to accept the Swift Parrot record on the back of a desktop assessment which reveals sightings in the surrounding area. Swift Parrots are known to travel long distances and regularly occur in Blue Gums, which occur adjacent to the sighting at Ozenkadnook. The surveys also recorded several new flora species including conservation listed species Small Milkwort, Bangham Rustyhood and Pink Zieria at Salvana (**Table 4**). Updated species lists can be viewed in Appendices E and F.

The sections below aim to describe:

(i) The outcomes of the FY23 monitoring surveys in relation to monitoring program objectives. This monitoring represents a snapshot in time and despite a high survey effort, the surveys have not detected every change at the Reserve or occurrence of threatened species. Accurate reporting relies on both monitoring data and the Reserve team's local knowledge and on-ground observations.
(ii) Progress towards the Reserve goals outlined in **Table 2** based on the FY23 monitoring data and history of management activities.

## 4.1 Vegetation Condition

Vegetation condition surveys show that native groundcover abundance and species richness was lower in revegetated areas compared to remnant areas and remnant control sites surrounding the Reserve. As expected, exotic species abundance and species richness is high in revegetated areas where native groundcover and canopy cover are low.

Broadly, vegetation condition is indicative of revegetation areas that are still quite young (between one – 13 years) and therefore as expected are lacking attributes such as logs, large trees and high canopy cover that are typically observed in mature revegetation (Appendix J). Low native diversity in revegetation sites may reflect

(i) the young age of revegetation and lack of establishment of understorey vegetation in the early years (e.g. 2020-2022 plantings); and
(ii) older revegetation at the Reserve which were planted with a informal carbon sequestration objective; i.e. very low diversity tree plantings (predominantly Eucalypt species with no understorey) (e.g. Minimay sites 4, 5 15 and Ozenkadnook sites 19, 24, 25, 27 and 19; Appendix J).

In sites where large trees were present (predominantly remnant areas), the proportion of tree hollows was typically high (refer to Appendix H). Tree hollows are an important habitat resources for birds such as the Endangered Red-tailed Black Cockatoo and small mammals like the Western Pygmy Possum. Revegetation areas had fewer large trees than remnant areas within the Reserve and significantly fewer than remnant control sites surrounding the Reserve, but importantly more large trees than cleared control sites (**Figure 15**). This is also reflective of the relatively young age of the revegetation within the Reserve.

Greening Australia and Trust for Nature undertake weed management to control exotic plant species in high value areas, predominantly revegetation areas and surrounding wetlands. Continuing weed control in

revegetation areas, in combination with other management activities including the cool cultural burning at Minimay, will help to reduce exotic weed cover over time which provides an opportunity for the native grasses to re-emerge from the seed bank and recruit. We also expect that as the revegetation ages and a canopy establishes, native species will increasingly outcompete exotic species.

The reserve team has also undertaken strategic restoration interventions such as log reinstatement in revegetation areas at Minimay (2019) where they were lacking.

## 4.2 Wetland condition

The wetlands re-surveyed in FY23 have either remained in a similar condition to the FY17 reference, or slightly improved. For example, condition improved across all categories at Minimay wetland 36 with notable improvements to catchment, hydrology and biota scores (**Table 5**). This improvement reflects a positive impact of the management activity completed in 2021 where earthworks were undertaken to infill a dam and reinstate the seasonally inundated wetland at this site. Conversely, the FY23 assessment results for Minimay wetland 37 (a man-made dam) reveal that this wetland has decreased in condition due to reduction in physical form and biota (**Table 5**). This wetland (dam) should be reviewed for future management interventions such as revegetation and be informed by the learnings of the Dams to Wetlands 2021 activity.

The newly surveyed wetlands at Salvana were in excellent condition in all categories, except biota. Revegetating these wetlands could be considered as a future management action to improve condition at these sites.

## 4.3 Bird diversity

A total of 113 bird species was detected at the Reserve, including 22 new species not previously recorded at the Reserve and six species of conservation significance. Despite new threatened species being detected in FY23 (e.g. Swift Parrot and Little Eagle), the total number of threatened birds has not changed. This can be partially explained by two species, Emu and Brown Treecreeper that were observed in FY17 and FY23 have had their conservation status downgraded in the 2023 Flora and Fauna Guarantee and are no longer considered threatened. Birds can be excellent indicators of ecosystem condition particularly at the functional group level, where the availability of habitat resources (e.g. groundcover food resources and protection for ground foragers, flowering plants and nectar for nectar sippers, availability of hollows for hollow-dependent parrots) (Temperate Woodland Bird Conservation Action Plan, 2020) can be identified.

The assemblage of bird species detected across FY17 and FY23 surveys were reviewed against the FFG listed Victorian Mallee Bird Community and Temperate Woodland Bird Community, but our array of species did not match with only 3 of 20 and 12 of 24 bird species present at the Reserve, respectively.

The FY23 bird survey results show that bird species richness and relative abundance was greater in revegetated areas compared to paired remnant sites and remnant control sites. This result supports anecdotal observations from field staff that birds were abundant in revegetated areas, and that a diversity of functional groups were utilising these areas, not only common, generalist or edge species. Previous studies have found that typically revegetation does not support the bird diversity or richness experienced in remnant vegetation (Munro, Lindenmayer & Fischer, 2007; Bennett et al, 2022). Bird composition is also likely to change as revegetation ages and will be influenced by structural complexity, with ecosystem restoration plantings that have high structural complexity likely to provide habitat for more bird species than simple tree plantings with low complexity (Caterall et al, 2004).

Survey results suggest that revegetation areas at the Reserve are of high quality (biodiverse habitat restoration) and are providing habitat resources for a diversity of bird species (e.g. food, nesting resources).

For example, the Diamond Firetail is a good indicator of grassy woodland habitat condition as they forage on the ground eating ripe seeds and insects. A Diamond Firetail was observed at Minimay in an open grassy woodland revegetation area (planted in 2014). However, older revegetation areas at the Reserve that are known to have low structural complexity (e.g. low diversity Eucalypt plantings at Minimay and Ozenkadnook, site, Appendix J) are unlikely to support bird species richness and abundance comparable to remnant, reference ecosystems. Improving plant diversity via infill planting, particularly understorey in these areas may help increase bird diversity in these areas.

Emus that have previously been found across the Reserve were recorded again during the FY23 monitoring program at Ozenkadnook and Booroopki. The Reserve team have observed Emu at other times on the other properties Minimay and Salvana (pers obs J. Gardner; Z. Birnie, 2021) which meets the Reserve objective 1.2.5b 'Emus recorded on all Reserve'. Emus prefer dry, grassy woodland vegetation where they can feed on fruits, seeds and insects. Emus play an important role in Australian ecosystems, by disturbing and turning over the soil. At Ozenkadnook the emus were recorded in a revegetation area (2011, low diversity Eucalypt planting) and at Booroopki in a remnant area. A clutch of emu eggs has previously been found in a revegetation area at Booroopki (2016 planting) (pers comm A. Blake, 2021). This highlights the importance of understorey and woody structure in revegetated areas in providing protection for nesting, and it also suggests more broadly suggests the availability of insects for foraging. This is broadly supported by our monitoring results, whereby insects where the most abundant invertebrate class observed at the Reserve (701 sightings compared to, 1-6 sightings of other classes, **Table 9**).

## 4.4 Amphibian diversity

Wetland fauna diversity results were limited due to the technical failures of the call recorders. Call-playback surveys yielded a low frog diversity at wetland sites, with five out of nine sites recording zero frogs.. The IWC assessment biota scores were excellent (between 19-20 out of 20) for wetland sites 36, 38, 39, 40 and 41 but moderate for sites 37, 119 and 126 (**Table 5**). The low detection of frogs at wetlands is therefore likely due to poor survey effort but may have been influenced by rainfall patterns and emergence in other areas of the Reserve. In 2022 we experienced a La Nina weather pattern and Horsham received 407 mm between August-November 2022, this is higher than the yearly total observed in other years (2021-366.4mm; 2020-399.0mm; 2019-273.0mm). Undertaking future frog surveys across multiple seasons (Spring and Autumn) may help to improve detections and provide a better account of frog occurrence across the Reserve wetlands. In comparison to wetland sites, frog detections were greater in pitfall traps. For example, zero frogs were detected at four out of eight wetland sites (**Table 6**), whist pitfall trap lines detected species counts between 1 (Eastern Common Froglet) to over 500 (Eastern Banjo Frog) across the Reserve (**Table 8**). It is difficult to identify what is influencing frog distribution across the Reserve, however, pitfall trapping occurred in April, which coincided with the arrival of Autumn rain which may have provided favourable conditions for frog emergence.

## 4.5 Threatened invertebrates

Overall, the invertebrate walked transect surveys recorded a higher number of species in FY23 (143 species) in comparison to baseline (106 species). A significant proportion of these species were detected at Salvana (85 species) with insects representing the majority of observations. A decrease in invertebrate records was observed at Minimay and Ozenkadnook but an increase at Booroopki.

The change in invertebrate detections may be influenced by a lower abundance of flowering in species such as Heath Tea-tree (*Leptospermum myrsinoides*) and Prickly Tea-tree (*Leptospermum continentale*) at Ozenkadnook and Tufted Grass-tree (*Xanthorrhoea caespitosa*), Heath Tea-tree (*L. myrsinoides*), and Sweet Bursaria (*Bursaria spinosa*) at Minimay during the FY23 surveys in comparison to FY17. However, this change may also reflect a lower survey effort in FY23 (two survey days) in comparison to FY17 (four survey days).

Insects are the most species diverse taxa which play a vital role in the provision of ecosystem services (e.g. pollination, nutrient cycling and decomposition, food) and terrestrial ecosystem function. This makes insects a useful indicator of ecosystem condition (Morimoto, 2020). There is an outdated assumption that invertebrates will naturally recolonise in revegetated areas and gradually resemble the richness and abundance observed in remnant zones, however, this is rarely observed in practice (Contos et al, 2021). Invertebrate re-establishment depends on several factors including dispersal potential from adjacent remnant areas.

In general, during our surveys, most invertebrates (dominated by insects) were recorded in remnant areas. This is likely due to the higher presence of groundcover, understorey species (mature and flowering) and logs in remnant areas in comparison to revegetated areas (**Figure 13**, **Figure 15**a). Furthermore, moths and butterflies (*Lepidoptera*) can also be useful indicators of ecosystem condition as they are known to be sensitive to changes in their environment (e.g. habitat loss and fragmentation and climate change). Previous studies have shown that increasing understorey diversity and abundance can influence an increase in butterfly species richness driven by changes to light intensity and nectar availability (Waltz & Covington, 2004). Our survey results, support these findings with moths and butterflies predominantly observed in remnant areas or edges or revegetated areas (**Figure 24**, **Figure 25**) where proportion of groundcover and canopy cover were higher (**Figure 13a**, **Figure 15d**).

## 4.6 Reptile and mammal diversity

The detection of reptiles and mammals was lower in revegetated areas compared to remnant areas. Although detection was generally low, this may have been influenced by pitfall trapping occurring in April and the associated drop in temperature and increase in rainfall. Repeating trapping at multiple times throughout the year is required to obtain a more complete inventory of the reptile species assemblage at the Reserve. Based on previous studies, we would expect reptile and mammal diversity and abundance to be greater in areas with a higher proportion of groundcover and structural complexity (e.g. woody debris and logs), particularly in comparison to cleared areas and farmland (Munro, 2007; Michael et al, 2018). Our survey results support the findings of these studies with lower reptile species diversity occurring in revegetated (0.4) areas compared to remnant areas (1.2) (**Figure 26a**). Comparative to remnant sites, revegetated sites also had lower proportion of groundcover, understorey shrub complexity and logs (**Figure 13a**; **Figure 14**; **Figure 15a**). As previously outlined, the revegetated areas are still relatively young across the Reserve, and some early plantings lack structural complexity (e.g. low diversity Eucalypt plantings at Minimay and Ozenkadnook, site, Appendix J). The log reinstatement activity undertaken at Minimay (**Figure 16**) may help to provide habitat resources for reptiles if coupled with a broader increase in ground cover and understorey species diversity and structural complexity.

Revegetation sites with the availability of tree hollows can provide habitat for arboreal marsupials, and typically older revegetation and remnant areas contain more species than young revegetation (Munro, 2007). There was very low detection rates for mammals across the Reserve which is likely in part due to the survey methodology and effort. However, surveys did detect the Western Pygmy Possum, an arboreal marsupial that often nests in tree hollows as well as other refugia such as tree forks, leaf clumps on the ground and grass hummocks. The surveys showed greater detection of mammals in remnant areas (0.6) at the Reserve compared to revegetated areas (0.1) (**Figure 26b**). Vegetation condition surveys show that remnant sites supported more large trees (3.4) (**Figure 15c**) compared to revegetated sites (0.5) but fewer than remnant control sites surrounding the Reserve (9.7) which aligns with findings by Munro (2007). Likewise, remnant sites typically had a higher proportion of tree hollows compared to revegetated sites, but again, remnant control sites reportedly had the highest proportion of large trees with hollows (Appendix H).

Older revegetation and remnant areas with higher structural diversity support more ground dwelling mammals than young revegetation or simple tree plantings (Munro, 2007). The most abundant mammal detected during our surveys – the Silky Mouse – prefers sandy heathland habitat with abundant banksias,

tea-trees and broombush, which they rely on for shelter and protection from predators. They feed on a variety of native fruit throughout the year and therefore, their presence is indicative of a diversity of vegetation with species that fruit at different times of the year. The Silky Mouse was detected at 10 sites (sites 101, 102, 104, 106-111, 116) at Salvana which are predominantly remnant sites in the southern block of the Reserve with the exception of site 116, which is a 2016 revegetation area. The presence of Silky Mouse at remnant sites at Salvana is supported by vegetation condition survey results which indicate higher native cover and species richness in remnant areas compared with revegetated areas (**Figure 13**) and higher abundance of medium and small shrubs in remnant areas (**Figure 14**). Continuing to improve the condition of revegetated areas is likely to benefit ground dwelling mammals like the Silky Mouse once shrub cover is more established.

## 4.7 Progress against the Reserve Goals

Based on the outcomes of the FY23 surveys, we have determined that the Reserve is tracking positively (denoted by good) towards goals 1.1, 1.2 and 1.3. **Table 10** provides a summary of the evidence supporting this assessment, which considered the management activities that have been undertaken by Greening Australia and Trust for Nature since FY17 in addition to the revegetation activities that occurred under earlier management. Broadly, the FY23 survey results reveal that revegetated sites lack the flora species richness and vegetation attributes observed in remnant sites within the Reserve, and in remnant control sites surrounding the Reserve. This has likely contributed to the lower fauna species richness in revegetated areas in comparison to remnant areas. Considering the relatively young age classes of the revegetation areas at the Reserve, these results generally meet our expectations. However, some of the older revegetation sites, particularly historic low diversity Eucalypt plantings (Minimay sites 4, 5 15 and Ozenkadnook sites 19, 24, 25, 27 and 19) are likely to require active restoration to increase understorey diversity. In 2021, the Reserve team implemented a climate-adjusted direct seeding trial within the Ozenkadnook revegetation sites which aimed to establish understorey shrubs. However, due to heavy browsing pressure, there was low establishment success from this activity.

The Sections below provide further detail to support this assessment.

**Table 10**: Summary progress against the Reserve Goals using a traffic light system (green=good, amber=fair, red=poor (off track, significant action required))

| Goal | Indicator of Success | FY23 Survey Outcomes | Management Activities | Intended Benefit | Assessed progress |
|---|---|---|---|---|---|
| 1.1 By 2026, we will maintain or improve the quality of 600 ha of remnant native vegetation to increase the availability of food and habitat resources for priority threatened species | • Native flora species richness<br>• Native groundcover % cover | • Mean native flora species richness in remnant areas was 15 compared to 20-25 in remnant control areas (**Figure 13**).<br>• Mean proportion native groundcover in remnant areas was 28% compared to 37% in remnant control areas (**Figure 13**a). | • 60 ha of Buloke enhancement at Minimay and Ozenkadnook<br>• Stringybark enhancement at Minimay (24 ha), Booropki (50 ha), and Salvana (95 ha)<br>• Minimay cultural burning across 30 ha | • Reestablishment of threatened Buloke Grassy Woodland vegetation community.<br>• Stringybark is a valuable food source for the threatened Red-tailed Black Cockatoo.<br>• Increased native groundcover and understorey provides habitat for ground foraging birds (e.g. Diamond Firetail) and ground dwelling mammals (e.g. Silky Mouse). | **OnTrack** |
| 1.2 By 2026, we will manage our Conservation Reserve to support and increase the populations of five threatened animals and five threatened plants | • Fauna species richness<br>• Fauna species abundance<br>• Presence/absence threatened species | • 286 native animal species including 11 threatened species were detected in FY23 compared to 227 species in FY17.<br>• 11 threatened animal species detected in FY23 and FY17 surveys.<br>• 10 threatened plant species detected in FY23. | • Pest animal control (rabbit, fox, deer) across entire Reserve (2,117 ha)<br>• Pest plant control (targeting priority weeds) | • Increase provision of habitat resources (food, nesting, protection from predators). Threatened animal species occurrence is consistent between FY17 and FY23, highlighting an ongoing availability of habitat resources at the Reserve.<br>• Through permanent protection from clearing and active pest plant and animal control, we aim to protect existing populations of threatened plants. Threatened plant species were not targeted during the FY23 surveys and therefore a lack of detection does not mean they were not present. | **On Track** |
| 1.3 By 2026, we will enhance the condition of existing revegetation across 200 ha of previously degraded land in the Reserve to provide habitat for at least five other animal species | • Native flora species richness<br>• Native groundcover % cover<br>• Species presence/absence | • On average, revegetated sites had lower native flora cover and richness in comparison to remnant sites, but greater richness compared to cleared sites (**Figure 13**).<br>• On average, revegetated sites had higher bird species richness compared to remnant areas (**Figure 20**) .<br>• With the exception of birds, other taxa richness was on average higher in remnant areas (**Figure 21**,**Figure 26**).<br>• Threatened birds including Diamond Firetail and Hooded Robin observed in revegetated areas (**Figure 16**, **Figure 17**, **Figure 18**). | • 167 ha of revegetation at Salvana Reserve<br>• 60 ha understorey revegetation at Ozenkadnook (fail due to browsing)<br>• Pest animal control (rabbit, fox, deer) across entire Reserve (2,117 ha)<br>• Pest plant control (targeting priority weeds)<br>• Log reinstatement across 115 ha at Minimay<br>• Minimay cultural burning across 30 ha | • Through targeted pest plant and animal control (to reduce competition from exotic plants and herbivore browsing pressure), and active infill planting, we aim to increase the species diversity in revegetated areas.<br>• Revegetated sites across the Reserve are still young (between 1-13 years old) and this broadly aligns with the lower diversity of flora and fauna recorded in these areas in the FY23 surveys.<br>• Older revegetation sites, particularly, older low diversity Eucalypt plantings (Minimay sites 4, 5 15 and Ozenkadnook sites 19, 24, 25, 27 and 19) require intervention to increase species diversity. | **On Track** |

### 4.7.1 Goal 1.1: By 2026, we will maintain or improve the quality of 600 ha of remnant native vegetation to increase the availability of food and habitat resources for priority threatened species.

To inform improved condition within remnant areas, we can use indicators of biodiversity such as native flora species richness and native groundcover (percentage cover).

The result of our groundcover vegetation transects show that mean native species richness in remnant areas was 15 compared to 20-25 in remnant control areas whilst exotic species richness was approximately 5 in both areas (**Figure 13**). Treating exotic weeds at the Reserve is an ongoing priority in the annual management plan but remains a considerable challenge particularly for species that are most effectively managed via hand-weeding, – a labour-intensive task. Weed control within remnants can be targeted to protect highest quality assets first, and work out from there, commonly referred to as the Bradley Method (Bradley, 1971). Habitat logs and tree recruitment were lower in remnant areas within the Reserve in comparison to remnant control sites (**Figure 15a & b).** Continuing weed control in remnant areas and potentially cultural cool burning practices, are management interventions that over time will help native species recover and regenerate in these areas. Reinstating habitat logs into Open Woodland remnants is another management action that can increase availability within a shorter time scale. Increasing availability of logs is likely to benefit reptiles and small ground dwelling mammals by providing protection from predators, and harbouring insects which provide a food source for birds, mammals, and reptiles.

Active restoration activities have been undertaken at the Reserve in remnant areas in line with pre-European EVC reference conditions. For example, in 2022 Stringybark restoration works were undertaken within Salvana and Minimay remnant areas which, once mature, are a valuable food resource for the threatened Red-tailed Black Cockatoo (**Figure 16**, **Figure 18**). Other priority threatened animals including the Fiery Jewel Butterfly, Diamond Firetailand Bearded Dragonwere all detected in the FY23. The repeat observation of these species six years on from the baseline surveys in FY17 provide us with confidence that the Reserve is continuing to provide important habitat resources for these species. Additionally, the two new threatened fauna detected in the FY23 surveys, which not previously seen at the Reserve, the Little Eagle and Swift Parrot (queried) helps to build our understanding of the types of resources available across the Reserve (

**Table 7**).

### 4.7.2 Goal 1.2: By 2026, we will manage our Conservation Reserve to support and increase the populations of five threatened animals and five threatened plants.

Reporting on changes to threatened species occurrence and abundance requires significant and long-term investment in fauna surveying. The Bank Australia monitoring has been established to undertake monitoring at baseline and five yearly intervals for ten years in line with the 10 Year Vision and Strategy. This monitoring is invaluable to informing an adaptive management framework for the Reserve and provides important data to assess how the Reserve is changing through time. However, due to the survey effort and frequency, there are limitations in our ability to report on population trends. Thus, to inform increased habitat availability for native animals across the Reserve, we can use indicators of biodiversity such as fauna species richness, fauna relative abundance and presence/absence of threatened species.

As described in the sections above, reptile, mammal, and amphibian species richness were on average higher in remnant areas compared to revegetated sites. Conversely, bird species richness was on average higher in revegetated sites compared to remnant sites and remnant control sites. These findings,

particularly the bird survey results, provide some evidence that the Reserve is providing habitat resources for a diversity of animal species.

A total of ten threatened plant species (**Table 4**) and nine animal species of conservation significance were identified during the FY23 surveys (

**Table 7**). With the exception of two species, all threatened species detected in the FY17 surveys were detected again in the FY23 surveys. Except for Salvana, which was surveyed as a baseline, detailed flora surveys (outside of the vegetation condition surveys) were not an objective of the FY23 monitoring program. This means that the FY23 results provide a snapshot of the plant species at the Reserve but is not extensive. For example, the vegetation condition surveys identified Buloke at Salvana only, whilst Buloke is present at all Reserve (pers comms J. Gardner, 2023).

### 4.7.3 Goal 1.3: By 2026, we will enhance the condition of existing revegetation across 200 ha of previously degraded land in the Reserve to provide habitat for at least five other animal species.

To inform improved condition within revegetated areas, we can use indicators of biodiversity such as native flora species richness, native groundcover (percentage cover), availability of habitat resources (e.g. logs) and fauna species richness.

A significant amount of revegetation and restoration work has been undertaken at the Reserve, some of which pre-dates Greening Australia and Trust for Nature's management of the Reserve. This creates a mosaic of age-class diversity across the Reserve which is likely to influence species distribution across the site. As revegetation ages, different habitat resources become available and therefore is suitable for different species and different times. An interesting and significant result from the FY23 surveys is that it was observed on average that there is a greater number of bird species in revegetated areas compared to remnant areas (**Figure 20**). Threatened species such as the Diamond FiretailHooded Robin and Red-tailed Black Cockatoo were all observed in revegetated areas (**Figure 16**, **Figure 18**). Additionally, the Swift Parrot is believed to have been sighted at Ozenkadnook in a remnant patch during the FY23 bird surveys (**Figure 17**). Swift Parrots often prefer dry forest and woodland habitats and are commonly found among Blue Gums feeding on nectar, seeds and flowers and nesting in tree hollows. The older landcare-led revegetation at Ozenkadnook are low diversity Eucalypt plantings, which could provide the food resources favourable to the Swift Parrot. Undertaking further surveys, preferably in Winter/early Spring, would help to confirm the sighting of Swift Parrots at the Reserve.

Although, Malleefowl were not detected during our surveys, old mounds were observed at Salvana. These mounds have been mapped and will be revisited to confirm the sighting and further investigate the surrounding vegetation. If these are in fact old mounds, this highlights the past presence of the Malleefowl at Salvana and the surrounding Little Desert National Park. The reserve team will continue to liaise with the Recovery Team to understand the impacts of revegetation in this landscape for the Malleefowl.

## Conclusion

The results of the FY23 Monitoring Program at the Bank Australia Conservation Reserve (the Reserve) build on the baseline datasets collected in FY17 and help to understand the diversity of species present at the Reserve and early indications of their distribution and abundance. Considering the FY23 data is only our second data point, we are limited in our ability to identify trends, however, the results provide some early indications that the Reserve is tracking positively towards ecological goals 1.1, 1.2 and 1.3 outlined in the Bank Australia Reimagining our Future Strategic Plan (2017).

The objective of the Monitoring Program was to:

- Assess the current ecological diversity and condition of Minimay, Ozenkadnook and Booroopki five years on from baseline surveys in FY17;
- Assess the baseline ecological diversity and condition of Salvana (purchased by Bank Australia in 2021);
- Compile a database of the animal and plant species present at the Reserve; and
- Assess Reserve progress against management goals outlined in the Reimagining our Future Strategic Plan (2017).

Vegetation surveys identified 128 native plant species at Minimay, Ozenkadnook and Booroopki and 251 native species at Salvana. The number of species recorded at Salvana is higher due to one of the objectives of the baseline surveys being to develop a detailed database of plant species across the site. The results of the vegetation condition surveys suggest that the native plant diversity and abundance and structural complexity in revegetated areas is low in comparison to remnant sites within the Reserve boundary and counterfactual control sites outside the Reserve boundary. When considering the age class of the revegetation sites and the objectives of the plantings, we can identify areas where we have confidence the revegetation is progressing towards reference remnant condition as expected and areas where we think intervention is required. For example, at Ozenkadnook, early revegetation sites (2009) are characteristic of low diversity overstorey plantings (Eucalypts). In these areas, we think the low native diversity and abundance in the understorey is driven by the absence of these strata in the planting design. Infill plantings which target native understorey and midstorey species and log reinstatement activities will likely improve the condition of these areas and their trajectory towards reference ecosystem condition.

In addition, the results of the Index of Wetland Condition surveys at wetlands across the Reserve indicate that condition has remained constant or slightly improved since FY17. Of particular interest is the improvement in condition score at Minimay wetland 36 which suggests a positive impact of the hydrology reinstatement activities in 2021 as part of the Dams to Wetlands project. Considering this finding, it is suggested that future dams to wetlands projects and dam restoration projects are considered for wetlands with low scores for catchment, physical form, hydrology (e.g. Minimay wetland 37) and biota (e.g. Salvana wetlands).

Furthermore, the results of the fauna surveys across the Reserve (bird, pitfall trapping – targeting reptiles and mammals, amphibian, invertebrate) reveal that we identified more species in FY23 compared to FY17. In FY23, a total of 283 native animal species were detected at the Reserve, including 10 threatened species. A considerable reason for the detection of new species is the addition of the Salvana land parcel in the FY23 surveys. An interesting finding from our surveys was that bird species richness was on average higher in revegetated areas compared to remnant sites and un-managed remnant areas surrounding the Reserve. This highlights the availability of habitat and resources for a variety of bird species within revegetated areas. Continuing to manage these areas via pest plant and animal control activities and active revegetation and restoration activities will help to improve the condition of these areas over time and ensure the ongoing provision of habitat resources for a diversity of native bird species.

A limitation of our surveys was the lack of amphibian data at wetland sites due the technical failure of recording devices. This lack of data means we are unable to identify whether amphibian richness and abundance was low at wetlands or if we simply did not detect them. Future surveys should consider increasing effort to better understand frog species richness and abundance at wetland sites, particularly in areas where Growling Grass Frog has previously been identified through incidental records.

Based on the FY23 monitoring survey results, it is recommended that the Reserve management plans are reviewed and updated in line with an adaptive management framework. The data can be used to inform the prioritisation of management activities in line with the goals and objectives of the Reserve as 2026 and the conclusion of the Reimagining our Future Strategic Plan, draws closer.

## References


Beckschafer,P. (2015) Hemispherical_2.0 Batch processing hemispherical and canopy photographs with ImageJ – User Manual. *Chair of Forest Inventory and Remote Sensing.*

Bennett, A.F., Holland, G.J., Haslem, A., Stewart, A., Radford, J.Q., Clarke, R.H. (2022) Restoration promotes recovery of woodland birds in agricultural environments: A comparison of 'revegetation' and 'remnant' landscapes. *Journal of Applied Ecology,* 59(5), pp 1334-1346

Bradley, J. (1971) Bush regeneration: the practical way to eliminate exotic plants from natural Reserve. The Mosman Parklands and Ashton Park Association, Mosman (Sydney), New South Wales. 15 pp. Originally published in Fremontia, the Journal of the California Native Plant Society, Vol 13 No 2 July 1985

Caterall, C.P., Kanowski, J., Wardell-Johnson, G.W., Proctor, H., Reis, T., Harrison, D., Tucker, N.I.J. (2004) Quantifying the biodiversity values of reforestation: perspectives, design issues and outcomes in Australian rainforest landscapes. *Conservation of Australia's Forest Fauna, Daniel Lunney*

Contos, P., Wood, J.L., Murphy, N.P., Gibb, H. (2021) Rewilding with invertebrates and microbes to restore ecosystems: present trends and future directions. *Ecology and Evolution,* 11(12), pp 7187-7200

DEWHA (2009) Significant impact guidelines for the critically endangered golden sun moth (Synemon plana), Department of Environment, Water, Heritage and the Arts (Canberra).

DSE (2004) Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method. Version 1.3. Victorian Government Department of Sustainability and Environment, Melbourne.

Michael, D.R., Crane, M., Forance, D., Lindenmayer, D.B. (2018) Revegetation, restoration and reptiles in rural landscapes: Insights from long-term monitoring programmes in the temperate eucalypt woodlands of south-eastern Australia. *Ecological Management & Restoration,* 19(1), pp 32-38

Morimoto, J. (2020) Addressing global challenges with unconventional insect ecosystem services: why should humanity care about insect larvae? *People and Nature,* 2(3), pp 582-595

Munro, N.T., Lindenmayer, D.B., Fischer, J. (2007) Faunal response to revegetation in agricultural areas of Australia: A review. *Ecological Management & Restoration,* 8(3), pp 199-207

Waltz, A.E.M., Covington, W.W. (2004) Ecological restoration treatments increase butterfly species richness and abundance: mechanisms of response. *Restoration Ecology,* 12(1), pp 85-96

# APPENDIX A ‘FY23 Monitoring Program Vegetation Condition Survey Methodology’

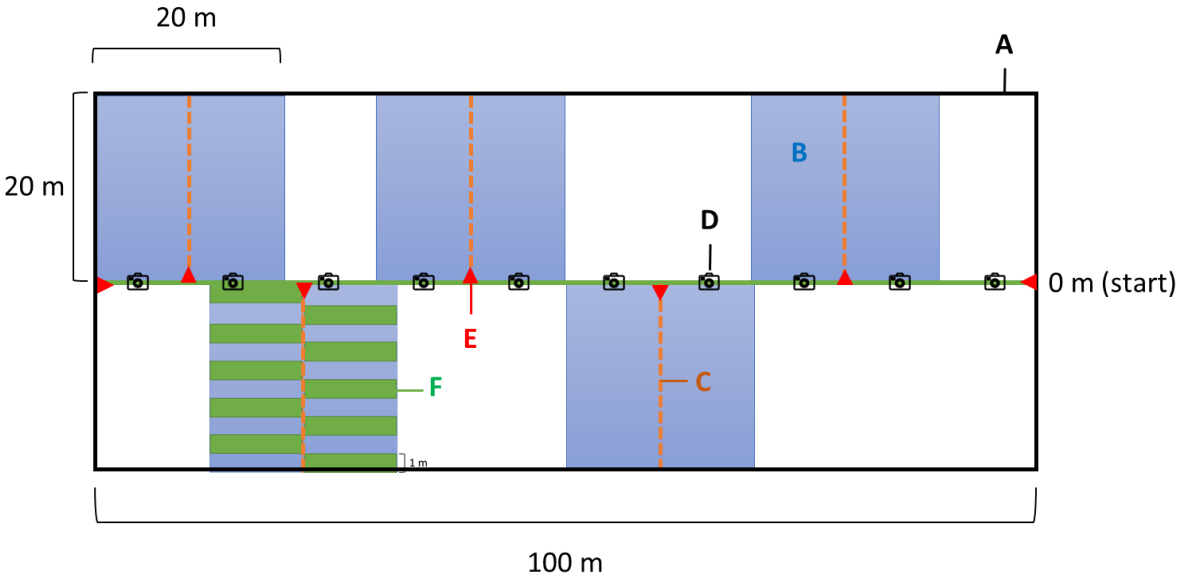



**Figure A1:** FY23 Monitoring Program sampling unit

**Table A1:** Revised vegetation condition metrics using key attributes from the Habitat Hectares methodology.

| Habitat Hectare Component | Survey unit/sub-unit* | Data | Data per site |
|---|---|---|---|
| Large trees | A; if < 10 trees then within FY17 2 ha plot area | Mapping, growth and structural data of all canopy trees ≥ 40 cm DBH | ≥ 10 mapped trees<br>• Species<br>• Alive/dead<br>• Diameter at Breast Height (DBH) @1.3m<br>• POM<br>• Fork height<br>• Multiple stems (Y/N), if Y, # stems<br>• Hollows >2cm diameter (Y/N)<br>• Est growth stage<br>• Fruit/Flower<br>• Crown dimensions<br>• Est height |
| Tree Canopy Cover | D | 10 hemispherical photo points along 100m main transect | 10 photos |
| Understorey | F | Along sub-transect C, score presence-absence of understorey life forms within 1 m x 10 m alternating plots. | 30 x (1 m x 10 m) plots (presence-absence) = 300 $m^2$ frequency of occurrence |
| | C | Point quadrat presence/absence and height of plant life form every 20 cm | 5 x 20 m point quadrats = 500 points |
| Recruitment (trees) | B | Record species and DBH class of each tree stem. | 5 x 400 $m^2$ quadrats |
| Groundcovers | C | Point intercept transect | 5 x 20 m point quadrats = 500 points |
| Native Groundcovers | C | Point intercept transect recording presence/absence and height of plant life forms < 1m, every 20 cm | “ |
| Organic Litter | C | Point intercept transect recording presence/absence organic litter every 20 cm | ” |
| Lack of Weeds | C | Point intercept transect recording presence/absence weeds every 20 cm | ” |
| Logs | B & A | Measure the lengths of all logs (>10 cm diameter) within the 5 sub-plots (B)<br>Record the number of large logs (> 10 cm Diameter) across the site (Plot A) | All logs > 10 cm diameter |

** refer to Figure A1*

## APPENDIX B ‘FY23 Releve Survey Attributes’

**Table B1**: Relevé survey metrics. Life form type definitions provided in Table B2.

| Component | Metrics | Data per site | Definitions |
|---|---|---|---|
| Land type | Aspect<br>Slope<br>Landform | Estimation | n/a |
| Vegetation | EVC type | Ground truth mapped pre-European EVC | Ecological Vegetation Class (EVC) - Native vegetation classification system based on vegetation community composition and structure, and landform and landscape attributes. |
| Condition | Vegetation Condition | Categorical assessment<br>(Completely degraded, poor, good, very good, excellent) | Completely degraded: the structure of the vegetation is no longer intact and the area is completely or almost completely without native species.<br>Poor: basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.<br>Good: vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure of ability to regenerate it.<br>Very good: Vegetation structure altered, obvious signs of disturbance, retains good vegetation structure and is regenerating.<br>Excellent: vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. |
| | Disturbance factors | Percentage assessment of categories<br>(bushfire, planned fire, harvesting, roads, aggressive weeds, dieback, grazing, partial clearing, parkland cleared) | n/a |
| | Browsing | Yes/No | n/a |
| | Weed cover<br>Noxious weeds present | Categorical (absent, low, medium, high)<br>Yes/No | n/a |

| Component | Metrics | Data per site | Definitions |
|---|---|---|---|
| | Weed species | List all weed species present | |
| | Tree cover | Percentage cover estimate | Visual assessment (%) |
| | Tree species | List all tree species present | |
| | Shrub cover | Percentage cover estimate for shrub types (large, medium, small, prostrate) | Visual assessment (%), Refer to Table B2 for life form definitions |
| | Shrub species | List all shrub species present | |
| | Herb cover | Percentage cover estimate for herb types (large, medium, small, prostrate) | Visual assessment (%), Refer to Table B2 for life form definitions |
| | Herb species | List all herb species present | |
| | Tufted and non-tufted graminoid cover | Percentage cover estimate<br>Species | Visual assessment (%), Refer to Table B2 for life form definitions |
| | Tufted and non-tufted graminoid species | List all Tufted and non-tufted graminoid species present | |
| | Miscellaneous life forms present | Yes – epiphytes, ground ferns, scramblers/climbers present<br>No - absent | Visual assessment (%), Refer to Table B2 for life form definitions |
| | Stand age | Comment on the estimated age or successional stage of the stand. | n/a |

**Table B2**: Life form definitions, adapted from Vegetation Quality Assessment Manual (DSE, 2004).

| Life form | Life form code | Definition |
|---|---|---|
| Large shrub | LS | Woody plants greater than 5 m in height, with single stems that never form part of the tree canopy. |
| Medium shrub | MS | Woody plants between 1 m and 5 m in height. |
| Small shrub | SS | More or less erect, woody plants that are between 20 cm and 1 m in height. |
| Prostrate shrub | PS | Woody plants with stems and branches that often trail along the ground and do not exceed 20 cm in height. |
| Large herb | LH | More or less erect, non-woody plants with non-grassy leaves, greater than 50 cm tall. |
| Medium herb | MH | More or less erect, non-woody plants with non-grassy leaves, between 5 cm and 50 cm tall. |
| Small herb | SH | More or less erect, non-woody plants with non-grassy leaves, less than 5 cm in height. Many of this group are ephemerals (ie. germinate, reproduce and die within a few weeks). |
| Tufted graminoid | TG | A robust grass, sedge, rush or similar, usually with more than one flower stalk. Usually large numbers of leaves arising from a common, often broad base or clump. |
| Non-tufted graminoid | NTG | A robust grass, sedge, rush or similar with leaves arranged along single, erect flower stalks, which in turn arise from rhizomes or stolons. |
| Miscellaneous | M | Bracken, climbers |

## APPENDIX C ‘FY23 Survey Sites’

| WptID | Habitat_Ty | Property_N | Type | Easting | Northing | Veg Survey Type | Bird survey site | Pitfall survey site | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Heathy Woodland | Minimay | Revegetated | 523807.3348 | 5938260.181 | Veg Condition | Y | Y | |
| 2 | Heathy Woodland | Minimay | Remnant | 524033.5347 | 5938076.597 | Veg Condition | Y | Y | |
| 3 | Shallow Sands Woodland | Minimay | Remnant | 524160.4375 | 5938419.878 | Veg Condition | Y | Y | |
| 4 | Shallow Sands Woodland | Minimay | Revegetated | 524343.5518 | 5938179.299 | Veg Condition | Y | Y | |
| 5 | Plains Woodland | Minimay | Revegetated | 524851.5792 | 5939169.077 | Veg Condition | Y | Y | |
| 6 | Plains Woodland | Minimay | Remnant | 525304.345 | 5939001.46 | Veg Condition | Y | Y | |
| 7 | Low Rises Woodland | Minimay | Revegetated | 524690.4913 | 5938085.257 | Veg Condition | Y | Y | |
| 8 | Shallow Sands Woodland | Minimay | Remnant | 524718.5244 | 5937767.031 | Veg Condition | Y | Y | |
| 9 | Plains Woodland | Minimay | Revegetated | 524917.7246 | 5937175.591 | Veg Condition | Y | Y | |
| 10 | Low Rises Woodland | Minimay | Remnant | 524853.3063 | 5936895.366 | Veg Condition | Y | Y | |
| 11 | Low Rises Woodland | Minimay | Revegetated | 523711.143 | 5937502.002 | Veg Condition | Y | N | |
| 12 | Heathy Woodland | Minimay | Remnant | 523749.7675 | 5937191.909 | Veg Condition | Y | N | |
| 13 | Low Rises Woodland | Minimay | Revegetated | 523375.5255 | 5939350.474 | Veg Condition | Y | N | |
| 14 | Shallow Sands Woodland | Minimay | Remnant | 523922.0373 | 5939344.816 | Veg Condition | Y | N | |
| 15 | Low Rises Woodland | Minimay | Revegetated | 524430.4703 | 5939000.127 | Veg Condition | Y | N | |
| 16 | Low Rises Woodland | Minimay | Remnant | 525132.8784 | 5938029.168 | Veg Condition | Y | N | |
| 17 | Heathy Woodland | Minimay | Revegetated | 523511.1146 | 5938644.678 | Veg Condition | Y | N | |
| 18 | Plains Woodland | Minimay | Remnant | 525399.4878 | 5937031.666 | Veg Condition | Y | N | |

| WptID | Habitat_Ty | Property_N | Type | Easting | Northing | Veg Survey Type | Bird survey site | Pitfall survey site | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 19 | Plains Woodland | Ozenkadnook | Revegetated | 527557.3867 | 5922846.359 | Veg Condition | Y | N | |
| 20 | Plains Woodland | Ozenkadnook | Remnant | 527893.3911 | 5921915.352 | Veg Condition | Y | N | |
| 21 | Plains Woodland | Ozenkadnook | Remnant | 526005.6479 | 5923052.862 | Veg Condition | Y | N | |
| 22 | Shallow Sands Woodland | Ozenkadnook | Revegetated | 526164.1215 | 5923040.162 | Veg Condition | Y | N | |
| 23 | Damp Sands Herb-rich Woodland | Ozenkadnook | Remnant | 527271.4492 | 5922667.998 | Veg Condition | Y | N | |
| 24 | Shallow Sands Woodland | Ozenkadnook | Revegetated | 527405.9243 | 5922382.561 | Veg Condition | Y | N | |
| 25 | Shallow Sands Woodland | Ozenkadnook | Revegetated | 527030.0401 | 5920848.715 | Veg Condition | Y | Y | |
| 26 | Damp Sands Herb-rich Woodland | Ozenkadnook | Remnant | 527257.6097 | 5920820.969 | Veg Condition | Y | Y | |
| 27 | Heathy Herb-rich Woodland | Ozenkadnook | Revegetated | 527781.2317 | 5921061.631 | Veg Condition | Y | Y | |
| 28 | Heathy Herb-rich Woodland | Ozenkadnook | Remnant | 527493.5809 | 5921044.501 | Veg Condition | Y | Y | |
| 29 | Heathy Herb-rich Woodland | Ozenkadnook | Revegetated | 527560.8288 | 5921694.332 | Veg Condition | Y | Y | |
| 30 | Heathy Herb-rich Woodland | Ozenkadnook | Remnant | 527199.8599 | 5921749.216 | Veg Condition | Y | Y | |
| 31 | Shallow Sands Woodland Mosaic | Booroopki | Remnant | 519609.1159 | 5924917.117 | Veg Condition | Y | Y | |
| 32 | Plains Woodland | Booroopki | Remnant | 520141.0065 | 5925080.677 | Veg Condition | Y | Y | |
| 33 | Heathy Herb-Rich Woodland | Booroopki | Remnant | 520026.026 | 5924095.077 | Veg Condition | Y | Y | |
| 34 | Heathy Herb-Rich NWoodland | Booroopki | Remnant | 519756.3615 | 5924332.946 | Veg Condition | Y | Y | Site unable to be accessed for vegetation surveys due to dense *Acacia paradoxa* |
| 35 | Wetland | Minimay | Wetland | 525232.8531 | 5937268.051 | Veg Condition | Y | N | Site 35 does not delineate from site 38 |
| 36 | Wetland | Minimay | Wetland | 522944.8456 | 5938499.661 | Veg Condition | Y | N | |
| 37 | Wetland | Minimay | Wetland | 523899.277 | 5938811.141 | Veg Condition | Y | N | |
| 38 | Wetland | Minimay | Wetland | 525311.8902 | 5937080.232 | Veg Condition | Y | N | |

| WptID | Habitat_Ty | Property_N | Type | Easting | Northing | Veg Survey Type | Bird survey site | Pitfall survey site | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 39 | Wetland | Minimay | Wetland | 525286.6762 | 5936794.804 | Veg Condition | Y | N | |
| 40 | Wetland | Ozenkadnook | Wetland | 526576.8534 | 5923000.398 | Veg Condition | Y | Y | |
| 41 | Wetland | Ozenkadnook | Wetland | 526237.6086 | 5922883.398 | Veg Condition | Y | N | |
| 50 | Heathy Woodland | Booroopki | Revegetated | 519441.1973 | 5924211.6 | Veg Condition | Y | Y | |
| 51 | Shallow Sands Woodland | Booroopki | Revegetated | 519318.1885 | 5923716.17 | Veg Condition | Y | N | |
| 52 | Shallow Sands Woodland | Booroopki | Revegetated | 520079.2574 | 5923777.976 | Veg Condition | Y | Y | |
| 53 | Shallow Sands Woodland | Booroopki | Revegetated | 519775.0358 | 5923671.608 | Veg Condition | Y | N | |
| 60 | Damp Sands Herb-rich Woodland | Booroopki | Control_remnant | 520708.3702 | 5924723.071 | Veg Condition | Y | N | |
| 61 | Plains Woodland | Booroopki | Control_cleared | 520947.6817 | 5923995.688 | Veg Condition | Y | N | |
| 62 | Plains Woodland | Booroopki | Control_cleared | 519107.3715 | 5924229.289 | Veg Condition | Y | N | |
| 63 | Plains Woodland | Booroopki | Control_remnant | 519351.5071 | 5925390.893 | Veg Condition | Y | N | |
| 64 | Heathy Herb-rich YWoodland | Ozenkadnook | Control_remnant | 528138.6661 | 5920403.993 | Veg Condition | Y | N | |
| 65 | Shallow Sands Woodland | Ozenkadnook | Control_cleared | 527547.7251 | 5920073.718 | Veg Condition | Y | N | |
| 66 | Heathy Herb-rich Woodland | Ozenkadnook | Control_remnant | 526812.0641 | 5922240.865 | Veg Condition | Y | N | |
| 67 | Plains Woodland | Ozenkadnook | Control_cleared | 526224.8399 | 5921338.924 | Veg Condition | Y | N | |
| 68 | Shallow Sands Woodland | Minimay | Control_remnant | 525646.691 | 5938542.755 | Veg Condition | Y | N | |
| 71 | Plains Woodland | Minimay | Control_cleared | 523125.22 | 5937362.844 | Veg Condition | Y | N | |
| 101 | Damp Heathland | Salvana | Remnant | 519505.9836 | 5953516.959 | Veg Condition | Y | Y | |
| 102 | Shallow Sands Woodland | Salvana | Remnant | 517994.9177 | 5954610.052 | Veg Condition | Y | Y | |
| 103 | Shallow Sands Woodland | Salvana | Remnant | 520860.7992 | 5956807.276 | Veg Condition | Y | Y | |
| 104 | Lowan Sands Mallee | Salvana | Remnant | 518248.548 | 5954063.227 | Veg Condition | Y | Y | |

| WptID | Habitat_Ty | Property_N | Type | Easting | Northing | Veg Survey Type | Bird survey site | Pitfall survey site | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 105 | Lowan Sands Mallee | Salvana | Remnant | 519350.1861 | 5953947.016 | Veg Condition | Y | Y | |
| 106 | Sandstone Ridge Shrubland | Salvana | Remnant | 518835.1238 | 5956337.992 | Veg Condition | Y | Y | |
| 107 | Heathy Woodland | Salvana | Remnant | 518703.8138 | 5955829.32 | Veg Condition | Y | Y | |
| 108 | Heathy Woodland/Heathy Mallee Mosaic | Salvana | Remnant | 518879.8547 | 5956584.573 | Veg Condition | Y | Y | |
| 109 | Lowan Sands Mallee | Salvana | Remnant | 519402.4846 | 5955692.669 | Veg Condition | Y | Y | |
| 110 | Lowan Sands Mallee | Salvana | Remnant | 519352.2888 | 5956478.208 | Veg Condition | Y | Y | |
| 111 | Lowan Sands Mallee | Salvana | Remnant | 519676.3034 | 5956746.391 | Veg Condition | Y | Y | |
| 112 | Shallow Sands Woodland | Salvana | Revegetated | 520060.1901 | 5954687.954 | Veg Condition | Y | Y | |
| 113 | Heathy Woodland | Salvana | Revegetated | 518699.4506 | 5955366.335 | Veg Condition | Y | Y | |
| 114 | Heathy Woodland | Salvana | Revegetated | 520297.8746 | 5955312.643 | Veg Condition | Y | Y | |
| 115 | Heathy Woodland | Salvana | Revegetated | 520664.3223 | 5956188.853 | Veg Condition | Y | Y | |
| 116 | Shallow Sands Woodland | Salvana | Revegetated | 519503.5708 | 5955116.882 | Veg Condition | Y | Y | |
| 117 | Damp Heathland | Salvana | Remnant | 519037.331 | 5953535.773 | Releve | N | N | |
| 118 | Shallow Sands Woodland | Salvana | Remnant | 517959.4732 | 5955008.351 | Releve | N | N | |
| 119 | Seasonally Inundated Shrubby Woodland | Salvana | Remnant | 521179.8287 | 5953192.329 | Releve | N | N | |
| 120 | Heathy Woodland | Salvana | Remnant | 518282.2861 | 5956626.001 | Releve | N | N | |
| 121 | Heathy Woodland/Heathy Mallee Mosaic | Salvana | Remnant | 518941.9757 | 5956944.12 | Releve | N | N | |
| 122 | Lowan Sands Mallee | Salvana | Remnant | 520137.705 | 5953822.992 | Releve | N | N | |
| 123 | Shallow Sands Woodland | Salvana | Revegetated | 519844.7853 | 5954402.253 | Releve | N | N | |
| 124 | Heathy Woodland | Salvana | Revegetated | 520529.5605 | 5955787.637 | Releve | N | N | |

| WptID | Habitat_Ty | Property_N | Type | Easting | Northing | Veg Survey Type | Bird survey site | Pitfall survey site | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 125 | Heathy Woodland | Salvana | Revegetated | 520534.8002 | 5955060.107 | Releve | N | N | |
| 126 | Heathy Woodland | Salvana | Revegetated | 520114.4487 | 5956360.687 | Releve | N | N | |
| 127 | Lowan Sands Mallee | Salvana | Control_cleared | 517329.7618 | 5955594.025 | Veg Condition | Y | N | |
| 128 | Lowan Sands Mallee | Salvana | Control_remnant | 520354.8471 | 5953033.387 | Veg Condition | Y | N | |

## APPENDIX D 'Index of Wetland Condition measures (DEPI, 2013)'

| IWC sub-index | Key ecological component | Measure | Measure type |
|---|---|---|---|
| Wetland catchment | Wetland catchment | Percentage of land in different land use intensity classes adjacent to the wetland | Threat |
| | Wetland buffer | Average width of the buffer | Component |
| | | Percentage of wetland perimeter with a buffer | Component |
| Physical form | Area of the wetland | Percentage reduction in wetland area | Component |
| | Wetland form | Percentage of wetland where activities (excavation and landforming) have resulted in a change in bathymetry | Threat |
| Hydrology | Water regime | Severity of activities that change the water regime | Threat |
| Water properties | Macronutrients (such as nitrogen and phosphorus) | Activities leading to an input of nutrients to the wetland | Threat |
| | Electrical conductivity (salinity) | Factors likely to lead to wetland salinisation:<br>-input of saline water<br>-wetland occurs in a salinity risk area | Threat |
| Soils | Soil physical properties (structure, texture, consistency and profile) | Percentage and severity of wetland soil disturbance | Impact |
| Biota | Wetland plants | Wetland vegetation quality assessment based on:<br>-critical lifeforms<br>-presence of weeds<br>-indicators of altered processes<br>-vegetation structure and health | Component<br>Impact<br>Impact<br>Component |

# APPENDIX E 'Methods – Analysis'

## 4.7.4 Vegetation Condition

**Large Trees**

The large tree dataset was processed in excel by summing the number of large trees recorded at each survey site and quantifying the mean and standard error of the number of large trees at revegetated, remnant, and control sites. Mean DBH, mean number of stems, and proportion of large trees with hollows was also quantified (**Appendix G**). The location of large trees was compiled as a point feature class using ArcGIS Pro.

**Tree Canopy Cover**

Tree canopy photos were provided as photospheres (a stitch of 10 images taken at a single canopy photo point). To extract hemispherical canopy photos from photospheres, ImageMagick and command line software were used. To process canopy cover estimates, ImageJ and Hemispherical PlugIn2.0 was used (Beckschafer, 2015). This calculates the Canopy Gap Fraction which was used to derive canopy cover (i.e. canopy cover = (100 – gap fraction)).

In cleared control sites surrounding the Reserve (sites 61, 62, 65, 67, 71 and 127) canopy cover was assessed as 0% using visual assessment only.

**Understorey (Plot F)**

Frequency of occurrence of understorey life forms were calculated using binomial generalised linear models (GLM) for each life form class. Data was modelled in Python. The response variable was the proportion of presence: absence for each life form and the predictor variable the categorical variable 'Site Type' (Remnant, Revegetated).

**Groundcover (Transect C, native and exotic)**

Groundcover point transect data was used to calculate the cover of native versus exotic cover at each survey point. Two sites were removed from analysis (33 and 114) because transects were incomplete. Data was modelled using a binomial generalised linear mixed model (GLMM) in the R package 'lme4'. The response variable was the proportion of presence: absence for each life form and the predictor (fixed effect) variable the categorical variable 'Site Type' (Remnant, Revegetated), with site held as the random intercept. A mixed model was used because there was overdispersion found in the original GLM. The GLMM resulted in a dispersion factor <1.

Transect C data was also used to determine native and exotic species richness (ie. mean and standard error derived for revegetated, remnant and control sites).

**Recruitment**

The tree recruitment dataset was processed in excel by summing the number of recruiting trees recorded at each survey site and quantifying mean and standard error for number of recruits at revegetated, remnant, and control sites.

**Logs**

The log dataset was processed in excel by summing the total length of all logs measured at each survey site and quantifying mean and standard error for revegetated, remnant and control sites.

### 4.7.5 Vegetation Relevé Surveys (subset Salvana sites only)

Vegetation relevé surveys outputs were cleaned in excel and compiled as a polygon feature class in ArcGIS Pro. The results were used to improve the accuracy of the EVC mapping at Salvana.

### 4.7.6 Wetlands

IWC assessment results were extracted from the Index of Wetland Condition Data Management System and compiled as a point feature class in ArcGIS pro. The outputs were used to compare IWC assessment scores to the baseline assessments in 2016.

### 4.7.7 Fauna

Bird data was processed in R and excel to derive a species list (for all Reserve individually and combined) and calculate species richness and abundance at each survey site. The mean and standard error were derived for revegetated, remnant and control sites. A species accumulation curve was produced to inform survey adequacy and result interpretation.

Reptile, mammal, and amphibian data derived from the pitfall trapping surveys, and invertebrate data from walked searches, were processed identical to the bird data but only for species richness. Abundance was not calculated due to the lower amount of data.

The data from the targeted amphibian surveys at wetlands was included in the species list and the species richness was derived for use as an indicator to assess wetland condition.

## APPENDIX F ‘Flora Species List’

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 500007 | *Acacia acinacea* | Round-leaved Wattle | | | | | | | | | | x |
| 504778 | *Acacia acinacea s.s.* | Gold-dust Wattle | | | | x | | | | x | | |
| 500017 | *Acacia brachybotrya* | Grey Mulga | | | | x | | | | x | x | x |
| 500020 | *Acacia euthicarpa* | Wallowa Wattle | | | | | | | | | | x |
| 500034 | *Acacia farinosa* | Mealy Wattle | | | | | | | | | | x |
| 500039 | *Acacia glandulicarpa* | Hairy pod Wattle | | | | | | | | | | x |
| 500015 | *Acacia ligulata* | Small Cooba | | | | x | | | | | | x |
| 500063 | *Acacia myrtifolia* | Myrtle Wattle | | | | | | | | | | x |
| 500071 | *Acacia oxycedrus* | Spike Wattle | | | | x | | | | x | | x |
| 500072 | *Acacia paradoxa* | Hedge Wattle | | | | x | | x | x | x | | |
| 500078 | *Acacia pycnantha* | Golden Wattle | | | | x | | x | | x | | x |
| 500089 | *Acacia spinescens* | Spiny Wattle | | | | x | | | | | | x |
| 500106 | *Acaena echinata* | Sheep's Burr | | | | x | x | x | x | x | x | x |
| 500105 | *Acaena novae-zelandiae* | Bidgee-widgee | | | | | | | | x | | |
| 502966 | *Acetosella vulgaris* | Sheep Sorrel | Introduced | | | x | x | | x | x | x | x |
| 500123 | *Acrotriche serrulata* | Honey-pots | | | | | x | x | | | | x |
| 500124 | *Actinobole uliginosum* | Flannel Cudweed | Introduced | | | | | | | | | x |
| 500165 | *Aira cupaniana* | Quicksilver Grass | Introduced | | | x | | | | x | | |
| 500164 | *Aira caryophyllea* | Silvery Hairgrass | Introduced | | | | x | | | | x | x |
| 500166 | *Aira elegantissima* | Delicate Hairgrass | Introduced | | | | x | | | | x | x |
| 508024 | *Aira sp.* | Hair Grass | Introduced | | | | | | x | | x | |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 500451 | *Allittia cardiocarpa* | Swamp Daisy | | | | x | | | | | | |
| 500481 | *Allittia uliginosa* | Small Swamp-daisy | | | | x | | | | | | |
| 500678 | *Allocasuarina luehmannii* | Buloke | | Victoria | Critically Endangered | x | x | | | x | | x |
| 504204 | *Allocasuarina mackliniana subsp. xerophila* | Western Sheoak | | | | | | | | | | x |
| 500680 | *Allocasuarina muelleriana subsp. muelleriana* | Slaty Sheoak | | | | | | x | | | | x |
| 500684 | *Allocasuarina pusilla* | Dwarf Sheoak | | | | | | | | | | x |
| 500685 | *Allocasuarina verticillata* | Drooping Sheoak | | | | x | | | | | | |
| 503628 | *Amphibromus nervosus* | Common Swamp Wallaby-grass | | | | x | | | | | | |
| 508050 | *Anagallis arvensis* | Scarlet Pimpernel | Introduced | | | | | | x | | | |
| 528409 | *Anthosachne scabra s.s.* | Common Wheat-grass | Introduced | | | x | | | | | | |
| 500255 | *Arctotheca calendula* | Cape weed | Introduced | | | x | x | x | x | x | x | x |
| 501621 | *Argentipallium obtusifolium* | Blunt Everlasting | | | | | | | | | | x |
| 501037 | *Arthropodium fimbriatum* | Nodding Chocolate-lily | | | | x | x | x | | | | x |
| 500270 | *Arthropodium minus* | Small Vanilla-lily | | | | x | x | x | | | | |
| 505126 | *Arthropodium strictum* | Chocolate Lily | | | | x | x | x | | x | x | x |
| 500274 | *Asparagus asparagoides* | Bridal Creeper | Introduced | | | | | | | x | | |
| 500278 | *Asperula conferta* | Common Woodruff | | | | x | | | | | | x |
| 505640 | *Asperula wimmerana* | Wimmera Woodruff | | Victoria | Endangered | x | | | | | | |
| 500303 | *Astroloma conostephioides* | Flame Heath | | | | x | | x | | x | | |
| 500304 | *Astroloma humifusum* | Cranberry Heath | | | | x | | x | | x | | |
| 503273 | *Austrostipa elegantissima* | Feather Spear-grass | | | | x | x | | | | | x |
| 503279 | *Austrostipa mollis* | Supple Spear-grass | | | | x | x | x | x | x | x | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 503275 | *Austrostipa scabra ssp. falcata* | Rough Spear-grass | | | | x | x | x | | | x | x |
| 509099 | *Austrostipa sp.* | Spear-grass | | | | | x | | x | | x | x |
| 500340 | *Avena barbata* | Slender Wild Oat | Introduced | | | | | | | | x | |
| 500341 | *Avena fatua* | Wild Oat | Introduced | | | x | x | | | x | | |
| 500342 | *Avena sativa* | Oats | Introduced | | | | | | | | | x |
| 500351 | *Baeckea crassifolia* | Desert Heath-myrtle | | | | | | | | | | x |
| 500353 | *Baeckea ericaea* | Mat Heath-myrtle | | | | | | | | | | x |
| 500363 | *Banksia marginata* | Silver Banksia | | | | x | | x | | x | x | x |
| 500364 | *Banksia ornata* | Desert Banksia | | | | | | x | | x | | x |
| 500394 | *Beyeria lechenaultii* | Pale Turpentine-bush | | | | | | x | | | | |
| 500400 | *Billardiera cymosa s.l.* | Sweet Apple-berry | | | | | | | | x | | |
| 504774 | *Billardiera cymosa s.s.* | Sweet Apple-berry | | | | x | | | | x | | x |
| 500482 | *Brachyloma ciliatum* | Fringed Brachyloma | | | | | x | x | x | | x | |
| 500483 | *Brachyloma daphnoides* | Daphne Heath | | | | x | x | x | x | x | x | x |
| 500485 | *Brachyloma ericoides subsp. ericoides* | Brush Heath | | | | | | | | | | x |
| 500458 | *Brachyscome goniocarpa* | Dwarf Daisy | | | | x | | | | | | |
| 500495 | *Briza maxima* | Large Quaking-grass | Introduced | | | x | x | | | | | |
| 500496 | *Briza minor* | Lesser Quaking-grass | Introduced | | | x | x | | x | | | |
| 500500 | *Bromus diandrus* | Great Brome | Introduced | | | x | x | | x | | x | x |
| 500501 | *Bromus hordeaceus subsp. hordeaceus* | Soft Brome | Introduced | | | | | | | x | | |
| 508150 | *Bromus sp.* | Brome | Introduced | | | | | | | | x | |
| 500510 | *Bulbine bulbosa* | Bulbine Lily | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 500511 | *Bulbine semibarbata* | Leek Lily | | | | x | | | | | | |
| 500512 | *Burchardia umbellata* | Milkmaids | | | | x | x | | | x | | x |
| 505690 | *Bursaria spinosa* | Sweet Bursaria | | | | x | | | | | | x |
| 500519 | *Caesia calliantha* | Blue Grass-lily | | | | | | x | | | | |
| 504346 | *Caladenia capillata* | White Wispy Spider orchid | | | | | | | | | | x |
| 500526 | *Caladenia cardiochila* | Heart lipped Spider orchid | | | | | | | | | | x |
| 503680 | *Caladenia carnea* | Pink fingers | | | | x | x | | | | | x |
| 503729 | *Caladenia colorata* | Coloured Spider-orchid | | Victoria | Endangered | | | | | | | x |
| 500530 | *Caladenia cucullata* | Hood Orchid | | | | x | | | | | | x |
| 504345 | *Caladenia filamentosa* | Red Wispy Spider orchid | | | | | | | | | | x |
| 504448 | *Caladenia prolata* | Shy fingers | | | | | | | | | | x |
| 508171 | *Caladenia spp.* | Caladenia | | | | | | x | | | | |
| 503677 | *Caladenia tentaculata* | Large Green-comb | | | | | | | | | | x |
| 500555 | *Calandrinia granulifera* | Pigmy Purslane | | | | | | | | | | x |
| 500563 | *Callistemon rugulosus* | Scarlet Bottlebrush | | | | x | | | | | | x |
| 500576 | *Callitris glaucophylla* | Murray Pine | | | | | | | | | | x |
| 500578 | *Callitris gracilis* | Slender Cypress-pine | | | | x | | | | | | x |
| 500579 | *Callitris rhomboidea* | Oyster Bay Pine | | | | x | | | | x | x | x |
| 500580 | *Callitris verucosa* | Mallee Pine | | | | | | | | | | x |
| 500589 | *Calochilus robertsonii* | Purplish Beard-orchid | | | | | | | | | | x |
| 500607 | *Calytrix alpestris* | Snow-myrtle | | | | | | | | | | x |
| 500609 | *Calytrix tetragona* | Common Fringe-myrtle | | | | x | x | x | | x | x | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 505028 | *Cardamine lineariloba* | Western Bitter-cress | | Victoria | Endangered | | x | | | | | |
| 500642 | *Carex inversa* | Knob Sedge | | | | x | | | | | | |
| 504681 | *Cassytha glabella f. dispar* | Smooth Cassytha | | | | | | | | | | x |
| 500672 | *Cassytha melantha* | Devil's Twine | | | | | | | | | | x |
| 500674 | *Cassytha pubescens* | Devil's Twine | | | | | | | | | | x |
| 500689 | *Caustis pentandra* | Thick Twistsedge | | | | | | | | | | x |
| 500705 | *Centaurium tenuiflorum* | Slender Centaury | | | | | | x | | | | |
| 500711 | *Centrolepis aristata* | Pointed Centrolepis | | | | x | | | | | | x |
| 500714 | *Centrolepis glabra* | Smooth Centrolepis | | | | x | | | | | | |
| 500715 | *Centrolepis polygyna* | Wiry Centrolepis | | | | x | | | | | | x |
| 500716 | *Centrolepis strigosa subsp. strigosa* | Hairy Centrolepis | | | | x | x | x | x | x | x | x |
| 500726 | *Chamaescilla corymbosa var. corymbosa* | Blue Stars | | | | | | | x | | | x |
| 500759 | *Chondrilla juncea* | Skeleton Weed | Introduced | | | x | | | | | | x |
| 500765 | *Chorizandra enodis* | Black Bristle-sedge | | | | x | x | x | x | | | x |
| 501606 | *Chrysocephalum apiculatum* | Common Everlasting | | | | x | | | | | | x |
| 500795 | *Comesperma calymega* | Blue-spike Milkwort | | | | | | x | | | | x |
| 500798 | *Comesperma polygaloides* | Small Milkwort | | Victoria | Critically Endangered | | | | | | | x |
| 505885 | *Convolvulus angustissimus subsp. angustissimus* | Blushing Bindweed | | | | x | | | | | | |
| 505886 | *Convolvulus angustissimus subsp. filiolobus* | Plains Bindweed | | | | x | | | | | | |
| 504370 | *Correa reflexa var. reflexa* | Common Correa | | | | | x | | | | | |
| 505467 | *Correa reflexa var. scabridula* | Western Correa | | | | x | | x | | x | | x |
| 508504 | *Corunastylis sp.* | Midge orchid | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 502716 | *Corunastylis tepperi* | Mallee Midge orchid | | | | | | | | | | x |
| 500838 | *Corybas diemenicus* | Veined Helmet-orchid | | | | | | | | | | x |
| 500846 | *Cotula australis* | Common Cotula | | | | x | x | | | | | |
| 500864 | *Crassula closiana* | Stalked Crassula | | | | | | | | | | x |
| 500859 | *Crassula colorata* | Dense Crassula | | | | x | x | | | | | x |
| 500860 | *Crassula decumbens var. decumbens* | Spreading Crassula | | | | x | x | | | x | x | x |
| 504378 | *Crassula sieberiana* | Sieber's Crassula | | | | x | x | x | x | x | x | x |
| 508265 | *Crassula sp.* | Crassula | | | | | x | | x | | | x |
| 505634 | *Cryptandra tomentosa s.s.* | Prickly Cryptandra | | | | | | x | | | | |
| 500886 | *Cucumis myriocarpus subsp. leptodermis* | Paddy Melon | Introduced | | | x | | | | | | |
| 500421 | *Cyanothamnus coerulescens ssp. coerulescens* | Blue Boronia | | | | | | | | | | x |
| 504277 | *Cyanothamnus nanus var. nanus* | Dwarf Boronia | | | | | | | | | | x |
| 504074 | *Cycnogeton alcockiae* | Southern Water-ribbons | | | | x | | | | | | |
| 500907 | *Cynodon dactylon* | Couch | Introduced | | | x | | | | | | |
| 508291 | *Cyperus sp.* | Flat sedge | | | | | x | | | | | |
| 500112 | *Cyrtostylis reniformis* | Gnat orchid | | | | | | | | | | x |
| 504402 | *Dampiera dysantha* | Shrubby Dampiera | | | | | | | | | | x |
| 500989 | *Daucus glochidiatus* | Australian Carrot | | | | x | x | x | x | x | x | x |
| 500993 | *Daviesia brevifolia* | Leafless Bitter-pea | | | | | | | | | x | x |
| 903704 | *Daviesia devito* | Mallee Bitter-pea | | | | | | | | | | x |
| 500998 | *Daviesia pectinata* | Thorny Bitter-pea | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 504424 | *Daviesia ulicifolia subsp. ruscifolia* | Gorse Bitter-pea | | | | | | | | | | x |
| 505555 | *Dianella admixta* | Black-anther Flax-lily | | | | x | | x | | x | | |
| 501028 | *Dianella longifolia* | Pale Flax-lily | | | | | x | | | | x | x |
| 504413 | *Dianella revoluta var. revoluta* | Black Anther Flax-lily | | | | | x | | | | | x |
| 508327 | *Dianella sp.* | Flax Lily | | | | | | | | | x | |
| 501051 | *Dillwynia glaberrima* | Smooth Parrot-pea | | | | | | | x | | x | x |
| 501052 | *Dillwynia hispida* | Red Parrot-pea | | | | | | | | | | x |
| 501058 | *Dillwynia sericea* | Showy Parrot-pea | | | | x | | x | x | x | x | x |
| 501068 | *Dipodium punctatum s.l.* | Hyacinth Orchid | | | | x | | | | x | | |
| 505483 | *Disa bracteata* | South African Orchid | Introduced | | | | x | | x | x | x | |
| 501076 | *Distichlis distichophylla* | Australian Salt-grass | | | | x | x | | | x | x | |
| 508349 | *Diuris calcicola* | Mallee Donkey orchid | | | | | | | | | | x |
| 508349 | *Diuris leopardina* | Yellow Leopard orchid | | | | | | | | | | x |
| 501080 | *Diuris pardina* | Leopard orchid | | | | | | | | | | x |
| 501095 | *Dodonaea viscosa* | Sticky Hop-bush | | | | x | | | | | | |
| 501089 | *Dodonaea viscosa ssp. cuneata* | Wedge-leaf Hop-bush | | | | | | | | | | x |
| 501110 | *Drosera aberrans* | Scented Sundew | | | | | | | | | | x |
| 501104 | *Drosera glanduligera* | Pimpernel Sundew | | | | | x | | | | | x |
| 528663 | *Drosera hookeri* | Branched Sundew | | | | x | x | x | | x | | x |
| 501106 | *Drosera macrantha subsp. planchonii* | Climbing Sundew | | | | | x | | x | | | x |
| 501108 | *Drosera pygmaea* | Tiny Sundew | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 501127 | *Ehrharta calycina* | Perennial Veldt-grass | Introduced | | | x | x | x | x | x | x | x |
| 501128 | *Ehrharta erecta* | Panic Veldt-grass | Introduced | | | | | | | | x | |
| 501129 | *Ehrharta longifolia* | Annual Veldt-grass | Introduced | | | | x | | | | | |
| 501139 | *Eleocharis acuta* | Common Spike-sedge | | | | x | | | | | | |
| 501165 | *Epacris impressa* | Common Heath | | | | | | | | x | | x |
| 508400 | *Eremophila spp.* | Emu Bush | | | | | | x | | | | |
| 501230 | *Erodium botrys* | Big Heron's-bill | Introduced | | | | x | | x | | x | x |
| 501237 | *Eruca vesicaria subsp. sativa* | Purple-vein Rocket | | | | x | | | | | | |
| 501239 | *Eryngium ovinum* | Blue Devil | | | | x | x | | | | | |
| 503714 | *Eucalyptus arenacea* | Desert Stringybark | | | | x | x | x | x | x | x | x |
| 501251 | *Eucalyptus behriana* | Bull Mallee | | | | | | | | | | x |
| 505313 | *Eucalyptus camaldulensis var. camaldulensis* | River Red-gum | | | | x | | x | x | x | x | |
| 501289 | *Eucalyptus costata ssp. murrayana* | Ridge-fruited Mallee | | | | | | | | | | x |
| 501286 | *Eucalyptus goniocalyx* | Long-leaf box | | | | | | | | | | x |
| 501277 | *Eucalyptus leptophylla* | Narrow-leaved Red Mallee | | | | | | | | | | x |
| 501293 | *Eucalyptus leucoxylon ssp. pruinosa* | Yellow Gum | | | | | x | | | | x | x |
| 504456 | *Eucalyptus leucoxylon subsp. pruinosa* | Waxy Yellow-gum | | | | x | | x | | x | | |
| 501298 | *Eucalyptus microcarpa* | Grey Box | | | | x | x | | | | | |
| 508415 | *Eucalyptus spp.* | Eucalypt | | | | x | | | | | | |
| 504462 | *Eucalyptus viminalis ssp. cygnetensis* | Rough-bark Manna Gum | | | | | | x | | x | | x |
| 503749 | *Euchiton involucratus* | Common Cudweed | Introduced | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 501471 | *Euchiton sphaericus* | Star Cudweed | Introduced | | | | x | | | | | x |
| 501347 | *Eutaxia microphylla* | Common Eutaxia | | | | x | | | | | | |
| 504492 | *Eutaxia microphylla var. microphylla* | Common Eutaxia | | | | | | | | | | x |
| 501352 | *Exocarpos sparteus* | Broom Ballart | | | | | | x | | | | |
| 501356 | *Festuca arundinacea* | Giant Festuca | Introduced | | | | x | | | | | x |
| 501782 | *Ficinia nodosa* | Knobby Club-sedge | | | | | | | | x | | x |
| 501780 | *Ficinia marginata* | Little Club-sedge | | | | | | | x | | | |
| 501412 | *Galium murale* | Small Goosegrass | | | | | | | | | | x |
| 501426 | *Geranium dissectum* | Cut-leaf Crane's-bill | | | | x | | | | x | | |
| 501434 | *Geranium solanderi* | Native Geranium | | | | | x | | | | x | |
| 508474 | *Geranium spp.* | Crane's Bill | | | | | | | | x | x | |
| 501444 | *Glischrocaryon behrii* | Golden Pennants | | | | | | | | | | x |
| 501445 | *Glossodia major* | Wax-lip Orchid | | | | | x | | | | x | x |
| 501451 | *Glyceria australis* | Australian Sweet-grass | | | | x | | | | | | |
| 500773 | *Gnephosis drummondii* | Slender Cup-flower | | Victoria | Endangered | x | | | | | | x |
| 501484 | *Gonocarpus humilis* | Shade Raspwort | | | | x | | | | | | |
| 501489 | *Gonocarpus tetragynus* | Common Raspwort | | | | x | x | x | | x | x | x |
| 501497 | *Goodenia geniculata* | Bent Goodenia | | | | | x | x | | | x | x |
| 501499 | *Goodenia gracilis* | Slender Goodenia | | | | x | | | | | | x |
| 501503 | *Goodenia humilis* | Swamp Goodenia | | | | x | | | | | | x |
| | *Graminaea sp.* | Grass | | | | | x | | x | | | |
| 501538 | *Grevillea ilicifolia* | Holly-leaf Grevillea | | | | | | x | | | | x |
| 501567 | *Hakea mitchellii* | Desert Hakea | | | | x | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 501569 | *Hakea rostrata* | Beaked Hakea | | | | | | | | | | x |
| 501570 | *Hakea rugosa* | Dwarf Hakea | | | | | | | | | | x |
| 501579 | *Haloragis aspera* | Rough Raspwort | | | | x | x | | | | | x |
| 508938 | *Helichrysum (s.s.) spp.* | Cudweed | Introduced | | | x | | | | | | |
| 501619 | *Helichrysum leucopsideum* | Satin Everlasting | | | | | x | | | | | |
| 502762 | *Helichrysum luteoalbum* | Jersey Cudweed | Introduced | | | x | | | | | | |
| 504594 | *Hibbertia crinita* | Hoary Guinea-flower | | | | | x | | x | | x | x |
| 528752 | *Hibbertia devitata* | Guinea Flower | | | | | | | x | | | x |
| 501675 | *Hibbertia riparia* | Erect Guinea-flower | | | | x | x | x | | x | x | x |
| 505079 | *Hibbertia sericea* | Silky Guinea-flower | | | | x | x | x | | x | x | x |
| 501684 | *Hibbertia virgata* | Twiggy Guinea-flower | | | | x | x | | x | x | x | x |
| 501692 | *Holcus lanatus* | Common Velvet Grass | Introduced | | | | | | x | | | |
| 515429 | *Hordeum hystrix* | Mediteranean Barley | Introduced | | | x | | x | | | | |
| 508271 | *Hordeum sp.* | Barley | Introduced | | | | x | | | | x | x |
| 501718 | *Hydrocotyle callicarpa* | Tiny Pennywort | | | | | x | | | | | x |
| 501719 | *Hydrocotyle capillaris* | Slender Pennywort | | | | | | | | | | x |
| 501720 | *Hydrocotyle foveolata* | Yellow Pennywort | | | | x | | x | | | | |
| 501723 | *Hydrocotyle laxiflora* | Stinking Pennywort | | | | x | x | x | | | | x |
| 501741 | *Hypericum gramineum s.l.* | Small St John's Wort | | | | | | | | x | | |
| 501747 | *Hypochaeris glabra* | Smooth Cat's-ear | Introduced | | | x | x | x | x | x | x | x |
| 501748 | *Hypochaeris radicata* | Cat's-ear | Introduced | | | | x | | | | | x |
| 508554 | *Hypochaeris sp.* | Cat's Ear | Introduced | | | | | | x | | | |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 501749 | *Hypolaena fastigiata* | Tassel Rope-rush | | | | x | x | x | x | x | x | x |
| 500350 | *Hysterobaeckea behrii* | Broom Baeckea | | | | | | | | | | x |
| 505944 | *Isolepis cernua* | Nodding Club-rush | | | | | x | | | | | |
| 501773 | *Isolepis congrua* | Slender Club-sedge | | Victoria | Endangered | x | | | | | | |
| 501778 | *Isolepis hystrix* | Awned Club-sedge | | | | x | | | | | | |
| 500936 | *Isolepis levynsiana* | Tiny Flat-sedge | | | | x | x | | | x | | |
| 501780 | *Isolepis marginata* | Little Club-sedge | | | | x | | | | | | |
| 508581 | *Isolepis sp.* | Club Sedge | | | | | | | x | | | |
| 501790 | *Isopogon ceratophyllus* | Horny Cone-bush | | | | x | | x | x | x | x | x |
| 501806 | *Juncus articulatus subsp. articulatus* | Jointed Rush | | | | x | | | | | | |
| 501810 | *Juncus bufonius* | Toad Rush | Introduced | | | | | | | | x | |
| 501813 | *Juncus capitatus* | Capitate Rush | Introduced | | | x | x | | | | | |
| 501830 | *Juncus pallidus* | Pale Rush | | | | x | x | | x | x | | x |
| 501837 | *Juncus radula* | Hoary Rush | | | | x | x | | | x | | x |
| 501847 | *Kennedia prostrata* | Running Postman | | | | x | | x | | | x | x |
| 501858 | *Kunzea pomifera* | Muntries | | | | x | x | | | x | x | x |
| 504219 | *Lachnagrostis filiformis* | Common Blown-grass | | | | x | x | | | | | x |
| 501862 | *Lagenophora gunniana* | Coarse Bottle-daisy | | | | | | | | | | x |
| 501864 | *Lagurus ovatus* | Hare's-tail Grass | Introduced | | | | | x | x | | x | x |
| | *Latuca serriola* | Prickly Lettuce | Introduced | | | | x | | x | | | |
| 501870 | *Lasiopetalum baueri* | Slender Velvetbush | | | | | | | | | | x |
| 501890 | *Laxmannia orientalis* | Dwarf Wire-lily | | | | | | | | | | x |
| | *Leperella fimbriata* | Fringed-Hare orchid | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 501914 | *Lepidobolus drapetocoleus* | Scale Shedder | | | | | x | | | | x | x |
| 501916 | *Lepidosperma carphoides* | Black Rapier-sedge | | | | | | x | | | | x |
| 501918 | *Lepidosperma congestum* | Clustered Sword-sedge | | | | | x | | | | | |
| 501923 | *Lepidosperma laterale* | Variable Sword-sedge | | | | | | | | | | x |
| 508653 | *Lepidosperma sp.* | Sword-sedge | | | | | x | | | | x | x |
| 501931 | *Lepidosperma viscidum* | Sticky Sword-sedge | | | | | | x | x | | | x |
| 501936 | *Leporella fimbriata* | Hare Orchid | | | | | | | | | x | |
| 501956 | *Leptospermum continentale* | Prickly Teatree | | | | | | | | | | x |
| 501961 | *Leptospermum myrsinoides* | Heath Tea-tree | | | | x | | x | x | x | x | x |
| 501977 | *Leucopogon costatus* | Twiggy Beard-heath | | | | | | | | | | x |
| 501978 | *Leucopogon ericoides* | Pink Beard-heath | | | | | | | | x | x | |
| 501981 | *Leucopogon glacialis* | Twisted Beard-heath | | | | | | | | | | x |
| 501995 | *Leucopogon virgatus* | Common Beard-heath | | | | x | | x | | x | | |
| 504392 | *Leucopogon virgatus var. brevifolius* | Short-leaf Beard-heath | | | | | | | x | | | x |
| 504391 | *Leucopogon virgatus var. virgatus* | Common Beard-heath | | | | | | | | | | x |
| 501997 | *Levenhookia dubia* | Hairy Stylewort | | | | x | x | x | | | | x |
| 504703 | *Lobelia gibbosa* | Native Lobelia | | | | | | | | | | x |
| 502026 | *Lobelia pratioides* | Poison Lobelia | | | | x | | | | | | |
| 502030 | *Logania linifolia* | Flax-leaf Logania | | | | | | | | | | x |
| 502036 | *Lolium perenne* | Perennial Rye-grass | Introduced | | | | x | | | | | |
| 502037 | *Lolium rigidum* | Wimmera Rye-grass | Introduced | | | x | x | | x | x | x | |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 508683 | *Lolium spp.* | Rye Grass | Introduced | | | x | x | | | | x | |
| 503842 | *Lomandra collina* | Pale Mat-rush | | | | x | x | x | | x | | x |
| 502041 | *Lomandra effusa* | Scented Mat-rush | | | | | | | | | | x |
| 502044 | *Lomandra juncea* | Desert Mat-rush | | | | x | x | x | x | x | x | x |
| 503843 | *Lomandra micrantha* | Small Mat-rush | | | | x | x | | | | x | x |
| 502048 | *Lomandra multiflora subsp. multiflora* | Mat-rush | | | | | | | | | x | |
| 503843 | *Lomandra nana* | Dwarf Mat-rush | | | | x | x | x | x | x | x | |
| 502049 | *Lomandra sororia* | Sword Mat-rush | | | | | | | x | | x | |
| 508684 | *Lomandra sp.* | Mat-rush | | | | | | | | | x | |
| 500223 | *Lysimachia arvensis* | Pimpernel | Introduced | | | x | | | x | | | |
| 500373 | *Machaerina acuta* | Pale Twig-rush | | | | | | | | | | x |
| 502138 | *Medicago minima* | Woolly Burr Medic | | | | | | | | | | x |
| 502141 | *Medicago sativa* | Lucerne | Introduced | | | | | | x | | | x |
| 508722 | *Medicago sp.* | Burr | Introduced | | | | x | | | | x | |
| 502151 | *Melaleuca brevifolia* | Mallee Honey-myrtle | | | | | | | | | | x |
| 502146 | *Melaleuca decussata* | Totem-poles | | | | x | | | | | | |
| 502146 | *Melaleuca decussata* | Totem Poles | | | | | | | | | | x |
| 502148 | *Melaleuca gibbosa* | Slender Honey-myrtle | | | | | | | | | | x |
| 502149 | *Melaleuca halmaturorum* | Saltwater Paperbark | | | | | | | | | | x |
| 502150 | *Melaleuca lanceolata* | Moonah | | | | | | | | | | x |
| 502155 | *Melaleuca uncinata* | Broom Honey-myrtle | | | | | | | | | | x |
| 502156 | *Melaleuca wilsonii* | Violet Honey-myrtle | | | | x | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 502170 | *Mentha satureioides* | Creeping mint | | | | x | | | | | | |
| 502179 | *Microlaena stipoides var. stipoides* | Weeping Grass | | | | x | | x | x | | x | |
| 502181 | *Micromyrtus ciliata* | Heath-myrtle | | | | | | | | | | x |
| 503886 | *Microseris lanceolata* | Alpine Yam-daisy | | | | x | | x | | x | | |
| 502182 | *Microseris scapigera s.l.* | Yam Daisy | | | | x | | | | | | |
| 503887 | *Microseris walteri* | Murnong | | | | | x | | | | x | |
| 502258 | *Microtis arenaria* | Pale Onion orchid | | | | | | | | | | x |
| 508739 | *Microtis benthamiana* | Benthams Onion-orchid | | | | | | | | | | x |
| 508739 | *Microtis biloba* | Bilobed Onion-orchid | | | | | | | | | | x |
| 502187 | *Microtis parviflora* | Slender Onion-orchid | | | | | | | | | | x |
| 508739 | *Microtis sp.* | Onion Orchid | | | | x | x | x | | | | x |
| 502189 | *Microtis unifolia* | Common Onion-orchid | | | | | | | | | | x |
| 503409 | *Millotia muelleri* | Common Bow-flower | | | | | | | | | | x |
| 503410 | *Millotia perpusilla* | Tiny Bow-flower | | | | | | | | | | x |
| 502192 | *Millotia tenuifolia var. tenuifolia* | Soft Millotia | | | | | x | | | | | x |
| 502220 | *Monotoca scoparia* | Prickly Broom Heath | | | | | | | x | | x | x |
| 501695 | *Moraea flaccida* | One-leaf Cape-tulip | Introduced | | | x | | | | | | |
| 502233 | *Muellerina eucalyptoides* | Creeping Mistletoe | | | | | | | | x | | |
| 502270 | *Neurachne alopecuroidea* | Fox-tail Mulga-grass | | | | x | x | x | x | | x | x |
| 502292 | *Oenothera stricta ssp. stricta* | Common Evening-primrose | Introduced | | | | | | | | | x |
| 502302 | *Olearia ciliata* | Fringed Daisy-bush | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 502311 | *Olearia lepidophylla* | Club-moss Daisy-bush | | | | | | | | | | x |
| 503521 | *Ornduffia reniformis* | Running Marsh-flower | | | | x | | | | | | |
| 502386 | *Oxalis perennans* | Grassland Wood-sorrel | | | | x | x | x | x | x | | x |
| 508835 | *Oxalis spp.* | Wood Sorrel | | | | x | | | | | | |
| 502448 | *Pelargonium rodneyanum* | Magenta Stork's-bill | | | | x | x | x | | x | x | x |
| 502457 | *Pentameris airoides* | False Hairgrass | Introduced | | | | | | | | x | |
| 508877 | *Persicaria sp.* | Knotweed | Introduced | | | | x | | | | | |
| 502474 | *Petrorhagia dubia* | Hairy Pink | Introduced | | | | x | | | | | |
| 502476 | *Phalaris aquatica* | Toowoomba Canary-grass | Introduced | | | x | | | | x | x | x |
| 501225 | *Philotheca pungens* | Prickly Waxflower | | | | | | | | | | x |
| 502209 | *Phyllangium divergens* | Wiry Mitrewort | | | | | | | | | | x |
| 502504 | *Phyllota pleurandroides* | Heathy Phyllota | | | | | | | | | | x |
| 502522 | *Pimelea hewardiana* | Forked Rice-flower | | Victoria | Endangered | x | | | | | | |
| 502523 | *Pimelea humilis* | Common Rice-flower | | | | x | x | x | x | x | | |
| 502527 | *Pimelea octophylla* | Woolly Rice-flower | | | | | | | | | | x |
| 502529 | *Pimelea phylicoides* | Heath Rice-flower | | | | | | | | | | x |
| 502533 | *Pimelea stricta* | Gaunt Rice-flower | | | | | | | | | | x |
| 502539 | *Pinus radiata* | Monterey Pine | Introduced | | | | | | | | | x |
| 502541 | *Pittosporum angustifolium* | Guwiirra | | | | | | | | | | x |
| 502552 | *Plantago bellardii* | Silky Plantain | | | | x | x | x | x | x | x | |
| 502558 | *Plantago gaudichaudii* | Narrow Plantain | | | | x | | | | | | |
| 502620 | *Podotheca angustifolia* | Sticky Long-heads | | | | x | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 502626 | *Polygonum aviculare* | Knotgrass | Introduced | | | | x | | | | | |
| 507704 | *Poranthera microphylla* | Small Poranthera | | | | x | | x | x | x | | x |
| 505274 | *Potamogeton cheesemanii* | Red Pondweed | | | | x | | | | | | |
| 502717 | *Prasophyllum odoratum* | Fragrant Leek-orchid | | | | | | | | | | x |
| 502737 | *Prostanthera aspalathoides* | Scarlet Mint-bush | | | | | | | | | | x |
| 502777 | *Pteridium esculentum* | Austral Bracken | | | | | x | | | x | x | |
| 528691 | *Pterostylis ferruginea* | Bangham Rustyhood | | Victoria | Endangered | | | | | | | x |
| 502805 | *Pterostylis nana* | Dwarf Greenhood | | | | | | | | | | x |
| 502810 | *Pterostylis pedunculata* | Maroonhood | | | | | | x | | | | x |
| 502811 | *Pterostylis plumosa* | Bearded Greenhood | | | | | | | | | | x |
| 503934 | *Pterostylis sanguinea* | Blood greenhood | | | | | | | | | | x |
| 503915 | *Pterostylis smaragdyna* | Emerald-lipped Greenhood | | | | | | | | | | x |
| 502856 | *Pultenaea laxiflora* | Loose-flower Bush-pea | | | | | | x | | | | |
| 502869 | *Pultenaea prostrata* | Silky Bush-pea | | | | x | x | | | x | | x |
| 500852 | *Pycnosorus chrysanthes* | Golden Billy-buttons | | | | x | | | | | | |
| 502086 | *Pyrorchis nigricans* | Red-beaks | | | | | x | | x | x | x | x |
| 501641 | *Rhodanthe corymbiflora* | Paper Sunray | | | | x | | | | | | |
| 502942 | *Romulea rosea* | Onion Grass | Introduced | | | | x | | x | x | x | x |
| 502968 | *Rumex brownii* | Slender Dock | | | | x | | | | x | | |
| 502970 | *Rumex crispus* | Curled Dock | Introduced | | | | | | | x | | x |
| 502972 | *Rumex dumosus* | Wiry Dock | | | | | | | | x | | |
| 500961 | *Rytidosperma caespitosum* | Common Wallaby-grass | | | | | | | | x | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 500963 | *Rytidosperma duttonianum* | Brown-back Wallaby-grass | | | | x | x | | | | | x |
| 500965 | *Rytidosperma geniculatum* | Kneed Wallaby-grass | | | | x | x | x | x | x | x | x |
| 500977 | *Rytidosperma racemosum var. racemosum* | Clustered Wallaby-grass | | | | | | | | | | x |
| 500980 | *Rytidosperma setaceum* | Bristly Wallaby-grass | | | | x | x | x | | x | x | x |
| 508313 | *Rytidosperma sp.* | Wallaby Grass | | | | | x | | x | | x | x |
| 503039 | *Schoenus apogon* | Common Bog-sedge | | | | x | x | | x | | x | x |
| 503040 | *Schoenus breviculmis* | Matted Bog-rush | | | | | x | | | | | x |
| 509042 | *Schoenus sp.* | Bog-rush | | | | | x | | | | | x |
| 507173 | *Senecio hispidissimus* | Sand Fireweed | | Victoria | Endangered | | | | | | | x |
| 504961 | *Senecio picridioides* | Hawkbit Fireweed | | | | x | x | x | | x | | x |
| 503124 | *Senecio quadridentatus* | Cotton Fireweed | | | | x | x | | | x | x | x |
| 503128 | *Senecio squarrosus* | Leafy Fireweed | | | | | | | | | | x |
| 503129 | *Senecio tenuiflorus* | Fireweed | | | | | | | | | x | |
| 503195 | *Solenogyne dominii* | Smooth Solenogyne | | | | x | x | | | | | |
| 503196 | *Solenogyne gunnii* | Hairy Solenogyne | | | | x | | | | | | |
| 504923 | *Sonchus asper subsp. asper* | Rough Sow-thistle | Introduced | | | x | | | | x | | |
| 503204 | *Sonchus oleraceus* | Sow Thistle | Introduced | | | | | | | | | x |
| 504725 | *Sphaerolobium minus* | Globe Pea | | | | | | | | | | x |
| 503234 | *Spyridium eriocephalum var. eriocephalum* | Heath Spyridium | | | | | | | | | | x |
| 503237 | *Spyridium subochreatum* | Velvet spyridium | | | | | | | | | | x |
| 503241 | *Stackhousia aspericocca* | Rough-nut Stackhousia | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 504964 | *Stackhousia aspericocca subsp. One-sided inflorescence (W.R.Barker 697)* | Rough-nut Stackhousia | | | | | | | | | | x |
| 503244 | *Stackhousia monogyna s.l.* | Creamy Stackhousia | | | | | | x | | | | |
| 500303 | *Stenanthera conostephioides* | Flame Heath | | | | | x | | x | | x | x |
| 503301 | *Stylidium beaugleholei* | Beauglehole's Triggerplant | | | | | | | | | | x |
| 503998 | *Stylidium despectum* | Small Triggerplant | | | | | | x | | | | |
| 504970 | *Stylidium ecorne* | Foot Triggerplant | | | | x | | | | | | |
| 503303 | *Stylidium graminifolium* | Grass Triggerplant | | | | | | | | | | x |
| 509101 | *Stylidium inundatum* | Hundreds And Thousands | | | | | | | | | | x |
| 503306 | *Stylidium perpusillum* | Slender Triggerplant | | | | x | | | | | | |
| 501974 | *Styphelia clelandii* | Cleland's Beard-heath | | | | | | | | | | x |
| 501978 | *Styphelia ericoides* | Pink Beard-heath | | | | | | | | | | x |
| 500304 | *Styphelia humifusa* | Cranberry Heath | | | | | x | | x | | | x |
| 501991 | *Styphelia rufa* | Spoon-leaf Beard-heath | | | | | | | | | | x |
| 503325 | *Swainsona procumbens* | Broughton Pea | | | | x | | | | | x | |
| 503351 | *Tetratheca ciliata* | Pink-bells | | | | | | x | | | | |
| 503351 | *Tetratheca ciliata* | Northern Pinkbells | | | | | | | | | | x |
| 507206 | *Thelymitra aff. alcockiae* | Mallee Sun-orchid | | | | | | | | | | x |
| 509134 | *Thelymitra albiflora* | Small White Sun-orchid | | | | | | | | | | x |
| 507206 | *Thelymitra alcockiae* | Alcocks Sun-orchid | | | | | | | | | | x |
| 503361 | *Thelymitra antennifera* | Rabbit-ears | | | | | | | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 505355 | *Thelymitra arenaria* | Forest Sun-orchid | | | | | | | | | | x |
| 509134 | *Thelymitra crenulata* | Crinkled Sun-orchid | | | | | | | | | | x |
| 503372 | *Thelymitra ixioides* | Dotted Sun-orchid | | | | | | | | | | x |
| 509134 | *Thelymitra latifolia* | Broad Leaf Sun-orchid | | | | | | | | | | x |
| 504017 | *Thelymitra megcalyptra* | Plains Sun-orchid | | | | | | | | | | x |
| 503382 | *Thelymitra pauciflora* | Slender Sun-orchid | | | | | | | | | | x |
| 503384 | *Thelymitra rubra* | Salmon Pink Sun-orchid | | | | | | | | | | x |
| 509134 | *Thelymitra spp.* | Sun Orchid | | | | x | x | x | | | | |
| | *Thinopyrum ponticum* | Tall Wheat-grass | Introduced | | | | | | x | | | x |
| 503392 | *Thomasia petalocalyx* | Paper Flower | | Victoria | Endangered | x | | | | | | |
| 503399 | *Thysanotus patersonii* | Twining Fringe-lily | | | | | x | | | | | x |
| 503421 | *Tricoryne elatior* | Yellow Rush Lily | | | | | | | | | | x |
| 503423 | *Trifolium angustifolium var. angustifolium* | Narrow-leaf Clover | Introduced | | | x | x | | | x | | x |
| 503424 | *Trifolium arvense var. arvense* | Hare's-foot Clover | Introduced | | | x | x | | x | x | x | x |
| 503425 | *Trifolium campestre var. campestre* | Hop Clover | Introduced | | | | x | | | x | | x |
| 503428 | *Trifolium fragiferum var. fragiferum* | Strawberry Clover | Introduced | | | x | x | | | x | x | |
| 503429 | *Trifolium glomeratum* | Clustered Clover | Introduced | | | | x | | | | x | x |
| 503435 | *Trifolium repens var. repens* | White Clover | Introduced | | | | | | | | x | x |
| 509161 | *Trifolium sp.* | Clover | Introduced | | | | x | | x | | x | x |
| 503439 | *Trifolium striatum* | Knotted Clover | Introduced | | | | | | | | | x |
| 503440 | *Trifolium subterraneum* | Subterranean Clover | Introduced | | | x | x | | x | x | x | x |
| 503444 | *Triglochin nana* | Dwarf Arrowgrass | | | | x | | x | | | | x |

| Taxon_ ID | Scientific Name | Common Name | Origin | Extinction Risk | Category of Threat | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| 503460 | *Triticum aestivum* | Common Wheat | Introduced | | | | x | | | | | |
| 501640 | *Triptilodiscus pygmaeus* | Common Sunray | | | | x | | | | | | |
| 503537 | *Vittadinia cuneata* | Fuzzy New Holland Daisy | | | | | x | x | | | | |
| 505065 | *Vittadinia cuneata var. cuneata* | Fuzzy New Holland Daisy | | | | x | | | | | | x |
| 503539 | *Vittadinia gracilis* | Woolly New-holland-daisy | | | | | | | | | | x |
| 503549 | *Vulpia myuros* | Rat's-tail Fescue | | | | x | | x | | x | | |
| 509223 | *Vulpia sp.* | Fescue | Introduced | | | | x | | x | | x | x |
| 504124 | *Wahlenbergia gracilenta* | Hairy Annual-bluebell | | | | x | x | x | x | x | x | x |
| 503558 | *Wahlenbergia gracilis* | Sprawling Bluebell | | | | x | x | | x | x | x | x |
| 503559 | *Wahlenbergia stricta ssp. stricta* | Tall Bluebell | | | | x | x | x | x | x | x | x |
| 504082 | *Wurmbea dioica subsp. dioica* | Common Early Nancy | | | | x | | | | | | |
| 504082 | *Wurmbea dioica subsp. dioica* | Early Nancy | | | | | | | | | | x |
| 503582 | *Wurmbea latifolia subsp. vanessae* | Broad-leaf Early Nancy | | | | x | | | | | | |
| 503587 | *Xanthorrhoea australis* | Austral Grass Tree | | | | | | | | | | x |
| 505088 | *Xanthorrhoea caespitosa* | Tufted Grass-tree | | Victoria | Vulnerable | x | | x | | x | x | x |
| 501619 | *Xerochrysum leucopsideum* | Satin Everlasting | | | | | | | | x | | |
| 503607 | *Zieria veronicea subsp. veronicea* | Pink Zieria | | Victoria | Endangered | | | | | | | x |

## APPENDIX G 'Fauna Species List'

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Botaurus poiciloptilus* | Australasian Bittern | Victoria | Critically Endangered | Bird | | | | | | | |
| *Ogyris amaryllis* | Amaryllis Azure | | | Invertebrate | x | | | | | | |
| *Phrissogonus laticostata* | Apple Looper | | | Invertebrate | x | | | | | | |
| *Trachylestes turneri* | Assassin Bug | | | Invertebrate | | | | | | | x |
| *Tachybaptus novaehollandiae* | Australasian Grebe | | | Bird | x | x | | | | | |
| *Anthus novaeseelandiae* | Australasian Pipit | | | Bird | x | x | | | x | x | x |
| *Musca vetustissima* | Australian Bush Fly | | | Invertebrate | | x | | x | | x | x |
| *Hemianax papuensis* | Australian Emperor (dragonfly) | | | Invertebrate | x | x | x | x | x | x | x |
| *Falco longipennis* | Australian Hobby | | | Bird | | x | | | | | |
| *Gymnorhina tibicen* | Australian Magpie | | | Bird | x | x | x | x | x | x | x |
| *Aegotheles cristatus* | Australian Owlet-nightjar | | | Bird | x | | | | | | |
| *Vanessa kershawi* | Australian Painted Lady (butterfly) | | | Invertebrate | x | x | x | x | x | | x |
| *Chortoicetes terminifera* | Australian Plague Locust | | | Invertebrate | | | | x | | | x |
| *Corvus coronoides* | Australian Raven | | | Bird | x | x | x | | x | | |
| *Barnardius zonarius* | Australian Ringneck | | | Bird | | | | | | x | x |
| *Lucilia cuprina* | Australian Sheep Blowfly | | | Invertebrate | | x | | x | | x | x |
| *Tadorna tadornoides* | Australian Shelduck | | | Bird | x | | | | x | | |
| *Chenonetta jubata* | Australian Wood Duck | | | Bird | x | x | | | | x | |
| *Camponotus consobrinus* | Banded Sugar Ant | | | Invertebrate | | x | | x | | | |
| *Pogona barbata* | Bearded Dragon | Victoria | Vulnerable | Reptile | | | | | x | | x |
| *Comptosia vittata* | Bee Fly | | | Invertebrate | | | | | | | x |
| *Urabunana festiva* | Bee Grass Ticker | | | Invertebrate | x | | | | | | |
| *Labium brevicorne* | Bee Parasitizing Wasp | | | Invertebrate | | | | x | | | |
| *Colepia sp.* | Bent-winged Robber Fly | | | Invertebrate | | | x | | | | |
| *Anthobosca spp* | Black Flower Wasp | | | Invertebrate | | | | x | | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Szepligetiella spp* | Black Hatchet Wasp | | | Invertebrate | | x | | | | x | x |
| *Myrmecia pilosula* | Black Jumper a.k.a. Jack Jumper (ant) | | | Invertebrate | | | | x | | x | |
| *Ommatoiulus moreletii* | Black Portuguese Millipede | | | Invertebrate | | | | x | | | |
| *Cygnus atratus* | Black Swan | | | Bird | | | | | | x | |
| *Wallabia bicolor* | Black Wallaby | | | Mammal | x | | x | | x | | |
| *Melithreptus gularis* | Black-chinned Honeyeater | | | Bird | x | x | | | x | x | |
| *Chalcites osculans* | Black-eared Cuckoo | | | Bird | | | | | | | x |
| *Coracina novaehollandiae* | Black-faced Cuckoo-shrike | | | Bird | x | x | x | | x | x | |
| *Myrmecia nigriceps* | Black-headed Bull Ant | | | Invertebrate | | x | | | | | x |
| *Myrmecia nigriscapa* | Black-scaped Bull Ant | | | Invertebrate | | x | | | | x | |
| *Cryptops spp* | Blind Scolopendrid Centipede | | | Invertebrate | | | | | | x | |
| *Erina acasta* | Blotched Dusky-blue (butterfly) | | | Invertebrate | | | | | | | x |
| *Monopis meliorelli* | Blotched Monopis Moth | | | Invertebrate | x | | | | | | |
| *Diamma bicolor* | Blue Ant a.k.a. Blue Bottle (wasp) | | | Invertebrate | | x | | | | | |
| *Amegilla cingulata* | Blue Banded Bee | | | Invertebrate | x | | | | | | x |
| *Austroscolia soror* | Blue Hairy Flower Wasp | | | Invertebrate | | x | | x | | x | |
| *Austrolestes annulosus* | Blue Ringtail (damselfly) | | | Invertebrate | | | | | | | x |
| *Orthetrum caledonicum* | Blue Skimmer (dragonfly) | | | Invertebrate | x | | x | | x | | |
| *Calliphora augur* | Blue-bodied Blowfly | | | Invertebrate | | x | | x | | x | x |
| *Adversaeschna brevistyla* | Blue-spotted Hawker (dragonfly) | | | Invertebrate | | x | | | | | x |
| *Neophema chrysostoma* | Blue-winged Parrot | | | Bird | x | x | | x | x | x | x |
| *Agrotis infusa* | Bogong Moth | | | Invertebrate | x | | | | | | |
| *Lerista bougainvillii* | Bougainvilles Skink | | | Reptile | | | | x | x | | x |
| *Morethia boulengeri* | Boulengers Snake-eyed Skink | | | Reptile | | x | | | | | |
| *Braconid Sp.* | Braconid Fly | | | Invertebrate | x | | | | | | |
| *Calliphora stygia* | Brown Blowfly | | | Invertebrate | | | | x | | x | x |
| *Falco berigora* | Brown Falcon | | | Bird | | | | | x | x | x |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Accipiter fasciatus* | Brown Goshawk | | | Bird | x | | | x | | | |
| *Culex quinquefasciatus* | Brown House Mosquito a.k.a. Southern House Mosquito | | | Invertebrate | | x | | | | x | x |
| *Cincloramphus cruralis* | Brown Songlark | | | Bird | | | | | x | | |
| *Acanthiza pusilla* | Brown Thornbill | | | Bird | x | x | x | x | x | x | x |
| *Climacteris picumnus* | Brown Treecreeper | | | Bird | | x | | | | | |
| *Climacteris picumnus victoriae* | Brown Treecreeper (south-eastern ssp.) | | | Bird | x | | | | x | | |
| *Melithreptus brevirostris* | Brown-headed Honeyeater | | | Bird | x | x | x | x | x | x | x |
| *Acanthiza reguloides* | Buff-rumped Thornbill | | | Bird | x | x | x | x | x | x | x |
| *Pieris rapae* | Cabbage White (butterfly) | | | Invertebrate | x | x | x | x | x | x | x |
| *Belenois java teutonia* | Caper White (butterfly) | | | Invertebrate | x | | x | | x | x | x |
| *Cryptoblepharus pannosus* | Carnaby's Wall Skink | | | Reptile | x | | | | | | |
| *Liparetrus spp* | Chafer Beetle | | | Invertebrate | | | | | | x | |
| *Anthrax spp* | Charcoal Bee Fly | | | Invertebrate | | x | | | | | |
| *Phlogistus spp* | Checkered Beetle | | | Invertebrate | | x | | | | | x |
| *Calamanthus pyrrhopygius* | Chestnut-rumped Heathwren | | | Bird | | | | | | x | |
| *Acanthiza uropygialis* | Chestnut-rumped Thornbill | | | Bird | x | x | | | | | |
| *Leioproctus clarki* | Clark's Leioproctus (bee) a.k.a. Copper Metallic Bee | | | Invertebrate | | | | | | x | |
| *Anestia ombrophanos* | Clouded Footman | | | Invertebrate | x | | | | | | |
| *Pollenia spp* | Cluster Fly | | | Invertebrate | | | | | | | x |
| *Accipiter cirrocephalus* | Collared Sparrowhawk | | | Bird | | | x | | | x | x |
| *Clania ignobilis* | Common (or Faggot) Case Moth | | | Invertebrate | | | | | | | x |
| *Turdus merula* | Common Blackbird | | | Bird | | x | x | x | | x | |
| *Tiliqua scincoides* | Common Blue-tongued Lizard | | | Reptile | | | x | | x | | |
| *Phaps chalcoptera* | Common Bronzewing | | | Bird | x | x | x | x | x | x | x |
| *Heteronympha merope merope* | Common Brown (butterfly) | | | Invertebrate | x | x | x | x | x | x | x |
| *Trichosurus vulpecula* | Common Brushtail Possum | | | Mammal | x | | | | | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Phalaenoides glycinae* | Common Day Moth/Vine Moth | | | Invertebrate | | | | | x | | |
| *Menetia greyii* | Common Dwarf Skink | | | Reptile | | x | | x | | | x |
| *Crinia signifera* | Common Froglet | | | Amphibian | x | | | | x | | |
| *Zizina otis labradus* | Common Grass-blue (butterfly) | | | Invertebrate | x | x | x | | x | x | x |
| *Melangyna viridiceps* | Common Hoverfly a.k.a. Half-band Hoverfly | | | Invertebrate | x | x | | x | | x | x |
| *Metriorrhynchus rhipidius* | Common Net-winged Beetle | | | Invertebrate | x | x | x | x | x | x | x |
| *Pygopus lepidopodus* | Common Scaly-foot | | | Reptile | | | | | | | x |
| *Sturnus vulgaris* | Common Starling | | | Bird | x | x | | | x | x | x |
| *Nasutitermes spp* | Conehead Termite | | | Invertebrate | | | | x | | | x |
| *Cyprotides cyprotus cyprotus* | Copper Pencilled-blue (butterfly) | | | Invertebrate | | | | | | | x |
| *Hippotion scofra* | Coprosma Hawk Moth | | | Invertebrate | x | | | | | | |
| *Helicoverpa armigera* | Corn Earworm (moth) | | | Invertebrate | x | | | | | | |
| *Cicadetta spinosa* | Creaking Branch (cicada) | | | Invertebrate | x | | | | x | | |
| *Ocyphaps lophotes* | Crested Pigeon | | | Bird | x | x | x | | x | | x |
| *Falcunculus frontatus* | Crested Shrike-tit | | | Bird | x | | | | | | |
| *Platycercus elegans* | Crimson Rosella | | | Bird | x | x | x | x | x | x | x |
| *Utethesia lotrix* | Crotalaria Moth | | | Invertebrate | | | x | | | | |
| | Crow & Raven spp | | | Bird | | x | | | | | |
| *Ischnura aurora aurora* | damselfly | | | Invertebrate | x | | | | x | | |
| *Adelium spp* | Darkling Beetle | | | Invertebrate | | | | x | | | |
| *Lampropholis delicata* | Delicate Skink | | | Reptile | | | | | | | x |
| *Stagonopleura guttata* | Diamond Firetail | Victoria | Vulnerable | Bird | x | x | x | | x | x | |
| *Eristalis tenax* | Drone Fly | | | Invertebrate | | x | | x | | | |
| *Dichromodes anelictis* | Dry Country Heath Moth | | | Invertebrate | x | | | | | | |
| *Artamus cyanopterus* | Dusky Woodswallow | | | Bird | x | x | | | x | x | x |
| *Limnodynastes dumerilii* | Eastern Banjo Frog | | | Amphibian | | x | | x | | x | x |
| *Pseudonaja textilis* | Eastern Brown Snake | | | Reptile | | | | | x | | x |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Crinia signifera* | Eastern Common Froglet | | | Amphibian | | | | | | x | |
| *Ctenotus orientalis* | Eastern Ctenotus | | | Reptile | | | | | | | x |
| *Macropus giganteus* | Eastern Grey Kangaroo | | | Mammal | x | x | | | | | |
| *Platycercus eximius* | Eastern Rosella | | | Bird | x | x | x | x | x | x | x |
| *Chelodina longicollis* | Eastern Snake-necked Turtle | | | Reptile | x | | | | | | |
| *Acanthorhynchus tenuirostris* | Eastern Spinebill | | | Bird | | | | | | x | |
| *Ctenotus robustus* | Eastern Striped Skink | | | Reptile | | x | | | | | |
| *Eopsaltria australis* | Eastern Yellow Robin | | | Bird | x | x | x | x | x | x | |
| *Hemicordulia tau* | Emerald Tau Dragonfly | | | Invertebrate | x | | x | | x | | |
| *Dromaius novaehollandiae* | Emu | | | Bird | x | | x | x | x | x | |
| *Fulica atra* | Eurasian Coot | | | Bird | x | | | | | | |
| *Carduelis carduelis* | European Goldfinch | | | Bird | x | | x | x | x | | x |
| *Lepus europaeus* | European Hare | | | Mammal | x | | | | | x | |
| *Apis mellifera* | European Honey Bee | | | Invertebrate | x | x | x | x | | x | x |
| *Oryctolagus cuniculus* | European Rabbit | | | Mammal | x | | x | x | x | | |
| *Goniaeoidea spp* | False Gumleaf Grasshopper (locust) | | | Invertebrate | | | | | | | x |
| *Cacomantis flabelliformis* | Fan-tailed Cuckoo | | | Bird | x | | | x | | x | x |
| *Termessa gratiosa* | Favoured Footman | | | Invertebrate | x | | | | | | |
| *Hypochrysops ignitus ignitus* | Fiery Jewel (butterfly) | Victoria | Endangered | Invertebrate | x | x | | | x | | x |
| *Sarcophaga spp* | Flesh Fly | | | Invertebrate | | | | x | | | |
| *Coleoptera* | Flower Beetle | | | Invertebrate | | | | | x | | |
| *Agriomyia?/Lophocheilas? Species not determined* | Flower Wasp | | | Invertebrate | | | | | | | x |
| *Apiocera spp* | Flower-loving Fly | | | Invertebrate | | | | | | | x |
| *Corvus tasmanicus* | Forest Raven | | | Bird | | | | | x | x | |
| *Pollanisus apicalis* | Forester Moth | | | Invertebrate | | | | | x | | |
| *Ptilotula fusca* | Fuscous Honeyeater | | | Bird | | x | | | | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Eolophus roseicapilla* | Galah | | | Bird | x | x | x | x | x | x | x |
| *Eriphora transmarina* | Garden Orb-weaving Spider | | | Invertebrate | | | x | | | | x |
| *Scopula Sp. 3* | Geometrid Moth | | | Invertebrate | x | | | | | | |
| *Hepialidae* | Ghost Moth | | | Invertebrate | | | x | | | | |
| *Pachycephala inornata* | Gilbert's Whistler | | | Bird | | | | | x | | x |
| *Microtropesa sinuata* | Golden Tachinid Fly | | | Invertebrate | | | | | | | x |
| *Pachycephala pectoralis* | Golden Whistler | | | Bird | x | x | x | x | x | x | x |
| *Myrmecia queenslandicus* | Golden-rumped Ant | | | Invertebrate | x | | | | | | |
| *Orthoptera* | Grasshopper | | | Invertebrate | x | | | | | | |
| *Rhytidoponera metallica* | Green Headed Ant | | | Invertebrate | | x | | x | | x | |
| *Odontomyia decipiens* | Green Soldier Fly | | | Invertebrate | | x | | | | x | |
| *Lipotriches (Austranomia) australica* | Green-and-gold Nomia Bee | | | Invertebrate | | | | | | | x |
| *Hypycnopa delotis* | Grey Carpet | | | Invertebrate | x | | | | | | |
| *Strepera versicolor* | Grey Currawong | | | Bird | x | x | x | | x | x | x |
| *Rhipidura fuliginosa* | Grey Fantail | | | Bird | x | x | x | x | x | x | x |
| *Sarcophaga aurifrons* | Grey Flesh Fly a.k.a. Grey Striped Fly | | | Invertebrate | | | | x | | | x |
| *Accipiter novaehollandiae* | Grey Goshawk | Victoria | Endangered | Bird | | | | | | | x |
| *Dasybasis spp* | Grey March Fly | | | Invertebrate | | | x | | | | x |
| *Rutilia inusta complex* | Grey Rutilia Fly | | | Invertebrate | | | | | | | x |
| *Colluricincla harmonica* | Grey Shrike-thrush | | | Bird | x | x | x | x | x | x | x |
| *Anas gracilis* | Grey Teal | | | Bird | x | x | | | | | |
| *Litoria raniformis* | Growling Grass Frog | Victoria | Vulnerable | Amphibian | x | | | | | | |
| *Goniaea australasiae* | Gumleaf Grasshopper (locust) | | | Invertebrate | | | | x | | | x |
| *Campsomeris sp.* | Hairy Flower Wasp | | | Invertebrate | x | | | | | | |
| *Padumeris radula* | Hairy Flower Wasp | | | Invertebrate | x | | | | | | |
| *Aythya australis* | Hardhead | Victoria | Vulnerable | Bird | x | | | | x | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Szepligetella spp* | Hatchet Wasp | | | Invertebrate | | x | | | | | x |
| *Pauropsalta sp.* | Heathland Buzzer (Cicada) | | | Invertebrate | x | | | | x | | |
| *Helina evecta* | Helina Fly | | | Invertebrate | | | | x | | | |
| *Utetheisa pulchelloides* | Heliotrope Moth | | | Invertebrate | | | | | | | x |
| *Neoaratus hercules* | Hercules Robber Fly | | | Invertebrate | | x | | x | | | |
| *Pericepta polysticta* | Hibbertia Moth | | | Invertebrate | x | | | | x | | |
| *Calliphora hilli* | Hill's Brown Blowfly | | | Invertebrate | | | | x | | x | |
| *Melanodryas cucullata* | Hooded Robin | Victoria | Vulnerable | Bird | x | x | | | x | x | x |
| *Anachloris uncinata* | Hook-winged Carpet | | | Invertebrate | | | x | | | | |
| *Chalcites basalis* | Horsfield's Bronze-Cuckoo | | | Bird | x | x | x | x | x | x | |
| *Mus musculus* | House Mouse | | | Mammal | | x | | x | | x | x |
| *Daspodia selenophora* | Household Moth | | | Invertebrate | x | | | | | | |
| *Syphidae* | Hoverfly | | | Invertebrate | x | | | | | | |
| *Austrolestes aridus* | Inland Ringtail | | | Invertebrate | x | | | | | | |
| *Iridomyrmex spp* | Iridomyrmex Ant | | | Invertebrate | | | | | | x | x |
| *Amphibolurus muricatus* | Jacky Lizard | | | Reptile | | | | | | | x |
| *Microeca fascinans* | Jacky Winter | | | Bird | x | x | x | x | x | x | |
| *Castiarina crenata* | Jewel Beetle | | | Invertebrate | x | x | | x | x | x | x |
| *Castiarina decemaculata* | Jewel Beetle | | | Invertebrate | x | | | | | | |
| *Castiarina malleeana* | Jewel Beetle | | | Invertebrate | x | | | | x | | |
| *Castiarina octomaculata* | Jewel Beetle | | | Invertebrate | x | | | | x | | |
| *Castiarina pallidiventris* | Jewel Beetle | | | Invertebrate | x | | | | x | | |
| *Castiarina adelaidae* | Jewel Beetle | | | Invertebrate | | | | | x | | |
| *Castiarina marginata* | Jewel Beetle | | | Invertebrate | | | | | x | | |
| *Castiarina media* | Jewel Beetle | | | Invertebrate | | | | | x | | |
| *Castiarina parallela* | Jewel Beetle | | | Invertebrate | | | | | x | | |
| *Castiarina vegeta* | Jewel Beetle | | | Invertebrate | | | | | x | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Myrmecia pilosula* | Jumping Jack (ant) | | | Invertebrate | | | | | x | | |
| *Servaea spp* | Jumping Spider | | | Invertebrate | | x | | | | | |
| *Aeshna brevistyla* | Lacer Dragonfly | | | Invertebrate | x | | | | | | |
| *Hesperilla trimaculata trimaculata* | Large Brown Skipper (butterfly) | | | Invertebrate | | | | | | | x |
| *Rutilia vivipara* | Large Brown Tachinid | | | Invertebrate | | | | | x | | |
| *Ctenotus robustus* | Large Striped Skink | | | Reptile | x | | | | | | |
| *Dacelo novaeguineae* | Laughing Kookaburra | | | Bird | x | x | x | x | x | x | |
| *Phonognatha spp* | Leaf-curling Spider | | | Invertebrate | | | | | | | x |
| *Danaus petilia* | Lesser Wanderer (butterfly) | | | Invertebrate | x | x | | | x | | x |
| *Turnix velox* | Little Button-quail | | | Bird | | | | x | | x | x |
| *Cacatua sanguinea* | Little Corella | | | Bird | | x | | | | | |
| *Notopsalta sp.* | Little Desert Ticker | | | Invertebrate | | | | | x | | |
| *Hieraaetus morphnoides* | Little Eagle | Victoria | Vulnerable | Bird | | | | | | | x |
| *Glossopsitta pusilla* | Little Lorikeet | | | Bird | | | | | | x | |
| *Microcarbo melanoleucos* | Little Pied Cormorant | | | Bird | | x | | | | | |
| *Corvus mellori* | Little Raven | | | Bird | x | x | x | x | x | x | |
| *Anthochaera chrysoptera* | Little Wattlebird | | | Bird | | x | x | x | | x | |
| *Chortoicetes spp* | Locust | | | Invertebrate | | | | | | x | |
| *Cacatua tenuirostris* | Long-billed Corella | | | Bird | x | x | x | x | x | x | |
| *Uracanthus bivitta* | Longicorn Beetle | | | Invertebrate | | | | | x | | |
| *Rhinotia spp* | Long-nosed Weevil | | | Invertebrate | | | | | | | x |
| *Lampides boeticus* | Long-tailed Pea-blue (butterfly) | | | Invertebrate | | | | | x | | |
| *Chlorocoma assimilis* | Lucas Emerald | | | Invertebrate | x | | | | | | |
| *Phyllotocus rufipennis* | Lycid Mimic Chafer (beetle) | | | Invertebrate | x | x | x | | x | x | x |
| *Eroschema poweri* | Lycid Minic Longicorn (beetle) | | | Invertebrate | | | | | | | x |
| *Scopula lydia* | Lydia's Wave | | | Invertebrate | x | | x | | | | |
| *Nyctemera amicus* | Magpie Moth a.k.a. Senecio Moth | | | Invertebrate | | | | x | | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Grallina cyanoleuca* | Magpie-lark | | | Bird | x | | | | | | |
| *Anopheles annulipes* | Malaria Mosquito | | | Invertebrate | x | x | | x | | x | x |
| *Pauropsalta sp. nr. Fuscata* | Mallee Hisser | | | Invertebrate | x | | | | | | |
| *Amphibolurus norrisi* | Mallee Tree Dragon | | | Reptile | | | | | | | x |
| *Geitoneura klugii* | Marbled Xenica (butterfly) | | | Invertebrate | x | x | | | x | | x |
| *Tabanidae* | March Fly | | | Invertebrate | x | | | | | | |
| *Hylaeus spp* | Masked Bee | | | Invertebrate | | | | | | x | |
| *Junonia villida calybe* | Meadow Argus (butterfly) | | | Invertebrate | x | x | | | x | x | x |
| *Iridomyrmex purpureus* | Meat Ant | | | Invertebrate | x | x | | x | | | x |
| *Metopiora sanguinata* | Metopiora Moth | | | Invertebrate | x | | | | | | |
| *Zygometis xanthogaster* | Milky Flower Spider | | | Invertebrate | | x | | | | x | |
| *Comocrus behri* | Mistletoe Moth | | | Invertebrate | x | | | | | | |
| *Dicaeum hirundinaceum* | Mistletoebird | | | Bird | x | x | x | x | x | x | x |
| *Glossopsitta concinna* | Musk Lorikeet | | | Bird | x | x | x | x | x | x | |
| *Falco cenchroides* | Nankeen Kestrel | | | Bird | | | x | | | | |
| *Apinidae spp.1* | Native Bee 1 | | | Invertebrate | x | | | | | | |
| *Apinidae spp.2* | Native Bee 2 | | | Invertebrate | x | | | | | | |
| *Apinidae spp.2* | Native Bee 3 | | | Invertebrate | x | | | | | | |
| *Apinidae spp.4* | Native Bee 4 | | | Invertebrate | x | | | | | | |
| *Apinidae spp.5* | Native Bee 5 | | | Invertebrate | x | | | | | | |
| *Heliothis punctiger* | Native Budworm | | | Invertebrate | x | | | | | | |
| *Eristalinus punctulatus* | Native Drone Fly | | | Invertebrate | x | x | | x | x | | x |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | | | Bird | x | x | x | x | x | x | x |
| *Noctuid Sp. 1* | Noctuid Moth | | | Invertebrate | x | | | | | | |
| *Manorina melanocephala* | Noisy Miner | | | Bird | x | x | x | x | x | | |
| *Gminatus australis* | Orange Assassin Bug | | | Invertebrate | | | | x | | | x |
| *Paralastor spp* | Orange Banded Mud-dauber (wasp) | | | Invertebrate | | x | | | | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Lycidae sp.* | Orange Beetle | | | Invertebrate | x | | x | | | | |
| *Netelia producta* | Orange Caterpillar Parasitoid Wasp | | | Invertebrate | x | | | | | | x |
| *Trisciloa spp* | Orange Hairy Flower Wasp | | | Invertebrate | | | | | | x | |
| *Arctiidae* | Orange-brown Moth | | | Invertebrate | x | | | | | | |
| *Synemon parthenoides* | Orange-spotted Sun-moth | | | Invertebrate | | | | | | | x |
| *Lissopimpla excelsa* | Orchid Dupe wasp | | | Invertebrate | | | x | | | | x |
| *Tyto javanica* | Pacific Barn Owl | | | Bird | x | | | | | | |
| *Anas superciliosa* | Pacific Black Duck | | | Bird | x | x | | | | | |
| *Neobatrachus pictus* | Painted Burrowing Frog | | | Amphibian | | x | | | | x | x |
| *Turnix varius* | Painted Button-quail | | | Bird | | | | | | | x |
| *Ctenophorus pictus* | Painted Dragon | | | Reptile | | | | | | | x |
| *Geopelia placida* | Peaceful Dove | | | Bird | x | x | | | x | x | x |
| *Cuspicona obesula* | Pentatomid Bug a.k.a. Stink Bug | | | Invertebrate | | | | | | | x |
| *Arhodia lasiocamparia* | Pink Arhodia | | | Invertebrate | x | | | | | | |
| *Mordella spp* | Pintail Beetle | | | Invertebrate | | x | | x | | | |
| *Limnodynastes dumerilii dumerilii* | Pobblebonk Frog | | | Amphibian | x | | | | x | | |
| *Rhytidoponera spp* | Pony Ant | | | Invertebrate | | | | | | | x |
| *Stomorhina subapicalis* | Punctuated Green Nose Fly | | | Invertebrate | | x | | | | | |
| *Porphyrio porphyrio* | Purple Swamphen | | | Bird | | | | | x | | |
| *Glossopsitta porphyrocephala* | Purple-crowned Lorikeet | | | Bird | x | x | | x | x | | x |
| *Nomophila corticalis* | Pyralid (moth) | | | Invertebrate | x | | | | | | |
| *Cryptoblepharus pannosus* | Ragged Snake-eyed Skink | | | Reptile | | x | | x | | x | |
| *Merops ornatus* | Rainbow Bee-eater | | | Invertebrate | x | | x | | | | |
| *Trichoglossus moluccanus* | Rainbow Lorikeet | | | Bird | | | | x | x | | |
| *Xanthagrion erythroneurum* | Red & Blue Damselfly | | | Invertebrate | x | | x | | x | | |
| *Myrmecia gulosa* | Red Bull Ant | | | Invertebrate | | | | | | | x |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Choerocoris pagans* | Red Jewel Bug a.k.a. Ground Shield Bug | | | Invertebrate | | | | | | | x |
| *Colepia malleola* | Red Legged Robber Fly | | | Invertebrate | | | | x | | | |
| *Anthochaera carunculata* | Red Wattlebird | | | Bird | x | x | x | x | x | x | x |
| *Szepligetella Undescribed species (ES04)* | Red-bodied Hatchet Wasp | | | Invertebrate | | x | | | | | |
| *Neochmia temporalis* | Red-browed Finch | | | Bird | | | | | | x | |
| *Petroica goodenovii* | Red-capped Robin | | | Bird | x | | | | | | |
| *Scopula rubraria* | Reddish Wave (moth) | | | Invertebrate | | x | | | | x | |
| *Psaltoda moerens* | Red-eye | | | Invertebrate | x | | | | x | | |
| *Catasarcus impressipenis* | Red-legged Weevil | | | Invertebrate | | | | | | | x |
| *Macropus rufogriseus* | Red-necked Wallaby | | | Mammal | | x | x | | x | | |
| *Macropus rufogriseus banksianus* | Red-necked Wallaby subsp. banksianus | | | Mammal | | | x | | | | |
| *Psephotus haematonotus* | Red-rumped Parrot | | | Bird | x | x | x | | x | x | x |
| *Calyptorhynchus banksii graptogyne* | Red-tailed Black-Cockatoo | Victoria | Endangered | Bird | x | | | | x | x | x |
| *Exoneura bicolor* | Reed Bee | | | Invertebrate | | | | | | x | x |
| *Exoneura?/Homalictus? Species not determined* | Reed Bee/Homalictus Bee | | | Invertebrate | | | | | | | x |
| *Myiagra inquieta* | Restless Flycatcher | | | Invertebrate | x | x | | | x | x | |
| *Asilidae Sp.* | Robber Fly | | | Invertebrate | x | | | | | | |
| *Psacadonotus robustus* | Robust Fan-winged Katydid | | | Invertebrate | | | | | | | x |
| *Cincloramphus mathewsi* | Rufous Songlark | | | Bird | x | | | x | x | x | |
| *Pachycephala rufiventris* | Rufous Whistler | | | Bird | x | x | x | x | x | x | x |
| *Todiramphus sanctus* | Sacred Kingfisher | | | Bird | x | x | | | x | x | |
| *Theclinesthes serpentatus serpentatus* | Saltbush Blue (butterfly) | | | Invertebrate | | | | | | | x |
| *Ogyris amaryllis meridionalis* | Satin Azure (butterfly) | | | Invertebrate | x | | | | | | |
| *Pollanisus viridipulverulenta* | Satin-green Forester (moth) | | | Invertebrate | x | | | | | | x |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Petroica multicolor* | Scarlet Robin | | | Bird | x | x | | | x | x | x |
| *Harpobittacus australis* | Scorpion Fly | | | Invertebrate | x | x | | | | x | |
| *Chalcites lucidus* | Shining Bronze-Cuckoo | | | Bird | x | | x | | x | x | |
| *Tachyglossus aculeatus* | Short-beaked Echidna | | | Mammal | x | x | | x | | x | x |
| *Morethia obscura* | Shrubland Morethia Skink | | | Reptile | | | | | | | x |
| *Calamanthus cautus* | Shy Heathwren | | | Bird | | | | | | | x |
| *Dichromodes consignata* | Signed Heath Moth | | | Invertebrate | | | | | | | x |
| *Pseudomys apodemoides* | Silky Mouse | | | Mammal | | | | | | | x |
| *Zosterops lateralis* | Silvereye | | | Bird | x | x | x | x | x | x | x |
| *Aeolothynnus spp* | Small Flower Wasp | | | Invertebrate | | | | x | | | |
| *Eurema smilax* | Small Grass-yellow (butterfly) | | | Invertebrate | | | x | | x | | x |
| *Termessa nivosa* | Snowy Footman | | | Invertebrate | x | | | | | | |
| *Persectania ewingii* | Southern Armyworm | | | Invertebrate | x | | | | | | |
| *Ninox boobook* | Southern Boobook | | | Bird | x | x | | | | x | |
| *Drymodes brunneopygia* | Southern Scrub-robin | | | Bird | | | x | | | | x |
| *Aphelocephala leucopsis* | Southern Whiteface | | | Bird | x | | | x | x | x | x |
| *Acanthagenys rufogularis* | Spiny-cheeked Honeyeater | | | Bird | x | x | | | x | | x |
| *Periscepta polysticta* | Spotted Day-moth | | | Invertebrate | | x | | | | | x |
| *Limnodynastes tasmaniensis* | Spotted Grass Frog | | | Amphibian | | x | | x | | x | |
| *Delias aganippe* | Spotted Jezabel (butterfly) | | | Invertebrate | x | | | | | | x |
| *Limnodynastes tasmaniensis* | Spotted Marsh Frog (race unknown) | | | Amphibian | x | | | | | | |
| *Pardalotus punctatus punctatus* | Spotted Pardalote | | | Bird | x | x | x | x | x | x | x |
| *Ctenotus spaldingii* | Straight Browed Ctenotus | | | Reptile | | x | | | | | |
| *Pardalotus striatus* | Striated Pardalote | | | Bird | x | x | x | x | x | x | x |
| *Acanthiza lineata* | Striated Thornbill | | | Bird | x | x | x | x | x | x | x |
| *Oxysarcodexia varia* | Striped Dung Fly | | | Invertebrate | | | | x | | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Ambigolimax (Lehmannia) valentianus* | Striped Greenhouse Slug a.k.a. Striped Field Slug | | | Invertebrate | | | | x | | | |
| *Limnodynastes peronii* | Striped Marsh Frog | | | Amphibian | | x | | | | | x |
| *Coturnix pectoralis* | Stubble Quail | | | Bird | | x | | | x | x | x |
| *Tiliqua rugosa* | Stumpy-tailed Lizard | | | Reptile | x | | x | | x | | |
| *Neobatrachus sudellae* | Sudells Frog | | | Amphibian | | | | | | x | x |
| *Camponotus terebrans* | Sugar Ant | | | Invertebrate | | | | | | | x |
| *Cacatua galerita* | Sulphur-crested Cockatoo | | | Bird | x | x | x | x | x | x | x |
| *Malurus cyaneus* | Superb Fairy-wren | | | Bird | x | x | x | x | x | x | x |
| *Wallabia bicolor* | Swamp Wallaby | | | Mammal | | x | | x | | | |
| *Lathamus discolor* | Swift Parrot | Australia | Critically Endangered | Bird | | | | | | x | |
| *Maratus tasmanicus* | Tasmanian Peacock Spider | | | Invertebrate | | | | | | | x |
| *Hemicordulia tau* | Tau Emerald (dragonfly) | | | Invertebrate | | x | | | | x | x |
| *Podargus strigoides* | Tawny Frogmouth | | | Bird | x | | | x | | | |
| *Glyciphila melanops* | Tawny-crowned Honeyeater | | | Bird | | x | | | | x | x |
| *Thundaca mimodora* | Thundaca Moth | | | Invertebrate | x | | | | | | |
| *Chrysodeixis argentifera* | Tobacco Looper (moth) | | | Invertebrate | x | | | | | | |
| *Dichromodes longidens* | Toothed Heath Moth | | | Invertebrate | | | | | | | x |
| *Myrmecia mandibularis* | Toothless Bull Ant | | | Invertebrate | | x | | | | | |
| *Chrysomelidae Sp.* | Tortoise Beetle | | | Invertebrate | x | | | | | | |
| *Lepidoscia arctiella* | Tower Case Moth | | | Invertebrate | | x | | | | | |
| *Coccinella transversalis* | Transverse Ladybird (beetle) | | | Invertebrate | | | | | | | x |
| *Petrochelidon nigricans* | Tree Martin | | | Bird | x | x | | x | x | x | x |
| *Daphoenositta chrysoptera* | Varied Sittella | | | Bird | x | x | | x | x | x | |
| *Malurus lamberti* | Variegated Fairy-wren | | | Bird | x | x | | x | x | x | x |
| *Diplacodes bipunctata* | Wandering Percher (dragonfly) | | | Invertebrate | x | x | x | | x | x | x |
| *Austrolestes leda* | Wandering Ringtail (damselfly) | | | Invertebrate | | x | | x | | x | x |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Hesthesis cingulata* | Wasp Mimic Longicorn (beetle) | | | Invertebrate | | | | | | | x |
| *Aquila audax* | Wedge-tailed Eagle | | | Bird | x | x | x | x | x | x | x |
| *Smicrornis brevirostris* | Weebill | | | Bird | x | x | x | x | x | x | x |
| *Hirundo neoxena* | Welcome Swallow | | | Bird | x | x | | | x | x | x |
| *Macropus fuliginosus* | Western Grey Kangaroo | | | Mammal | x | x | x | x | x | x | x |
| *Cercartetus concinnus* | Western Pygmy Possum | | | Mammal | | x | | | | x | x |
| *Haliastur sphenurus* | Whistling Kite | | | Bird | | x | | | | | |
| *Pomatostomus superciliosus* | White-browed Babbler | | | Bird | x | x | x | x | x | x | x |
| *Sericornis frontalis* | White-browed Scrubwren | | | Bird | x | x | x | x | x | x | |
| *Nesoptilotis leucotis* | White-eared Honeyeater | | | Bird | x | x | | x | x | x | x |
| *Egretta novaehollandiae* | White-faced Heron | | | Bird | x | | | | | x | |
| *Epthianura albifrons* | White-fronted Chat | | | Bird | | | | | x | | |
| *Melithreptus lunatus* | White-naped Honeyeater | | | Bird | | x | | | | x | |
| *Ptilotula penicillata* | White-plumed Honeyeater | | | Bird | x | x | | x | x | x | |
| *Tadarida australis* | White-striped Freetail Bat | | | Mammal | x | | | | | | |
| *Gerygone olivacea* | White-throated Gerygone | | | Bird | | | | | x | | |
| *Cormobates leucophaea* | White-throated Treecreeper | | | Bird | x | x | x | x | x | x | x |
| *Corcorax melanorhamphos* | White-winged Chough | | | Bird | x | | | | | | |
| *Lalage tricolor* | White-winged Triller | | | Bird | x | | | | x | x | |
| *Rhipidura leucophrys* | Willie Wagtail | | | Bird | x | x | x | x | x | x | x |
| *Vanessa itea* | Yellow Admiral (butterfly) | | | Invertebrate | x | | | x | x | | x |
| *Acanthiza nana* | Yellow Thornbill | | | Bird | x | x | | | | | |
| *Caligavis chrysops* | Yellow-faced Honeyeater | | | Bird | x | x | x | x | x | x | x |
| *Demansia psammophis* | Yellow-faced Whip Snake | | | Reptile | x | | | | | | |
| *Acanthiza chrysorrhoa* | Yellow-rumped Thornbill | | | Bird | x | x | x | x | x | x | x |
| *Simosyrphus grandicornis* | Yellow-shouldered Stout Hoverfly | | | Invertebrate | | x | | | | | |
| *Zanda funereus* | Yellow-tailed Black-Cockatoo | | | Bird | x | x | | x | x | | |

| Scientific Name | Common Name | Extinction Risk | Category of Threat | Taxa | Minimay | | Booroopki | | Ozenkadnook | | Salvana |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | FY17 | FY23 | FY17 | FY23 | FY17 | FY23 | FY23 |
| *Turneromyia spp* | Zebra Spider Hunter (wasp) | | | Invertebrate | | x | | | x | x | x |
| *Varanus varius* | Lace Monitor | Victoria | Endangered | Reptile | | | | | | | |

# APPENDIX H 'Large Tree Attributes – detailed summary'

*Note: NTP = No Large Trees Present*

| Reserve | EVC | Type | No large trees (>40 cm DBH) | Mean DBH cm | Mean # stems | Proportion hollows | Comments |
|---|---|---|---|---|---|---|---|
| Minimay | Heathy Woodland | Revegetated | 0 | NTP | NTP | NTP | |
| | | Remnant | 11 | 50.7 | 3.2 | 1.00 | |
| | Shallow Sands Woodland | Revegetated | 0 | NTP | NTP | NTP | |
| | | Remnant | 30 | 55.0 | 1.9 | 0.87 | |
| | | Control_remnant | 13 | 52.0 | 2.1 | 1.0 | |
| | Plains Woodland | Revegetated | 2 | 130.0 | 1.0 | 1.0 | |
| | | Remnant | 21 | 52 | 1.0 | 0.67 | |
| | | Control_cleared | 0 | NTP | NTP | NTP | |
| | Low Rises Woodland | Revegetated | 4 | 46.0 | 1.0 | 0.0 | |
| | | Remnant | 9 | 60 | 3.1 | 1.0 | |
| Ozenkadnook | Plains Woodland | Revegetated | 1 | 75.0 | 2.0 | 1.0 | |
| | | Remnant | 4 | 83.8 | 1.5 | 0.75 | |
| | | Control_cleared | 0 | NTP | NTP | NTP | |
| | Shallow Sands Woodland | Revegetated | 2 | 62.0 | 1.0 | 1.0 | |
| | | Control_cleared | 1 | 120.0 | 1.0 | 1.0 | |
| | Damp Sands Herb-rich Woodland | Revegetated | n/a | n/a | n/a | n/a | No revegetated survey site for this EVC |
| | | Remnant | 5 | 54.4 | 1.4 | 0.80 | |
| | Heathy Herb-rich Woodland | Revegetated | 0 | NTP | NTP | NTP | |
| | | Remnant | 1 | 45.0 | 3.0 | 1.0 | |
| | | Control_remnant | 21 | 53.7 | 1.5 | 0.14 | |
| Booroopki | Shallow Sands Woodland | Revegetated | 0 | NTP | NTP | NTP | |
| | Shallow Sands Woodland Mosaic | Remnant | 0 | NTP | NTP | NTP | |
| | Plains Woodland | Revegetated | n/a | n/a | n/a | n/a | No revegetated survey site for this EVC |
| | | Remnant | 6 | 47.8 | 1.5 | 0.86 | |
| | | Control_remnant | 14 | 60.7 | 1.6 | 0.57 | |
| | | Control_cleared | 0 | NTP | NTP | NTP | |
| | Heathy Woodland | Revegetated | 0 | NTP | NTP | NTP | |
| | Heathy Herb-rich Woodland | Remnant | 7 | 49.86 | 2.00 | 0.86 | |
| | Damp Sands Herb-rich Woodland | Control_remnant | 10 | 59.30 | 3.20 | 1.00 | |
| Salvana | Damp Heathland | Revegetated | n/a | n/a | n/a | n/a | No revegetated survey site for this EVC |
| | | Remnant | 0 | NTP | NTP | NTP | |

| Reserve | EVC | Type | No large trees (>40 cm DBH) | Mean DBH cm | Mean # stems | Proportion hollows | Comments |
|---|---|---|---|---|---|---|---|
| | Shallow Sands Woodland | Revegetated | 0 | NTP | NTP | NTP | |
| | | Remnant | 0 | NTP | NTP | NTP | |
| | Lowan Sands Mallee | Revegetated | n/a | n/a | n/a | n/a | No revegetated survey site for this EVC |
| | | Remnant | 3 | 43.3 | 2.7 | 1.00 | |
| | | Control_remnant | 0 | NTP | NTP | NTP | |
| | | Control_cleared | 0 | NTP | NTP | NTP | |
| | Heathy Woodland | Revegetated | 2 | 57.5 | 1.0 | 0.50 | |
| | | Remnant | 2 | 58.5 | 5.5 | 0.50 | |
| | Sandstone Ridge Shrubland | Remnant | 0 | NTP | NTP | NTP | |

## APPENDIX I 'Vegetation Relevé Surveys – Salvana'

**Table I1:** Vegetation Relevé Survey Outputs

| Site | EVC | Landform | Vegetation Condition | Disturbance Factors | Browsing evident | Comment | Weed Cover | Noxious Weeds Present | Tree Cover | Large Shrub Cover | Medium Shrub Cover | Small Shrub Cover | Prostrate shrub Cover | Large Herb Cover | Medium Herb Cover | Small or Prostrate Herb Cover | Tufted Graminoid Cover | Non-tufted Graminoid Cover | Stand Age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAL 117 | 87: Lowan Sands Mallee | Swale (or plains as recorded) | excellent | | No | | Low | No | 15 | 0 | 45 | 15 | 10 | <1 | 1 | <1 | 7 | 2 | |
| SAL 118 | 87: Lowan Sands Mallee | Swale | excellent | | No | Gentle swale | Absent | No | 20 | 0 | 20 | 25 | 3 | <1 | <1 | <1 | 10 | 5 | |
| SAL 119 | 195: Seasonally Inundated Shrubby Woodland | Plains | Excellent | Seasonal wetland and flats drain to dam to south, fenceline clearance on southern side, pasture weeds on southern edge, possible past grazing | Light | *Gnephosis drummondii* present | Low | No | | 0 | 30 | 10 | 0 | 0 | 1 | <1 | 15 | | |
| SAL 120 | 87/48: Lowan Sands Mallee/Heathy Woodland Complex | Swale | excellent | Possible past grazing, lack of burning (*Banksia ornata* senescence) | No | Gentle swale | Absent | No | 5 | 0 | 30 | 10 | 5 | 0 | <1 | <1 | 10 | 15 | |
| SAL 121 | 87/48: Lowan Sands Mallee/Heathy Woodland Complex | Swale | Good | Partial_Clearing | No | Gentle swale | Low | No | 10 | 0 | 15 | 10 | 10 | | <1 | 5 | 25 | 5 | |
| SAL 122 | 87: Lowan Sands Mallee | Dune | Good | Partial_Clearing | No | Possible partial clearance in past | Low | No | 10 | 0 | 10 | 35 | 0 | <1 | 1 | <1 | 2 | 5 | 40y+ |
| SAL 123 | Revegetated | Plains | Poor | Partial_Clearing | Light | Revegetation site | High | Yes | 5 | 0 | 3 | 0 | 0 | 0 | 20 | 3 | | | Reveg 3-5y, remnant 80y+ |
| SAL 124 | Revegetated | Dune | Poor | Partial_Clearing | Light | Gentle dune. Revegetation site. | High | No | 5 | 0 | 2 | 3 | 0 | 0 | 10 | <1 | 50 | | |
| SAL 125 | Revegetated | Swale | Poor | Partial_Clearing | Light | Gentle swale | High | Yes | | | 2 | 1 | 0 | 1 | 20 | <1 | 55 | 5 | |
| SAL 126 | 87/48: Lowan Sands Mallee/Heathy Woodland Complex | Swale | Good | Partial_Clearing,Rabbits | Moderate | Gentle swale | High | No | | 0 | 25 | 5 | 0 | 0 | 1 | 1 | 20 | 1 | |

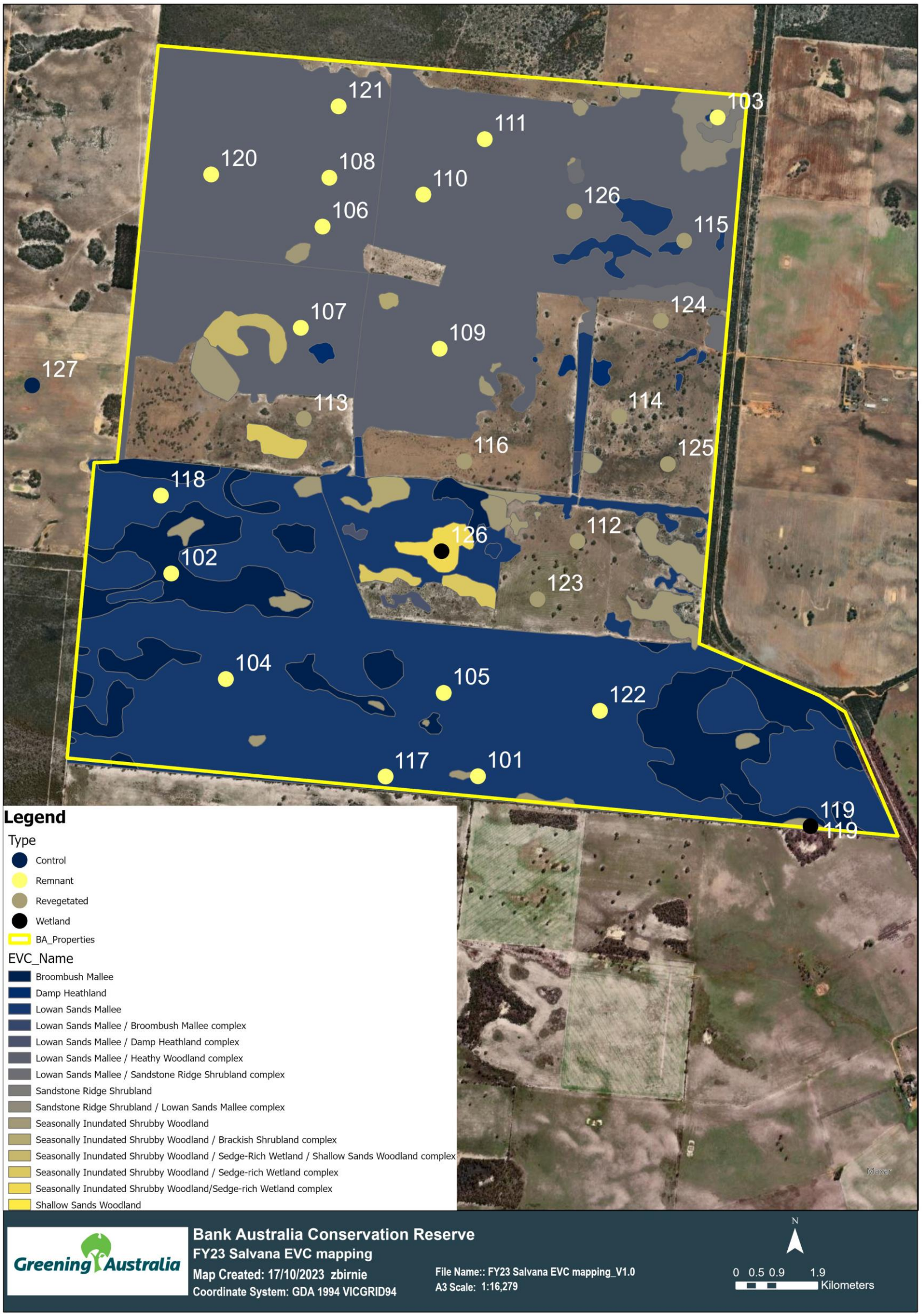



**Figure I1**: FY23 Salvana EVC mapping showing the vegetation types at Relevé survey sites (117-126).

## APPENDIX J 'Revegetation Register'

Note: For the purpose of this document, low species diversity refers to 0-33% of EVC strata represented, medium 33-66% and high 66-99%.

| Reserve | Revegetation Year | Area planted (ha) | FY23 Survey Site | Method | Objective (biodiversity/carbon/biodiverse carbon) | Species diversity-planned (low, med, high) | Comment |
|---|---|---|---|---|---|---|---|
| Minimay | 2009 | 6 | 9, 11 | Planted | Biodiversity | Low | Yellow gum |
| Minimay | 2010 | 47 | | Planted | Biodiversity | Low | Yellow gum, Buloke |
| Minimay | 2012 | 75 | 4, 5, 15 | Planted | Carbon (informal) | Med | Yellow gum, Buloke, Grey box, Brown Stringybark, Red gum |
| Minimay | 2013 | 27 | 13 | Direct seeding and planting | Biodiversity | Med | Yellow gum, Stringybark and Manna Gum |
| Minimay | 2014 | 37 | 1, 17 | Direct seeding and planting | Biodiversity | Med | Yellow gum, Stringybark and Manna Gum |
| Minimay | 2015 | 35 | 37 | Direct seeding and planting | Biodiversity | Med | Yellow gum, Stringybark and Manna Gum |
| Minimay | 2019 | 5 | 7 | Planted | Biodiversity | N/A | Buloke enhancement |
| Minimay | 2022 | 24 | 2, 3 | Planted | Biodiversity | N/A | Stringybark enhancement |
| Ozenkadnook | 2011 | 52 | 19, 24, 29 | Planted | Carbon (informal) | Low | Dominated by Yellow gum, Red gum, Brown stringybark |
| Ozenkadnook | 2012 | 26 | 25, 27 | Planted | Carbon (informal) | Low | Dominated by Yellow gum, Red gum, Brown stringybark |
| Ozenkadnook | 2015 | 45 | 22 | Planted | Biodiversity | N/A | Buloke enhancement |

| Reserve | Revegetation Year | Area planted (ha) | FY23 Survey Site | Method | Objective (biodiversity/carbon/biodiverse carbon) | Species diversity-planned (low, med, high) | Comment |
|---|---|---|---|---|---|---|---|
| Ozenkadnook | 2019 | 60 | 20, 22, 25 | Planted | Biodiversity | N/A | Buloke enhancement |
| Ozenkadnook | 2021 | 60 | 24, 27, 29 | Direct seeding | Biodiversity | High | Climate Adjusted Direct Seeding (fail – browsing pressure) |
| Booroopki | 2016 | 45 | 50, 51, 52, 52 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Booroopki | 2017 | 45 | 50, 51, 52, 52 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2015-2016 (1) | 65 | 112, 123 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2016 (1) | 52 | 116 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2018-2019 (1) | 27 | 113, 124 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2020-2021 (1) | 5 | | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2021-2022 | 47 | 114, 125 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2022 | 24 | 115, 126 | Direct seeding and planting | Biodiversity | High | Habitat revegetation |
| Salvana | 2022 | 95 | 108, 110, 111, 121 | Planted | Biodiversity | N/A | Stringybark enhancement addressing lack of canopy recruitment |

Note: (1) Revegetation activities undertaken prior to the inclusion of this land parcel in the Bank Australia Conservation Reserve