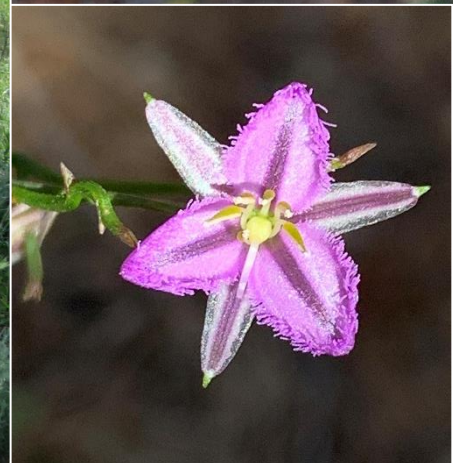




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Tharbogang Quarry and Landfill Offset Monitoring



Lot 181 and 182 / DP756035, Hillside Drive, Tharbogang, NSW

Annual monitoring report 2022

Prepared for: Griffith City Council

20 February 2023 Version: 1.0 - Final

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Glossary and abbreviations

Acronym	Description
DNG	Derived native grassland
LLS	Local Land Services
MZ	Management Zone
OEH	Office of Environment and Heritage

1 Introduction

Ecoplanning was commissioned to prepare the Annual Monitoring Report 2022 to comply with the Conservation Agreement between the Minister Administering the *National Parks and Wildlife Act 1974* and Griffith City Council for Tharbogang Quarry and Landfill (2015). This report complies with Annexure D of the Conservation Agreement, to satisfy a commitment made to secure a biodiversity offset relating to the expansion of the existing landfill and quarry. The subject site is located at Lots 181 and 182 in Deposited Plan 756035 (known as Tharbogang Quarry and Landfill), approximately 10 km northwest of Griffith.

Monitoring of the Conservation Area is undertaken annually, with this report documenting year 7 of annual monitoring.

The Conservation Agreement requires that the annual monitoring report is to include:

- A description of all completed management actions undertaken in the previous 12-month period
- Copies of all receipts from third party contractors engaged by the owner to undertake management actions listed in items 1 and 2 of Annexure C to the Conservation Agreement
- Completed monitoring data sheets (including photographs) using the template provided in Table 4 of Annexure D to the Conservation Agreement (below) and including quarterly inspection data and stock impact data collected by the owner
- A discussion of the changes recorded at photo monitoring points and quadrats
- A discussion of the condition of Conservation Values
- A discussion of effectiveness of any management actions implemented
- Recommendations and proposed management actions to be performed in following year.

2 Monitoring methodology

Monitoring was consistent with Annexure D of the Conservation Agreement and previous monitoring, and included:

- Photos point sampling
- Collection of Biometric data and previous locations
- Fauna monitoring
- Walk through assessment.

Monitoring occurred from 19 to 22, and 27 to 29 September 2022.

Four photos (one in each cardinal direction) were taken at each of the eight monitoring photo points and six Biobanking monitoring points. Notes were taken on the presence of weeds, erosion, vegetation condition and management issues. Vegetation condition and management issues were compared to previous years.

Floristic data were collected at each of the six Biobanking monitoring sites in accordance with the Biobanking Assessment Methodology (2014) and compared with baseline data (collected in 2015), data from 2021 and benchmark data.

Surveys for microchiropteran bats were conducted in each management zone. The sites surveyed were the same as those in years 2016 to 2021, inclusive. An Anabat Express and Anabat Swift were used for the survey. Echolocation calls were recorded over two nights and were activated 1 hour before sunset until 1 hour after sunrise.

Bird surveys were undertaken at the same sites as in years 2016 to 2021, inclusive: one site in DNG (MZ1), two in open woodland (MZ2) and two in woodland (MZ3) and one in *Callitris* Woodland. At each 2 ha site, a 20 minute survey was conducted in the morning and at dusk over two days. All birds seen or heard were recorded.

The Conservation Area was traversed to record opportunistic sightings within the Conservation Area. The current survey recorded weed species, evidence of pest animals, natural regeneration of previously disturbed areas and sightings of threatened species.

3 Completed management actions

Table 3.1: Management actions for Year 7, 2022 monitoring period.

Management action	Timing	Status
Monitoring Biobanking monitoring plots and photo points	Year 7	Complete – results of monitoring are provided
Recommend weed management thresholds and commence weed management actions in the Conservation Area in Year 1	Years 1 - 5	Weed management occurred during 2022.
Pest animal control (local co-ordination with LLS and OEH)	Years 1 - 10	Pest animal control actions were undertaken.
	Years 1 – 4 Initial Rabbit Control	No pest animal control actions were undertaken. No Rabbits, evidence of Rabbits, were observed during the survey.
	Years 1-10 Fox Control	Pest animal control actions were undertaken. No evidence of foxes was observed in the Conservation Area during quarterly inspections. Fox scats were observed during annual monitoring.
	Years 1 – 10 Feral Goat Control	No pest animal control actions were undertaken. No Feral Goats or evidence of Feral Goats were observed during monitoring.
	Years 1 – 10 Feral Cat Control	Pest animal control actions were undertaken. No evidence of Feral Cats were observed during quarterly inspections.
Fire management hazard reduction burn	Years 1 – 10	No fire management actions were undertaken.
Maintain vehicle access to Conservation Area for fire management, weed and fencing management.	Year 2-10 Maintain tracks and fire breaks	Tracks were inspected during the monitoring period. No action was required.
Fencing, gates and signage	Year 1	The boundary of the Conservation Area has been fenced and signage erected. Western fence line completed in

Management action	Timing	Status
		2017. The northern boundary fence completed in 2018.
	Year 2-10 – maintain fences and gates	Fences and gates re-inspected during monitoring.
Quarterly inspections and stock management data	Years 1 - 10	<p>Inspections were conducted in December 2021, March, June, September and December 2022.</p> <p>Weed control works conducted July 2022</p> <p>No pest control (vertebrate) documented</p> <p>No grazing occurred in year 7.</p>
Annual Reports for Monitoring Program	Years 1 -10	Monitoring was conducted in September 2022.

4 Photo monitoring points and quadrats

Photo Point 1 (PP1) (from top left bearing N, E, S, W)

Photo Point 1 monitors an eroded channel and pasture weeds.

Erosion: Monitoring in 2022 did not observe any active erosion, despite above average rainfall.

Vegetation – general: Vegetation appears to be in moderate condition. Vegetation cover was higher than the previous year, with a high cover of exotic annual grasses and forbs, and a moderate cover of annual native grasses and perennial native shrubs. Recruitment of native canopy species was observed close to the distant remnant but not near the photo point marker.

Vegetation cover: Groundcover was estimated to be approximately 95% in the area surrounding the photo point in 2022, which is substantially higher than the groundcover in 2021 (60%).

Weeds: *Arctotheca calendula* (Capeweed), *Hordeum leporinum* (Barley Grass), *Medicago* sp., *Moraea setifolia* (Thread Iris), *Vulpia* sp. were observed in 2022.



Photo Point 2 (PP2) (from top left bearing N, E, S, W)

Photo Point 2 monitors an eroded channel, pasture weeds and woodland health. Erosion appeared inactive along the drainage line and stabilised by vegetation cover.

Erosion: Monitoring in 2022 did not observe active erosion, despite above average rainfall.

Vegetation – general: Vegetation is in good health with no signs of dieback. Annual native and exotic grasses and forbs are common in the understory. As in the previous monitoring year, recruitment of canopy species was observed.

Vegetation cover: Groundcover in 2022 was estimated to be 70%, substantially higher than the previous monitoring year where 35% groundcover was observed in the area surrounding the photo point. Estimated canopy cover was the same as the previous year (10%), however, midstorey cover increased from 5% in 2021 to 15% in 2022.

Weeds: *Echium plantagineum* (Paterson's Curse), *Arctotheca calendula*, *Hordeum leporinum*, *Trifolium arvense* (Hare's-foot Clover), *Sonchus asper* (Prickly Sowthistle) and *Vulpia* sp. were recorded in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler (*Pomatostomus temporalis*).

Pest animals: Feral fox tracks were observed within the area surrounding the photo point.



Photo Point 3 (PP3) (from top left bearing N, E, S, W)

Photo Point 3 monitors a weed infested area, which during baseline survey included priority weeds *Lycium ferocissimum*, *Marrubium vulgare* and *Opuntia* sp. and other weeds such as *Hordeum leporinum*, *Echium plantagineum* and *Arctotheca calendula*.

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Vegetation appears to be in good condition. Vegetation biomass is greater than the previous monitoring year, with higher cover of both native and exotic grasses and forbs and reduced bare ground observed in 2022 compared to 2021. Recruitment of canopy species was observed and exotic weed species were concentrated under trees.

Vegetation cover: The groundcover in 2022 was 80%, which was substantially higher than the previous monitoring year, where a groundcover of 30% occurred in the area surrounding the photo point. Canopy cover was the same as the previous monitoring year (5%).

Weeds: *Echium plantagineum*, *Marrubium vulgare*, *Hordeum leporinum* and *Lolium rigidum* (Annual Ryegrass) were recorded in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

Pest animals: Fox scats were observed within the area surrounding the photo point.

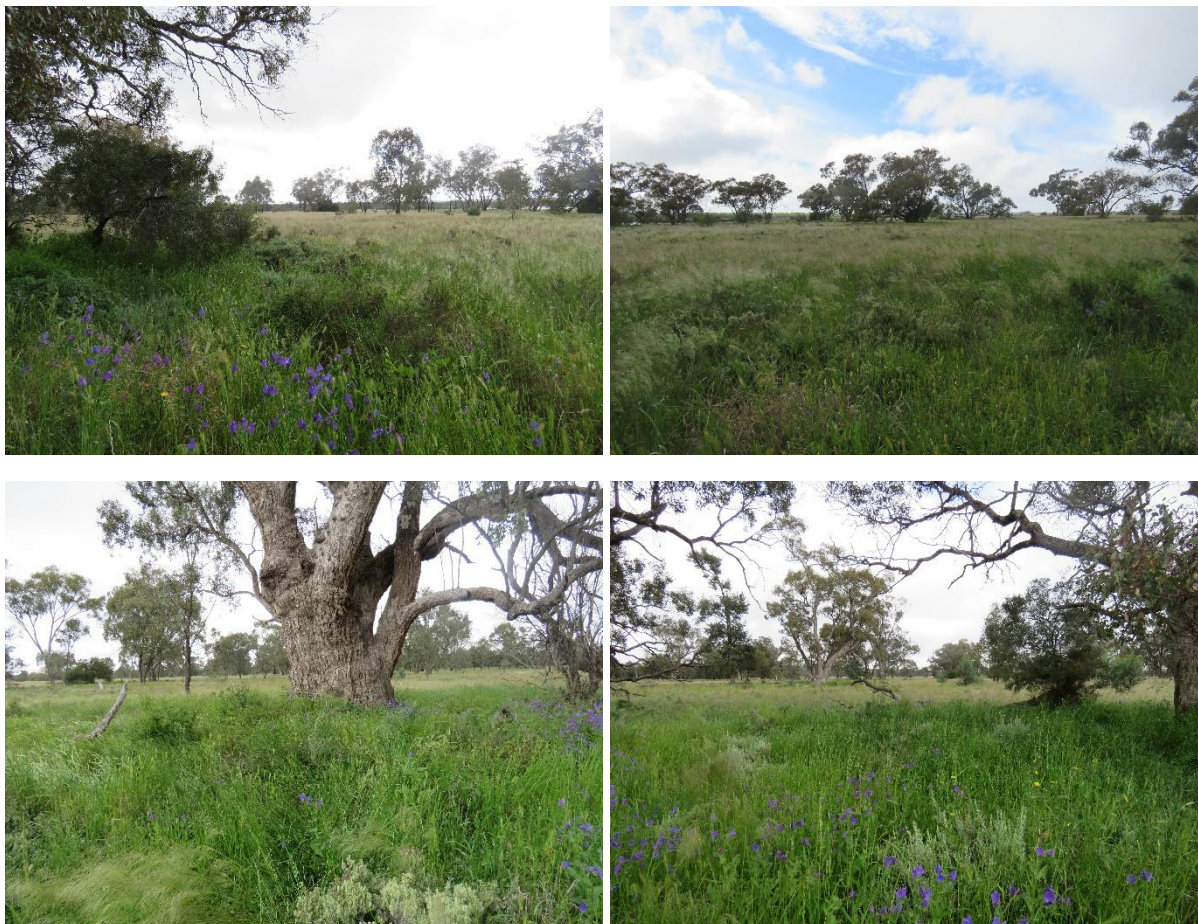


Photo Point 4 (PP4) (from top left bearing N, E, S, W)

Photo point monitors priority weeds and eucalypt health. Priority weeds observed in the baseline survey included *Lycium ferocissimum*, *Marrubium vulgare* and *Opuntia* sp. Other weeds at the site included *Echium plantagineum* and *Hordeum leporinum*. Some minor dieback of eucalypts was observed in the south, with scattered regrowth of *Callitris* observed in the west.

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Vegetation was in good health with no recent canopy dieback and a similar canopy cover to 2021. Biomass of both native and exotic species has generally increased since the previous monitoring year. A high cover of native shrubs, grasses and forbs were present, with a moderate cover of exotic grasses and forbs throughout the understorey.

Vegetation cover: Groundcover has substantially increased from 30% in 2021 to 80% in the 2022 monitoring year. Canopy cover of 10% was consistent with the previous monitoring year. Litter cover has decreased from 45% in 2021 to 5% in 2022.

Weeds: *Echium plantagineum*, *Arctotheca calendula*, *Marrubium vulgare*, *Medicago* sp., *Sisymbrium erysimoides* (Smooth Mustard) and *Hordeum leporinum* were recorded in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.



Photo Point 5 (PP5) (from top left bearing N, E, S, W)

Photo Point 5 monitors priority weeds and eucalypt health.

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: The area around the photopoint had a high cover of vegetation. Weeds are more concentrated around the base of trees with a higher cover of native species in open areas. Biomass of both native and exotic species has increased since the previous monitoring year, with bare ground decreasing from 25% in 2021 to 5% in 2022.

Vegetation cover: Groundcover has substantially increased from 35% in 2021 to 70% in 2022. The canopy and midstory cover were estimated at 5% and 1%, respectively, which was the same coverage as observed in 2021. Exotic groundcover has increased to 15% in the 2022 monitoring year.

Weeds: *Sisymbrium erysimoides*, *Hordeum leporinum*, *Marrubium vulgare*, *Medicago* sp. and *Echium plantagineum* were recorded in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.



Photo Point 6 (PP6)(from top left bearing N, E, S, W)

Photo Point 6 monitors an eroded channel, eucalypt health and priority weeds. During the baseline survey high coverage of the priority weed *Opuntia* sp. was recorded. Significant effort has been made to the area to remove *Opuntia* sp. from the area.

Erosion: Monitoring in 2022 did not observe active erosion around the drainage line. Drainage line appeared to be well vegetated.

Vegetation – general: The vegetation around the photo point appeared to be in moderate condition. Biomass of exotic grasses and forbs has increased since the previous monitoring year, with bare ground decreasing from 15% in 2021 to 5% in 2022. There was a similar coverage of native groundcover to the previous monitoring year.

Vegetation cover: Groundcover increased from 35% in 2021 to 75% in 2021 in the area surrounding the photo point. The canopy and midstory cover were estimated at 15% and 5%, respectively, which accounts for a moderate increase from the previous monitoring year.

Weeds: *Arctotheca calendula*, *Echium plantagineum*, *Medicago laciniata* (Cut-leaved Medic), *Trifolium arvense* and *Vulpia* sp. were recorded in 2022.



Photo Point 7 (PP7) (from top left bearing N, E, S, W)

Photo Point 7 monitors eucalyptus health and regrowth, and general woodland health. Eucalypt regrowth was present during the baseline survey, with minor dieback in the canopy. The vegetation is generally low and sparse with few weeds.

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Vegetation biomass has substantially increased since the previous monitoring year, with bare ground cover decreasing from 50% in 2021 to 5% in 2022.

Vegetation cover: Groundcover has substantially increased from 35% in 2021 to 56% in 2022, including cryptogram and litter cover. Canopy and midstory cover are similar to the previous monitoring year, with 5% and 10% cover observed, respectively. Exotic groundcover has increased from 3% in 2021 to 10% in 2022.

Weeds: *Arctotheca calendula*, *Echium plantagineum*, *Medicago laciniata* and *Trifolium arvense* were recorded in 2021.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.



Photo Point 8 (PP8) (from top left bearing N, E, S, W)

Photo Point 8 monitors priority weeds, pasture weeds, the perimeter track and eucalypt health. During baseline survey the priority weed *Lycium ferocissimum* was recorded, with a high abundance of other weeds in the area.

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Vegetation appeared to be in moderate to poor condition, with a high cover of exotic annual grasses and forbs, particularly along the road edge. *Lycium ferocissimum* has been previously removed and recruitment of canopy species was observed.

Vegetation cover: Overall groundcover has increased from 75% in 2021 to 80% in 2022. Exotic groundcover has increased from 10% in 2021 to 55% in 2022, while native groundcover has declined from 35% to 25% over the same period. Overstorey and midstory cover was 5% and 1%, respectively, in both 2021 and 2022.

Weeds: *Hordeum leporinum*, *Sisymbrium erysimoides*, *Echium plantagineum*, *Sonchus oleraceus* and *Medicago* sp. were recorded in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

Fire event/fuel/fire breaks: The fire break was in moderate condition with increased grass growth compared to previous years.

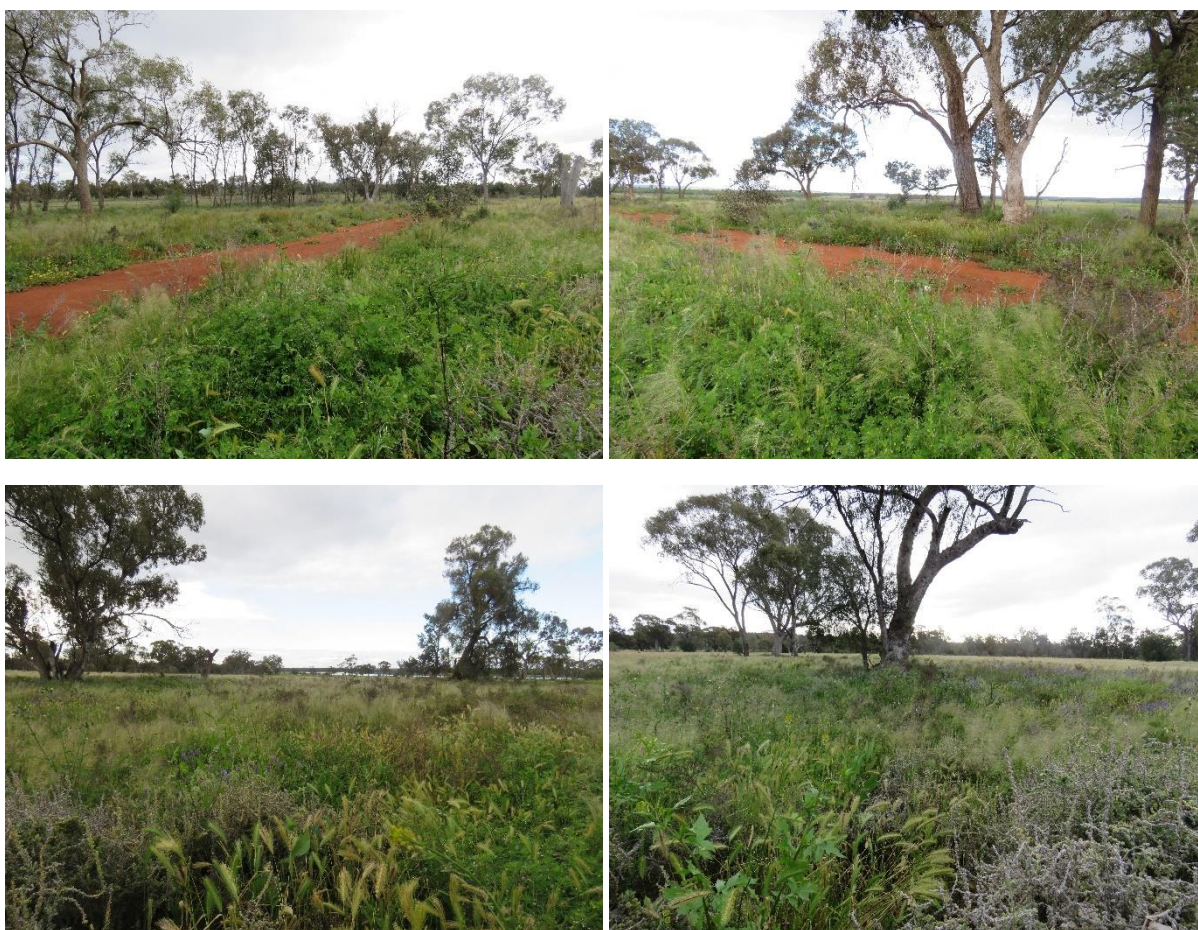


Photo Point 9 (BOA1) (from top left bearing N, E, S, W)

This photo point monitors a Biobanking plot located in open woodland. During baseline survey the plot was in good condition with a high abundance and diversity of native flora (*Austrostipa scabra*, *Goodenia pusilliflora* and *Hyalosperma semisterile*) with a low cover of weeds (8%).

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Vegetation appeared to be in good condition with a high cover and diversity of cover of native grasses and forbs and a low diversity of exotic species. Both native and exotic biomass was greater than the previous monitoring year.

Vegetation cover: The ground cover in the area surrounding the photo point was estimated at 60% in 2022 compared with 58% in 2021. This included both native and exotic groundcover species. The midstorey in 2022 was 0% which was the same as 2021, as was the overstorey cover which was 0% for both years.

Natural regeneration: The area surrounding the photo point was found to have native regeneration in the form of *Callitris glaucophylla*, *Eucalyptus populnea* and *Pittosporum angustifolium*.

Weeds: There was an increase in weed cover and diversity in 2022, with *Lycium ferocissimum* (African boxthorn), *Echium plantagineum*, *Medicago* sp. and *Trifolium* sp. observed.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.



Photo Point 10 (BOA2) (from top left bearing N, E, S, W)

This photo point monitors a Biobanking plot located in woodland. During the baseline survey the plot contained a high cover of weeds (*Bromus* sp., *Vulpia* sp., *Echium plantagineum*, and *Hypochaeris radicata*) but also a high diversity of native flora (*Austrostipa scabra* and *Rytidosperma semisterile*).

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Vegetation biomass was substantially higher than the previous monitoring year, with natural regeneration in good health and a high diversity of native forbs throughout the understorey.

Vegetation cover: In 2021 the groundcover was observed at 8% and in 2022 it increased to 26% in the area surrounding the photo point. The mid and overstorey covers were both 0%.

Weeds: No weeds were detected along the transect, however, low numbers of *Echium plantagineum*, *Arctotheca calendula* and *Medicago minima* were observed in the plot in 2022.



Photo Point 11 (BOA3) (from top left bearing N, E, S, W)

This photo point monitors Biobanking plot located in open woodland. During baseline survey the plot was in good condition with a high abundance and diversity of native flora (*Austrostipa scabra* and *Goodenia pusilliflora*) with a moderate cover of weeds (*Vulpia* sp. and *Arctotheca calendula*).

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: There was a substantially increase in vegetation biomass from the previous year. Natural regeneration and native groundcover species appear to be in good health.

Vegetation cover: Ground cover has substantially increased since the previous year. In 2022 the ground cover was 88% compared with 58% in 2021. The overstorey and midstorey decreased in 2021 to 0% and 6%, respectively.

Natural regeneration: *Callitris glaucophylla* and *Eucalyptus populnea* regeneration was observed within the plot.

Weeds: *Arctotheca calendula*, *Echium plantagineum*, *Trifolium* sp., *Lolium rigidum* and *Medicago laciniata* were recorded in 2022.

Threatened species sightings: Grey-crowned Babbler was recorded during bird surveys.



Photo Point 12 (BOA4) (from top left bearing N, E, S, W)

This photo point monitors a Biobanking plot located in derived native grassland (DNG) which was a former gravel extraction pit.

Erosion: Monitoring in 2022 revealed minor sheet erosion evidence by small stone wash, however increased groundcover vegetation since the previous monitoring year has somewhat reduced sheet erosion.

Vegetation – general: There was an increase in vegetation biomass from the previous year. Natural regeneration of *Eucalyptus* and *Callitris* saplings and sparse native groundcover species appear to be in good health.

Vegetation cover: Vegetation cover in 2022 has increased since 2021 in the area surrounding the photo point with groundcover estimated at 44%. Midstorey cover along the transect has decreased from 3.5% in 2021 to 2% in 2022 and whilst overstorey cover remained the same at 0%.

Natural regeneration: Regenerating *Callitris glaucophylla*, *Eucalyptus populnea* and *Dodonaea viscosa* were observed in disturbed areas within the plot.

Weeds: *Arctotheca calendula* was recorded in 2022.

Pest animals: Fox scats were observed within the site.



Photo Point 13 (BOA5) (from top left bearing N, E, S, W)

This photo point monitors a Biobanking plot located within a *Callitris glaucophylla* thicket.

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Native vegetation was in good condition, with vegetative biomass increasing since the previous monitoring year. However, the understorey still contains a high level of bare ground, which is likely driven by the dense *Callitris glaucophylla* midstorey which can limit ground cover diversity and eucalypt recruitment.

Vegetation cover: Groundcover has increased to 20% in 2022, compared with 16% in the previous monitoring year. Midstorey cover was 16% and the overstorey cover was estimated at 0%.

Natural regeneration: Disturbed areas were found to have regenerating *Callitris glaucophylla*.

Weeds: Weed diversity increased since 2021, with *Arctotheca calendula*, *Echium plantagineum*, *Sonchus oleraceus* and *Opuntia stricta* observed in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

Pest animals: Fox scats were observed within the site.



Photo Point 14 (BOA6) (from top left bearing N, E, S, W)

Photo Point 14 monitors a Biobanking plot located in woodland. During the baseline survey the plot had a high cover of weeds (*Arctotheca calendula*, *Bromus* sp., *Echium plantagineum* and *Medicago* sp.), but also had a high diversity of native flora (*Dichopogon fimbriatum*, *Austrostipa scabra*, *Triptilodiscus pygmaea* and *Stuartina muelleri*).

Erosion: Monitoring in 2022 did not observe active erosion.

Vegetation – general: Native vegetation was in good condition, with vegetative biomass increasing since the previous monitoring year. Natural regeneration of *Eucalyptus* and *Callitris* saplings appear to be in good health.

Vegetation cover: Groundcover in 2022 was estimated at 44%. Overstorey cover was estimated at 16% whilst midstorey cover was 0%.

Natural regeneration: Disturbed areas were found to have regenerating *Callitris glaucophylla* and *Eucalyptus populnea*.

Weeds: Weed diversity and cover has increased since the previous monitoring year. *Arctotheca calendula*, *Echium plantagineum*, *Sonchus oleraceus*, *Trifolium* spp., *Medicago* sp., *Vulpia* sp. and *Sisymbrium erysimoides* were observed in 2022.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

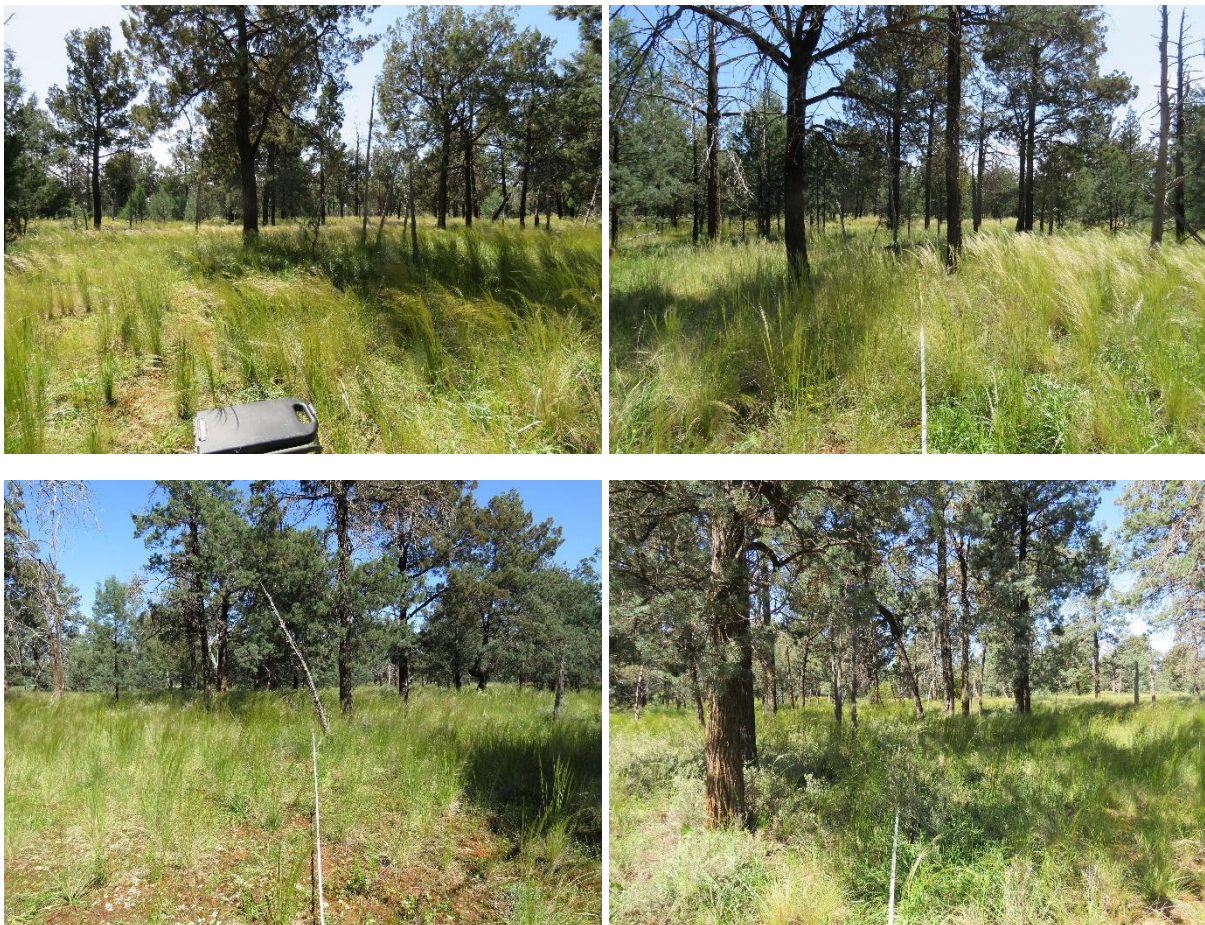


Table 4.1: Plant community type benchmarks and quadrat scores as at September 2022, with the range of values from monitoring periods across all years (in brackets). Values within benchmark are highlighted in green.

Quadrat number	Native species richness	Overstorey cover %	Mid-storey cover %	Ground cover – grasses %	Ground cover – shrubs %	Ground cover – other %	Exotic cover	Number of trees with hollows	Proportion overstorey regen.	Total length of fallen logs (m)*
<i>Benchmark:</i>	>=23	14-27	33-38	5-22	0-21	0-20	N/A	>=3	1	>=33
BOA1	46 (26-46)	0 (0-0)	0 (0-5)	34 (0-72)	4 (0-4)	14 (0-80)	8 (0-52)	0 (0-0)	1 (0-1)	0 (0-0)
BOA2	43 (22-47)	0 (0-4)	0 (0-12.1)	10 (0-14)	2 (0-4)	14 (0-34)	0 (0-52)	0 (0-0)	0.67 (0-0.67)	24.5 (0-51)
BOA3	43 (22-48)	0 (0-2.1)	6 (0-10)	52 (0-52)	4 (0-4)	16 (0-68)	16 (0-48)	0 (0-0)	1 (0-1)	1.5(0-30)
BOA4	33 (21-39)	1 (0-1)	2 (0-4)	34 (0-34)	2 (0-4)	8 (0-50)	0 (0-28)	0 (0-0)	1 (0-1)	0 (0-0)
BOA5	46 (20-46)	0 (0-0)	16 (0-60)	14 (0-16)	0 (0-0)	6 (0-78)	0 (0-42)	0 (0-0)	1 (0-1)	2.5 (0-5)
BOA6	44 (18-44)	16 (0-36)	0 (0-6)	18 (0-18)	10 (0-10)	14 (0-38)	2 (0-70)	1 (0-1)	1 (0-1)	10 (0-22)

*Data not collected in 2022. Data is from the 2021 monitoring year.

5 Condition of conservation values

Conservation values refers to the biodiversity values of the Conservation Area and are specified in Annexure B of the Conservation Agreement.

During the previous monitoring period, native species richness increased to the highest record since monitoring commenced at three of the six Biobanking monitoring sites. The 2022 monitoring period saw a similar increase in native species richness in comparison to the previous year. It is likely that increased rainfall over this time has made it possible to identify more specimens to species level, elevating the total native species richness score.

Favourable rainfall conditions have likely increased groundcover scores, with 'grasses' groundcover scores within or greater than the benchmark at all Biobanking monitoring sites. Scores for 'shrubs' and 'other' groundcover were within benchmark at all Biobanking monitoring sites.

Overstorey cover and midstorey cover scores were similar to previous monitoring years and generally not within the benchmarks, except for site BOA6, which had overstorey cover scores within the benchmark.

The general cover of exotic species was similar to the previous monitoring year, except at BOA3, which saw a moderate increase in exotic cover in 2022. *Arctotheca calendula*, *Echium plantagineum* and *Hypochaeris radicata* were present at all Biobanking monitoring sites, which aligns with previous years. The cover of weeds varies between seasons and across years, influenced by rainfall and other climatic factors.

Figure 6.1 illustrates the distribution of weeds in the Conservation Area. Several previously documented weeds were dead or not found during the survey. Follow up spraying is required for some weeds which have resprouted or remain untreated. Weed control has proven to be effective for most *Opuntia stricta* (Prickly Pear) and *Lycium ferocissimum* (African Boxthorn).

The 2022 survey recorded 54 species of birds within the Conservation Area during the bird surveys (one more than in 2021) with four additional species recorded incidentally (**Appendix A**). One of these species is listed under the *Biodiversity Conservation Act 2016* (Grey-crowned Babbler) and three species (Spotted Harrier, Glossy Ibis and Masked Lapwing) were recorded for the first time.

Only one species, Common Starling, is considered a pest species. Full species list in **Appendix A**.

The 2022 survey recorded 10 species of microbat within the Conservation Area during bat surveys, and one possible identification (**Appendix A**). This is similar to the previous monitoring year, which recorded 10 species of microbat and three possible identifications. One possible threatened microbat species was recorded, *Vespadelus baverstocki* (Inland Forest Bat). The calls of Inland Forest Bat are similar to other *Vespadelus* species, however, these records most aligned with *V. baverstocki*. A confident identification could only be determined through capture.

6 Effectiveness of management actions

The following management actions have been undertaken within the Conservation Area in the past twelve months.

6.1 Monitoring Biobanking monitoring plots and photos points

Monitoring of Biobanking monitoring plots and photo points was undertaken in the 2022 period. Monitoring methodology followed the management action outlined in Table 4 Annexure C Monitoring Program of the Conservation Agreement (2015) and **Table 3.1** of this report. No significant deviations from baseline monitoring occurred in the 2022 monitoring period.

6.2 Annual reports for monitoring program

This Annual Monitoring Report meets the specifications in Annexure D Monitoring Program of the Conservation Agreement (2015).

6.3 Weed management

Weed management occurred in July 2022, completed by MA & WM Robb Environmental Management Services. Previous weed treatment is evident with many weeds found dead or not found during the survey. Weed treatments include both herbicide application and mechanical removal of weeds, with particular focus on *Opuntia stricta* (Prickly Pear). Many tonnes of *Opuntia stricta* were mechanically removed and stockpiled for later disposal at the landfill.

The 2021 recommended that *Opuntia stricta* be mechanically removed rather than continually sprayed. Two piles of *Opuntia stricta* that had been dug up were observed during the monitoring period in the Conservation Area ready for disposal.

Figure 6.1 shows the weeds that require treating, including resprouting weeds that have been previously treated. Since the previous monitoring year there has been an increase in weed abundance, particularly of *Asphodelus fistulosus* (Onion Weed).

6.4 Pest management

There was evidence of Fox and Rabbit scats observed during the 2022 monitoring surveys. Feral animal sightings are shown in **Figure 6.1**. However, no evidence of feral pests was detected during quarterly inspections (refer to **section 6.7**).

No pest control activities were conducted in the monitoring period.

6.5 Fire trail and vehicle access

All trails were in fair to good condition.

6.6 Fencing

All fencing was observed to be in good condition and working order.

6.7 Quarterly inspections

Quarterly inspections of the Conservation Area were conducted in March, June, September and December 2022 by Riverina Agriconsultants. The inspections include commentary on:

- Erosion
- Weeds
- Vegetation cover
- Litter cover
- Dieback
- Soil stability
- Feral animals

The only actions arising from the quarterly inspections were to:

- Monitor and control weeds
- Monitor erosion lines.

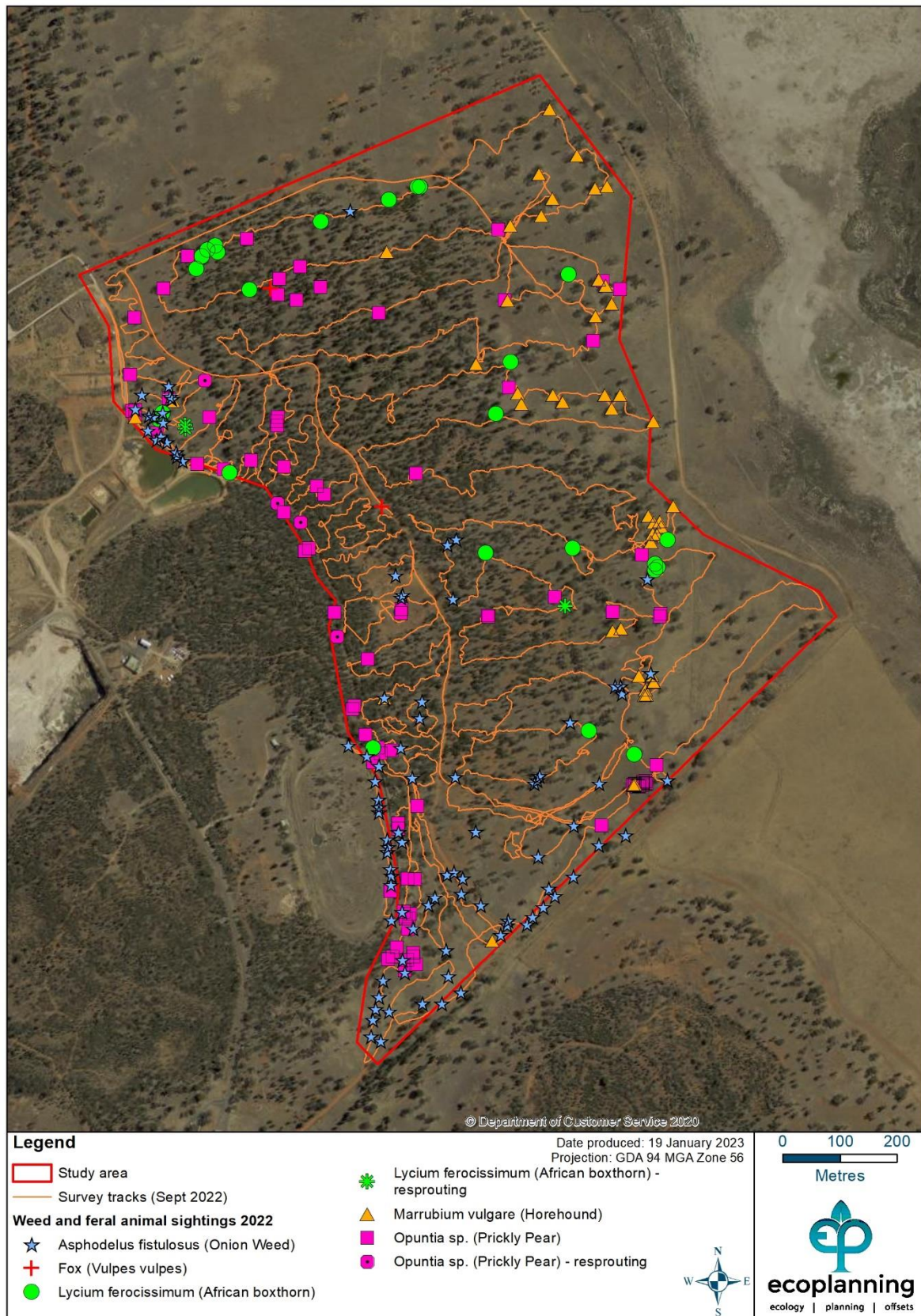


Figure 6.1: Weed and feral animal sightings within the Conservation Area.

7 Recommendations

The following is recommended for the Conservation Area:

- Continue to monitor weeds and conduct secondary treatment for *Lycium ferocissimum*, *Opuntia* sp. and *Marrubium vulgare* as required. Consider further digging out small *Opuntia* sp. and disposing of them in the landfill rather than spraying.
- Maintain quarterly inspections. Monitoring weed growth along the northern perimeter track.
- Continue to conduct annual monitoring in September 2022.
- Foxes appear to be in low numbers, however, they might not be detected as readily when ground cover is high and when high rainfall is more likely to cause scats to break down more quickly. Despite little evidence for foxes, pest management should be conducted in the offset area and coincide with management practices around the landfill for maxise effectiveness.

Appendix A Species list

Biobanking plot species lists

Species name	Common name	BOA1							BOA2							BOA3						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
Exotic species																						
<i>Arctotheca calendula</i>	Capeweed	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
<i>Brassicaceae</i> sp.																						
<i>Bromus rubens</i>						x				x				x	x		x		x			
<i>Bromus</i> sp.			x		x				x	x	x	x	x	x		x	x				x	
<i>Capsella bursa-pastoris</i>	Shepherd's Purse																		x			
<i>Carthamus lanatus</i>	Saffron Thistle																x		x			
<i>Centaurea</i> sp.															x						x	
<i>Chondrilla juncea</i>	Skeleton Weed																				x	
<i>Cirsium vulgare</i>	Spear Thistle																					
<i>Conyza</i> sp.														x							x	
<i>Echium plantagineum</i>	Paterson's Curse	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
<i>Ehrharta longiflora</i>	Annual Veldtgrass														x							
<i>Eragrostis</i> sp.																						
<i>Erodium cicutarium</i>	Common Crowfoot															x				x		
<i>Euphorbiaceae indeterminate</i>	Spurges																			x		
<i>Hordeum leporinum</i>	Barley Grass	x	x				x	x	x	x		x	x	x		x						
<i>Hypochaeris glabra</i>		x					x	x	x	x				x	x		x			x	x	
<i>Hypochaeris radicata</i>	Catsear	x	x		x	x		x	x	x		x	x	x	x	x	x		x	x	x	
<i>Lactuca serriola</i>	Prickly Lettuce		x			x	x	x	x	x			x	x	x					x		
<i>Lamarckia aurea</i>	Goldentop																					
<i>Leontodon rhagadioloides</i>	Cretan Weed	x			x	x		x							x	x			x			
<i>Lepidium</i> sp.							x															
<i>Leptorhynchos</i> sp.					x																	
<i>Lolium rigidum</i>	Wimmera Ryegrass						x	x		x		x	x	x	x				x			

Species name	Common name	BOA1							BOA2							BOA3						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Lycium ferocissimum</i>	African Boxthorn				x	x	x	x														
<i>Medicago laciniata</i>	Cut-leaved Medic	x	x	x	x	x	x	x								x	x	x	x	x	x	x
<i>Medicago minima</i>	Woolly Burr Medic				x	x			x	x	x	x	x	x	x				x	x	x	
<i>Medicago truncatula</i>	Barrel Medic		x	x	x					x	x	x		x	x	x	x					
<i>Medicago</i> sp.									x													x
<i>Opuntia stricta</i>								x														
<i>Opuntia</i> sp.	Prickly Pear																					
<i>Pentaschistis airoides</i>	False Hairgrass						x			x		x	x	x	x				x		x	
<i>Petrorhagia nanteuilii</i>																						
<i>Raphanus raphanistrum</i>	Wild Radish								x													
<i>Romulea rosea</i>	Onion Grass				x			x			x	x	x	x	x		x	x	x	x	x	
<i>Salvia verbenaca</i>																						
<i>Silene tridentata</i>	Catchfly												x		x							
<i>Sisymbrium erysimoides</i>	Smooth Mustard	x				x			x	x		x	x	x		x						
<i>Sisymbrium irio</i>	London Rocket	x							x			x	x									
<i>Sonchus oleraceus</i>	Common Sowthistle	x			x	x	x	x	x			x	x	x	x	x			x	x	x	x
<i>Taraxacum officinale</i>	Dandelion																					
<i>Trifolium arvense</i>	Haresfoot Clover						x		x	x		x	x	x	x	x			x	x	x	x
<i>Trifolium glomeratum</i>	Clustered Clover									x							x					
<i>Trifolium</i> sp.												x							x	x		x
<i>Veronica arvensis</i>	Wall Speedwell								x							x						
<i>Vulpia myuros</i>	Rat's Tail Fescue	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Unknown grass																			x			
Unknown green fleshy lily													x							x		
Native species																						
<i>Actinobole uliginosum</i>	Flannel Cudweed	x	x		x	x	x	x	x	x		x	x	x	x	x	x		x	x	x	x
<i>Aphanes australiana</i>												x	x	x	x				x	x	x	x
<i>Aristida behriana</i>	Bunch Wiregrass	x	x		x	x	x	x		x	x		x		x	x	x			x	x	x

Species name	Common name	BOA1							BOA2							BOA3						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Aristida</i> sp.																			x	x	x	
<i>Aristida jerichoensis</i>	Jericho Wire-grass													x	x							x
<i>Arthropodium minus</i>	Small Vanilla Lily		x	x	x		x													x	x	
<i>Asperula conferta</i>	Common Woodruff														x							
<i>Atriplex semibaccata</i>	Creeping Saltbush		x	x			x	x	x	x	x		x	x	x	x	x					
<i>Austrostipa bigeniculata</i>		x	x	x	x			x		x	x					x	x	x	x			x
<i>Austrostipa scabra</i>	Speargrass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Austrostipa</i> sp.										x					x							
<i>Brachychiton populneus</i>	Kurrajong								x	x	x	x	x	x	x							
<i>Brachyscome lineariloba</i>	Hard-headed Daisy	x																			x	
<i>Bulbine bulbosa</i>	Bulbine Lily	x			x	x	x	x	x			x	x	x	x		x		x	x	x	x
<i>Bulbine semibarbata</i>																						
<i>Calandrinia eremaea</i>					x				x			x	x	x					x	x	x	
<i>Callitris glaucophylla</i>	White Cypress Pine	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Calotis hispidula</i>	Bogan Flea	x		x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
<i>Euphorbia drummondii</i>	Caustic Weed				x	x	x						x		x					x	x	
<i>Cheilanthes sieberi</i>	Mulga Fern	x	x					x	x	x	x	x		x	x	x	x	x	x	x	x	x
<i>Chenopodium desertorum</i>						x	x	x					x									
<i>Chenopodium</i> sp.																						
<i>Chloris</i> sp.		x	x	x	x				x							x	x	x				
<i>Chrysocephalum apiculatum</i>	Common Everlasting	x	x		x	x	x	x								x	x		x			x
<i>Convolvulus erubescens</i> complex							x	x		x			x	x	x		x	x	x	x	x	x
<i>Convolvulus</i> sp.																						
<i>Crassula colorata</i>			x			x	x	x					x	x	x					x	x	x
<i>Crassula</i> sp.		x			x				x			x				x			x			
<i>Daucus glochidiatus</i>	Native Carrot							x														

Species name	Common name	BOA1							BOA2							BOA3						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Dodonaea</i> sp.																						
<i>Dianella</i> sp.		x	x	x	x	x	x	x														
<i>Dichelachne</i> sp.																						
<i>Dichopogon fimbriatum</i>	Chocolate Lily		x	x	x	x	x	x		x		x	x	x			x	x	x	x	x	x
<i>Dichopogon</i> sp.		x							x							x						
<i>Einadia nutans</i>	Climbing Saltbush	x	x											x		x	x					
<i>Einadia nutans</i> subsp. <i>nutans</i>		x		x	x	x	x	x	x			x	x		x				x	x	x	x
<i>Enchylaena tomentosa</i>	Ruby Saltbush	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x
<i>Enteropogon acicularis</i>							x	x			x			x	x							
<i>Eragrostis</i> spp.	A Lovegrass							x							x							
<i>Erodium crinitum</i>	Blue Storksbill	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Eucalyptus populnea</i>	Poplar Box	x	x	x	x	x	x	x									x	x	x	x	x	x
<i>Euphorbia</i> sp.																						
<i>Goodenia cycloptera</i>		x	x	x	x	x	x	x														x
<i>Goodenia pusilliflora</i>		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Goodenia</i> spp.																						
<i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i>			x	x						x	x	x					x	x	x			x
<i>Hyalosperma semisterile</i>		x			x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x
<i>Hyalosperma</i> sp. 2		x																				
<i>Isoetopsis graminifolia</i>	Grass Cushion	x			x	x	x	x	x			x	x	x	x	x		x	x	x	x	x
<i>Leptorhynchos squamatus</i>	Scaly Buttons					x	x	x														
<i>Limonium</i> spp.																						
<i>Maireana enchylaenoides</i>	Wingless Fissure Weed	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Maireana excavata</i>	Bottle Bluebush	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Millotia myosotidifolia</i>	Broad-leaved Millotia																					

Species name	Common name	BOA1							BOA2							BOA3						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Minuria leptophylla</i>																						
<i>Monachather paradoxus</i>	Bandicoot Grass							x							x							
<i>Ophioglossum lusitanicum</i>	Adders Tongue	x						x	x					x	x					x	x	x
<i>Ophioglossum</i> sp.													x			x						
<i>Oxalis perennans</i>		x			x	x	x	x	x	x		x	x	x		x		x	x	x		x
<i>Paspalidium</i> spp.																						
<i>Paspalidium distans</i>														x	x							
<i>Phyllanthus fuernrohrii</i>														x						x		
<i>Pimelea</i> sp.																						
<i>Pittosporum angustifolium</i>		x	x	x	x	x	x	x						x	x							
<i>Plantago debilis</i>													x							x		
<i>Pterostylis bicolor</i>	Black-tip Greenhood																					
<i>Ptilotus spathulatus</i>	Pussy Tails	x	x	x	x	x	x	x														
<i>Ranunculus sessiliflorus</i>									x			x	x	x	x							
<i>Rhodanthe corymbiflora</i>	Small White Sunray					x						x										
<i>Rhodanthe diffusa</i>									x			x	x	x	x	x			x	x	x	x
<i>Rhodanthe laevis</i>	Smooth Sunray																					
<i>Rhodanthe pygmaea</i>	Pygmy Sunray	x		x	x	x	x	x	x			x	x	x		x	x		x	x	x	x
<i>Rytidosperma caespitosum</i>																						x
<i>Rytidosperma</i> sp.		x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	
<i>Salsola australis</i> (syn. <i>S. kali</i> and <i>S. tragus</i>)	Soft Roly Poly	x	x			x	x		x	x	x									x		
<i>Sclerolaena diacantha</i>						x	x	x						x	x						x	x
<i>Sclerolaena</i> sp.				x	x																	
<i>Senna artemisioides</i>	Silver Cassia								x		x	x			x							
<i>Sida corrugata</i>	Corrugated Sida	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x

Species name	Common name	BOA1							BOA2							BOA3						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Sida cunninghamii</i>	Ridged Sida	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Solanum esuriale</i>	Quena															x	x					
<i>Solanum</i> sp.										x												
<i>Spergularia</i> sp.																						
<i>Stackhousia monogyna</i>	Creamy Stackhousia								x	x	x	x	x	x	x	x						
<i>Stuartina muelleri</i>	Spoon Cudweed					x			x			x	x	x	x	x			x	x	x	x
<i>Thysanotus patersonii</i>	Twining Fringe Lily																					
<i>Tricoryne elatior</i>	Yellow Autumn-lily				x			x		x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Tripogon loliiformis</i>	Five-minute Grass						x	x						x	x						x	x
<i>Triptilodiscus pygmaeus</i>	Common sunray	x			x	x		x	x			x	x	x	x	x	x		x	x	x	x
<i>Vittadinia cuneata</i>	Fuzzweed		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Vittadinia</i> sp.	Fuzzweed							x							x					x		x
<i>Wahlenbergia communis</i>	Tufted Bluebell							x				x										
<i>Wahlenbergia</i> sp.		x			x		x		x					x	x				x		x	x
<i>Wahlenbergia</i> sp. (broad leaf)																x				x		x
<i>Wahlenbergia stricta</i>	Tall Bluebell					x							x									
<i>Wurmbea dioica</i>	Early Nancy								x			x	x									
<i>Xerochrysum bracteatum</i>	Golden Everlasting		x		x		x	x	x	x		x	x	x		x			x	x	x	x
Unknown Asteraceae																						
Unknown grass																						

Species name	Common name	BOA4							BOA5							BOA6						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
Exotic species																						
<i>Aira cupaniana</i>										x							x					
<i>Arctotheca calendula</i>	Capeweed	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x
<i>Brassicaceae</i> sp.																				x		
<i>Bromus rubens</i>			x		x	x	x	x				x	x				x		x			
<i>Bromus</i> sp.		x	x						x	x	x		x	x		x	x	x	x	x	x	x
<i>Capsella bursa-pastoris</i>	Shepherd's Purse																		x			
<i>Carthamus lanatus</i>	Saffron Thistle	x	x	x	x	x	x	x				x				x						
<i>Centaurea</i> sp.															x							x
<i>Cirsium vulgare</i>	Spear Thistle								x													
<i>Chenopodiaceae indeterminate</i>	Salt-bushes												x									
<i>Chondrilla juncea</i>	Skeleton Weed							x														
<i>Cirsium vulgare</i>	Spear Thistle							x														
<i>Conyza</i> sp.															x							
<i>Echium plantagineum</i>	Paterson's Curse	x	x		x	x	x	x	x	x		x	x	x	x	x	x		x	x	x	x
<i>Eragrostis</i> sp.																		x				
<i>Erodium cicutarium</i>	Common Crowfoot																					
<i>Euphorbiaceae indeterminate</i>	Spurges												x							x	x	
<i>Leontodon rhagadioloides</i>	Cretan Weed	x			x	x	x	x														
<i>Hordeum leporinum</i>	Barley Grass				x				x	x	x	x	x	x	x	x	x			x	x	x
<i>Hypochaeris glabra</i>								x					x	x	x	x	x					x
<i>Hypochaeris radicata</i>	Catsear	x	x		x	x	x	x	x	x		x	x	x	x	x	x		x	x		x
<i>Iris</i> sp.																					x	
<i>Lactuca serriola</i>	Prickly Lettuce								x	x					x	x					x	x
<i>Lamarckia aurea</i>	Goldentop												x	x								
<i>Lolium rigidum</i>	Wimmera Ryegrass				x	x	x	x	x	x					x	x	x		x	x		x
<i>Lycium ferocissimum</i>	African Boxthorn																					
<i>Medicago laciniata</i>	Cut-leaved Medic					x	x		x				x	x	x	x			x	x	x	x

Species name	Common name	BOA4							BOA5							BOA6						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Medicago minima</i>	Woolly Burr Medic	x	x		x	x	x	x					x	x					x	x	x	
<i>Medicago truncatula</i>	Barrel Medic	x	x		x		x	x			x				x			x	x		x	x
<i>Medicago</i> sp.									x	x			x	x		x						
<i>Opuntia stricta</i>			x		x			x		x		x					x					
<i>Opuntia</i> sp.	Prickly Pear	x		x		x	x				x		x					x				
<i>Pentaschistis airoides</i>	False Hairgrass											x	x	x	x				x	x	x	x
<i>Petrorhagia nanteuillii</i>								x														
<i>Raphanus raphanistrum</i>	Wild Radish																					
<i>Romulea rosea</i>	Onion Grass					x					x	x	x	x	x			x	x	x	x	
<i>Salvia verbenaca</i>							x	x														
<i>Silene tridentata</i>	Catchfly	x			x	x	x	x								x			x			
<i>Sisymbrium erysimoides</i>	Smooth Mustard	x			x	x	x	x	x			x	x			x			x	x	x	x
<i>Sisymbrium irio</i>	London Rocket															x			x	x	x	
<i>Sonchus oleraceus</i>	Common Sowthistle	x			x	x	x	x	x			x	x	x	x	x			x	x	x	x
<i>Taraxacum officinale</i>	Dandelion														x							
<i>Trifolium arvense</i>	Haresfoot Clover							x		x		x	x	x	x	x	x		x	x	x	x
<i>Trifolium glomeratum</i>	Clustered Clover									x							x					
<i>Trifolium</i> sp.													x	x		x			x		x	
<i>Veronica arvensis</i>	Wall Speedwell								x													
<i>Vulpia myuros</i>	Rat's Tail Fescue												x	x	x				x	x		
<i>Vulpia</i> sp.		x	x		x	x			x	x		x				x	x		x			
Unknown dead thistle										x												
Unknown green fleshy lily													x	x								
Native species																						
<i>Actinobole uliginosum</i>	Flannel Cudweed							x	x	x		x	x	x	x	x	x		x	x	x	x
<i>Aphanes australiana</i>												x	x	x	x	x			x	x	x	
<i>Aristida behriana</i>	Bunch Wiregrass		x	x	x	x	x	x			x											
<i>Aristida</i> sp.						x	x															

Species name	Common name	BOA4							BOA5							BOA6						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Aristida jerichoensis</i>								x														
<i>Arthropodium minus</i>	Small Vanilla Lily								x		x	x	x	x	x	x	x		x	x	x	x
<i>Atriplex semibaccata</i>	Creeping Saltbush	x	x	x	x	x	x															
<i>Austrostipa aristiglumis</i>	Plains Grass																					
<i>Austrostipa bigeniculata</i>											x											
<i>Austrostipa scabra</i>	Speargrass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
<i>Austrostipa</i> sp.																						
<i>Brachychiton populneus</i>	Kurrajong																					
<i>Brachyscome lineariloba</i>	Hard-headed Daisy																					
<i>Bromus</i> sp.															x							x
<i>Bulbine bulbosa</i>	Bulbine Lily	x			x	x	x	x	x		x		x	x	x	x			x	x	x	x
<i>Bulbine semibarbata</i>									x				x	x	x							
<i>Calandrinia eremaea</i>									x			x	x	x	x	x			x		x	x
<i>Callitris glaucophylla</i>	White Cypress Pine	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Calotis hispidula</i>	Bogan Flea			x	x	x	x	x	x	x		x	x	x	x	x			x	x	x	x
<i>Euphorbia drummondii</i>	Caustic Weed				x	x	x	x					x	x						x	x	
<i>Cheilanthes sieberi</i>	Mulga Fern								x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Chenopodium desertorum</i>						x	x										x	x	x	x	x	x
<i>Chenopodium</i> sp.																x						
<i>Chloris</i> sp.							x		x	x	x											
<i>Chloris truncata</i>	Windmill Grass							x														
<i>Chrysocephalum apiculatum</i>	Common Everlasting	x	x	x	x	x	x	x	x	x		x	x		x							
<i>Convolvulus erubescens</i> complex			x	x	x	x	x	x					x	x	x					x	x	
<i>Convolvulus</i> sp.		x																				
<i>Crassula colorata</i>										x			x	x	x		x			x	x	x

Species name	Common name	BOA4							BOA5							BOA6						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Crassula decumbens</i>																x						
<i>Crassula</i> sp.									x			x				x			x			
<i>Daucus glochidiatus</i>	Native Carrot							x														
<i>Dodonaea</i> sp.															x							
<i>Dianella</i> sp.																						
<i>Dichelachne</i> sp.									x							x						
<i>Dichopogon fimbriatum</i>	Chocolate Lily									x	x	x	x	x	x		x	x	x	x	x	x
<i>Dichopogon</i> sp.									x							x						
<i>Einadia nutans</i>	Climbing Saltbush		x	x			x		x	x	x					x	x					
<i>Einadia nutans</i> subsp. <i>nutans</i>					x		x	x				x	x		x				x	x	x	x
<i>Enchylaena tomentosa</i>	Ruby Saltbush	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x	x
<i>Enteropogon acicularis</i>						x	x	x							x						x	x
<i>Eragrostis</i> spp.	A Lovegrass														x					x		x
<i>Erodium crinitum</i>	Blue Storksbill	x			x	x			x		x	x	x		x	x	x	x	x	x	x	x
<i>Eucalyptus populnea</i>	Poplar Box	x	x	x	x	x	x	x		x		x	x		x	x	x		x	x	x	x
<i>Euphorbia</i> sp.									x													
<i>Goodenia cycloptera</i>					x			x				x			x							
<i>Goodenia pusilliflora</i>		x	x	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x
<i>Goodenia</i> spp.						x	x						x		x							
<i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i>			x	x													x	x				
<i>Hyalosperma semisterile</i>		x			x	x	x	x			x	x	x		x				x	x	x	x
<i>Hyalosperma</i> sp.									x													
<i>Hyalosperma</i> sp. 2									x							x						
<i>Hypoxis glabella</i> var. <i>glabella</i>	Star Grass																					x
<i>Isoetopsis graminifolia</i>	Grass Cushion	x			x	x	x	x	x			x	x		x	x					x	x

Species name	Common name	BOA4							BOA5							BOA6						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
<i>Leptorhynchus squamatus</i>	Scaly Buttons																					
<i>Limonium</i> spp.						x	x															
<i>Maireana enchylaenoides</i>	Wingless Fissure Weed	x		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Maireana excavata</i>	Bottle Bluebush		x	x	x	x	x	x								x	x		x		x	x
<i>Millotia myosotidifolia</i>	Broad-leaved Millotia								x			x	x	x	x							
<i>Monachather paradoxus</i>	Bandicoot Grass														x							x
<i>Minuria leptophylla</i>		x	x	x	x	x	x	x														
<i>Ophioglossum lusitanicum</i>	Adders Tongue																			x	x	
<i>Ophioglossum</i> sp.																						
<i>Oxalis perennans</i>			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Paspalidium</i> spp.													x		x					x	x	x
<i>Paspalidium distans</i>							x	x						x						x		
<i>Phyllanthus fuernrohrii</i>														x	x					x	x	
<i>Pimelea trichostachya</i>							x															
<i>Pimelea</i> sp.								x														
<i>Pittosporum angustifolium</i>																						
<i>Plantago debilis</i>																						
<i>Pterostylis bicolor</i>	Black-tip Greenhood							x	x						x							
<i>Ptilotus spathulatus</i>	Pussy Tails	x	x	x	x	x	x	x														
<i>Ranunculus sessiliflorus</i>														x		x				x	x	x
<i>Rhodanthe corymbiflora</i>	Small White Sunray				x		x						x							x	x	
<i>Rhodanthe diffusa</i>												x	x	x	x				x	x	x	x
<i>Rhodanthe laevis</i>	Smooth Sunray											x	x	x	x							x
<i>Rhodanthe pygmaea</i>	Pygmy Sunray	x			x	x	x					x										

Species name	Common name	BOA4								BOA5								BOA6							
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022			
<i>Rytidosperma caespitosum</i>								x																	
<i>Rytidosperma</i> sp.		x	x	x	x	x		x	x	x	x			x	x	x	x	x	x	x	x	x			
<i>Salsola australis</i> (syn. <i>S. kali</i> and <i>S. tragus</i>)	Soft Roly Poly	x	x			x	x													x					
<i>Sclerolaena diacantha</i>						x	x							x											
<i>Sclerolaena</i> sp.																									
<i>Senna artemisioides</i>	Silver Cassia																								
<i>Sida corrugata</i>	Corrugated Sida	x	x	x	x	x	x		x	x		x	x	x		x	x		x	x	x	x			
<i>Sida cunninghamii</i>	Ridged Sida	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
<i>Solanum esuriale</i>	Quena		x			x	x																		
<i>Solanum</i> sp.																									
<i>Spergularia</i> sp.									x																
<i>Stackhousia monogyna</i>	Creamy Stackhousia								x	x		x		x	x										
<i>Stuartina muelleri</i>	Spoon Cudweed							x	x	x		x		x	x	x		x	x	x	x				
<i>Thysanotus patersonii</i>	Twining Fringe Lily								x			x	x	x											
<i>Tricoryne elatior</i>	Yellow Autumn-lily										x		x		x		x	x	x	x	x	x			
<i>Tripogon loliiformis</i>	Five-minute Grass												x		x					x	x	x			
<i>Triptilodiscus pygmaeus</i>	Common sunray								x	x		x	x	x	x	x	x		x	x	x	x			
<i>Vicia</i> sp.																						x			
<i>Vittadinia cuneata</i>	Fuzzweed	x	x	x	x	x	x	x		x	x		x	x		x	x	x		x	x				
<i>Vittadinia</i> spp.	Fuzzweed																					x			
<i>Wahlenbergia communis</i>	Tufted Bluebell																								
<i>Wahlenbergia</i> sp.									x	x				x	x	x					x	x			
<i>Wahlenbergia stricta</i>	Tall Bluebell												x		x										
<i>Wurmbea dioica</i>	Early Nancy											x													
<i>Xerochrysum bracteatum</i>	Golden Everlasting		x		x	x	x	x	x	x		x	x	x	x	x	x		x	x	x	x			
Unknown Asteraceae																		x							

Species name	Common name	BOA4							BOA5							BOA6						
		2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022	2015	2017	2018	2019	2020	2021	2022
Unknown grass				x					x	x								x				

Bird survey species lists 2022

Species Name	Common Name	BC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Incidentals	Previously recorded
<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater			x	x	x	x	x	x		x
<i>Acanthiza apicalis</i>	Inland Thornbill										x
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill			x		x	x	x	x		x
<i>Acanthiza nana</i>	Yellow Thornbill			x		x	x	x	x		x
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill					x	x				x
<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill			x		x	x	x	x		x
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk										x
<i>Agotheles cristatus</i>	Australian owl-nightjar			x				x		x	x
<i>Anas superciliosa</i>	Pacific Black Duck				x	x	x		x	x	x
<i>Aphelocephala leucopsis</i>	Southern Whiteface										x
<i>Aquila audax</i>	Wedge-tailed Eagle										x
<i>Ardea pacifica</i>	White-necked Heron										x
<i>Artamus cyanopterus</i>	Dusky Woodswallow	V									x
<i>Artamus leucorhynchus</i>	White-breasted Woodswallow										x
<i>Artamus personatus</i>	Masked Woodswallow										x
<i>Artamus superciliosus</i>	White-browed Woodswallow			x		x			x		x
<i>Barnardius zonarius</i>	Australian Ringneck			x	x	x	x	x	x		x
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo							x	x	x	x
<i>Cacatua leadbeateri</i>	Major Mitchell's Cockatoo	V									x
<i>Chalcites basalis</i>	Horsefield's Bronze-Cuckoo										x
<i>Chenonetta jubata</i>	Australian Wood Duck					x				x	x
<i>Chroicocephalus novaehollandiae</i>	Silver Gull			x	x	x	x	x			x
<i>Chrysococcyx lucidus</i>	Shinny Bronze Cuckoo										x
<i>Cincloramphus mathewsi</i>	Rufous Songlark					x			x	x	x
<i>Circus approximans</i>	Swamp harrier					x					x
<i>Circus assimilis</i>	Spotted Harrier									x	

<i>Colluricincla harmonica</i>	Grey Shrike-thrush				X			X	X		X
<i>Columba livia</i>	Rock Dove										X
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike			X	X	X	X	X	X		X
<i>Corcorax melanorhamphos</i>	White-winged Chough			X		X	X	X	X		X
<i>Corvus bennetti</i>	Little Crow										X
<i>Corvus coronoides</i>	Australian Raven			X	X	X	X		X		X
<i>Corvus mellori</i>	Little Raven			X	X	X	X	X	X		X
<i>Cracticus nigrogularis</i>	Pied Butcherbird			X	X			X	X		X
<i>Cracticus tibicen</i>	Australian Magpie			X	X	X	X	X	X		X
<i>Cracticus torquatus</i>	Grey Butcherbird			X	X	X	X	X	X		X
<i>Dacelo novaeguineae</i>	Laughing Kookaburra				X					X	X
<i>Dicaeum hirundinaceum</i>	Mistletoe Bird										X
<i>Egretta novaehollandiae</i>	White-faced Heron										
<i>Eolophus roseicapilla</i>	Galah				X		X	X			X
<i>Eopsaltria australis</i>	Eastern Yellow Robin					X	X		X		X
<i>Falco berigora</i>	Brown Falcon				X					X	X
<i>Falco cenchroides</i>	Nankeen Kestrel										X
<i>Falco subniger</i>	Black Falcon										X
<i>Geopelia humeralis</i>	Bar-shouldered Dove								X		X
<i>Geopelia placida</i>	Peaceful Dove			X	X	X	X	X			X
<i>Gerygone fusca</i>	Western Gerygone			X		X			X		X
<i>Grallina cyanoleuca</i>	Magpie Lark			X	X	X	X	X	X		X
<i>Haliastur spheonurus</i>	Whistling Kite			X	X	X	X	X	X		X
<i>Lalage sueurii</i>	White-winged Triller			X							X
<i>Manorina flavigula</i>	Yellow-throated Miner			X	X	X	X	X	X		X
<i>Melopsittacus undulatus</i>	Budgerigar										X
<i>Merops ornatus</i>	Rainbow bee-eater			X							X
<i>Milvus migrans</i>	Black Kite			X	X	X	X	X	X		X
<i>Northiella haematogaster</i>	Blue Bonnet			X	X	X		X	X		X
<i>Nymphicus hollandicus</i>	Cockatiel								X		X
<i>Ocyphaps lophotes</i>	Crested Pigeon			X	X	X	X	X	X		X
<i>Pachycephala rufiventris</i>	Rufous Whistler			X		X	X	X	X		X

<i>Pardalotus striatus</i>	Striated Pardalote					x	x	x	x		x
<i>Pelecanus conspicillatus</i>	Australian Pelican									x	x
<i>Petrochelidon nigricans</i>	Tree Martin										x
<i>Petroica goodenovii</i>	Red-capped Robin			x	x	x	x				x
<i>Phalacrocorax carbo</i>	Black Cormorant										x
<i>Phalacrocorax varius</i>	Australian pied cormorant							x			x
<i>Phaps chalcoptera</i>	Common Bronzewing			x	x		x	x	x		x
<i>Philemon citreogularis</i>	Little Friarbird			x		x		x			x
<i>Plectorhyncha lanceolata</i>	Striped Honeyeater			x		x	x	x	x		x
<i>Plegadis falcinellus</i>	Glossy Ibis									x	
<i>Polytelis swainsonii</i>	Superb Parrot	V	V								x
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler	V		x	x	x	x	x	x		x
<i>Psephotus haematonotus</i>	Red-rumped Parrot			x	x	x	x	x	x		x
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler	V									x
<i>Rhipidura albiscapa</i>	Grey Fantail			x					x		x
<i>Rhipidura leucophrys</i>	Willie Wagtail			x	x	x	x	x	x		x
<i>Smicronis brevirostris</i>	Weebil					x	x		x		x
<i>Struthidea cinerea</i>	Apostlebird			x	x	x		x	x		x
<i>Sturnus vulgaris</i>	Common Starling				x	x	x	x	x		x
<i>Tadorna tadornoides</i>	Australian shelduck							x			x
<i>Taeniopygia bichenovii</i>	Double-barred Finch			x		x	x				x
<i>Threskiornis moluccus</i>	Australian White Ibis			x	x	x	x	x	x		x
<i>Threskiornis spinicollis</i>	Straw-necked Ibis			x	x	x		x	x		x
<i>Todiramphus sanctus</i>	Sacred Kingfisher										x
<i>Trichoglossus haematodus</i>	Rainbow lorikeet										x
<i>Turnix varius</i>	Painted Buttonquail			x	x	x	x		x		x
<i>Vanellus miles</i>	Masked Lapwing			x	x					x	
<i>Zosterops lateralis</i>	Silvereye									x	x

Bat survey species list 2022

Species Name	Common Name	BC Act Listing	EPBC Act Listing	2016	2017	2018	2019	2020	2021	2022
<i>Austronomus australis</i>	White-striped Freetail Bat			X			X	X	X	X
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			X	X	X	X	X	X	X
<i>Chalinolobus morio</i>	Chocolate Wattled Bat			X	X	X	X	X	X	X
<i>Chalinolobus picatus</i>	Little Pied Bat	V		X	X			X		
<i>Miniopterus australis</i>	Little Bent-winged Bat	V					X			
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V					X			
<i>Mormopterus (Ozimops) kitcheneri</i>	South-western Freetail Bat			X						
<i>Nyctophilus</i> sp.	Long-eared Bat			X	X	X	X	X	X	
<i>Ozimops ridei</i>	Ride's Freetail Bat								P	X
<i>Ozimops petersi</i>	Inland Freetail Bat			X	X	X	X	X	X	X
<i>Ozimops planiceps</i>	South-eastern Freetail Bat				X	X	X	X	X	X
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat						X			
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail Bat	V						X		
<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat			X	X	X	X	X	X	X
<i>Scotorepens greyii</i>	Little Broad-nosed Bat			X	X	X	X	X	X	X
<i>Vespadelus baverstocki</i>	Inland Forest Bat	V		X					P	P
<i>Vespadelus darlingtoni</i>	Large Forest Bat				X				P	X
<i>Vespadelus regulus</i>	Southern Forest Bat			P			X	X	X	
<i>Vespadelus vultumus</i>	Little Forest Bat			X	X	X	X	X	X	X

Appendix B Completed monitoring data sheets

Photo point 1

Monitoring Data Sheet			
Monitoring Point Number	PP1	Date	27/9/22
1. Site Photo(s)	9309 - 9311 9312		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	5%	Euc. populnea,	
Midstorey:	1%	Acacia osw.	
Groundcover(grass - shrubs - other):	25% 0%	Austrostipa scabra, Eucly. tom	
Litter:	2%		
Bare ground:	<1%		
Cryptogams:	1%		
Proportion of canopy species regenerating	1/3		
Exotic cover	70%	Hordeum, medicago, capeweed, vulpia, thrediris,	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Some exotic growth along erosion line
Threatened species sightings			Nd
Fire event/fuel/fire breaks			High biomass
Weeds			see above
Pest animals			Nd
Visitor impact/vehicles			Nd
Rubbish dumping			Nd
Erosion			old erosion stable
Fencing			Nd

Photo point 2

Monitoring Data Sheet				
Monitoring Point Number	PP2		Date	27/9/22
1. Site Photo(s)	9313 - 9316			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	10%		Callitris, Eucalyptus	
Midstorey:	15%		Willow, Callitris, Dodonaea	
Groundcover (grass - shrubs - other):	30%	10%	Austro. scabra; E. hyn. tom.	
Litter:	1%			
Bare ground:	10%			
Cryptogams:	15%			
Proportion of canopy species regenerating	1/2			
Exotic cover	30%		Sonchus; Echinum; trifolium ar.; Hordeum; arctotheca; vulpa	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased grass cover over old track	
Threatened species sightings			GCB.	
Fire event/fuel/fire breaks			High biomass	
Weeds			See above	
Pest animals			Fox track	
Visitor impact/vehicles			Track nearby.	
Rubbish dumping			Nil	
Erosion			Old erosion - low levels	
Fencing			Nil	

Photo point 3

Monitoring Data Sheet				
Monitoring Point Number	PP3		Date	28/9/22
1. Site Photo(s)	9317 - 9320			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	5		E. popul.	
Midstorey:	1		Acacia oswaldii	
Groundcover (grass - shrubs - other):	30	10	30	Asplenium, Eriophorum, Entolasia, Dichondra, Sclerolaena
Litter:	5			
Bare ground:	5			
Cryptogams:	5			
Proportion of canopy species regenerating	212			
Exotic cover	10		Lolium, Hordeum, Maritima, Echinum	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased ground cover growth on bare earth	
Threatened species sightings			GCB	
Fire event/fuel/fire breaks			Increased biomass	
Weeds			Trifolium arvense, Medicago	
Pest animals			Fox scat	
Visitor impact/vehicles			None	
Rubbish dumping			Nil	
Erosion			Nil	
Fencing			Nil	

Photo point 4

Monitoring Data Sheet				
Monitoring Point Number	PP4		Date	28/9/22
1. Site Photo(s)	9321 - 9324			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	10		E. pop Calceolaria	
Midstorey:	1		Calceolaria	
Groundcover(grass - shrubs - other):	25	20	15	Holpa, enclyp Atiplex semi, Entrop
Litter:	5			
Bare ground:	5			
Cryptogams:	10			
Proportion of canopy species regenerating	2/2			
Exotic cover	20		Hordeum, Marrubium Medicago, Echium, Aschottreca	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased ground cover	
Threatened species sightings			GCB	
Fire event/fuel/fire breaks			Increased biomass	
Weeds			Siamonius ens	
Pest animals			Nil	
Visitor impact/vehicles			Nil	
Rubbish dumping			Nil	
Erosion			Nil	
Fencing			Nil	

Photo point 5

Monitoring Data Sheet				
Monitoring Point Number	PP 5		Date	28/9/22
1. Site Photo(s)	9325 - 9328			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	5		E pop, Callitris	
Midstorey:	1		Callitris, Acacia ossea, E. pop, Grevia	
Groundcover(grass - shrubs - other):	20	10	25	Asplen, Enchyl, Maire decal, Sclero diac, Entero ac
Litter:	5			
Bare ground:	5			
Cryptogams:	20			
Proportion of canopy species regenerating	2/2			
Exotic cover	15%		Hordenn, Marrubium, Madic, Silymb erys, Sordus	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased ground cover	
Threatened species sightings			GCB	
Fire event/fuel/fire breaks			Increased biomass	
Weeds			Echinum as above	
Pest animals			nil	
Visitor impact/vehicles			nil	
Rubbish dumping			nil	
Erosion			nil	
Fencing			nil	

Photo point 6

Monitoring Data Sheet				
Monitoring Point Number	PP6		Date	28/9/22
1. Site Photo(s)	9329 - 9332			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	15		Callitris E pop	
Midstorey:	5		Callitris, Geijera	
Groundcover(grass - shrubs - other):	20	15	15	Aster, Eucalypt, Actin, Hyalos, Crassula, Sclero dace
Litter:	5			
Bare ground:	15			
Cryptogams:	15			
Proportion of canopy species regenerating				
Exotic cover	25		Medic laet, Telf arva Arcto, Echium, Vulpia	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased ground cover.	
Threatened species sightings			Nil	
Fire event/fuel/fire breaks			Increased ground fuel fire trail good condition	
Weeds			as above	
Pest animals			Nil	
Visitor impact/vehicles			Vehicle track nearby	
Rubbish dumping			No visible blown rubbish	
Erosion			Nil. drainage line well vegetated	
Fencing			Nil	

Photo point 7

Monitoring Data Sheet				
Monitoring Point Number	117		Date	28/9/22
1. Site Photo(s)	9333 - 9336			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	5		Callitris E. pop	
Midstorey:	10		1	
Groundcover (grass - shrubs - other):	20	1	25	Asp. pa, Enterop, Hyalosp. Aristida ser Marr etca, Good pusi, Arist bel
Litter:	1			
Bare ground:	5			
Cryptogams:	38			
Proportion of canopy species regenerating	2/2			
Exotic cover	10		Medic laei, Arcto, Echum Trif arve	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased ground cover	
Threatened species sightings			Gib	
Fire event/fuel/fire breaks			Increased fuel / biomass	
Weeds			as above	
Pest animals			N.I	
Visitor impact/vehicles			N.I	
Rubbish dumping			N.I	
Erosion			N.I	
Fencing			N.I	

Photo point 8

Monitoring Data Sheet				
Monitoring Point Number	P18		Date	28/9/22
1. Site Photo(s)	9337 - 9340			
2. Floristic BioMetric attributes				
Native cover	% cover		Dominant species	
Overstorey:	5		E pop, Callitris, Allocas, Lueh	
Midstorey:	1		E pop, Acacia osu, Callitris	
Groundcover (grass - shrubs - other):	10	5	10	Astax, Endygl, Mair deca, Silero muri, Grass colo
Litter:	5			
Bare ground:	5			
Cryptogams:	10			
Proportion of canopy species regenerating	2/3			
Exotic cover	35		Sisy eris, Hordeum, Medie trunc, Arcto, Edmun, Sonda overa	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Increased ground cover	
Threatened species sightings			GLB	
Fire event/fuel/fire breaks			fire trail - increased grass growth Increased fuel / biomass	
Weeds			as above	
Pest animals			Nil	
Visitor impact/vehicles			Nil / track rarely used	
Rubbish dumping			Nil	
Erosion			Nil	
Fencing			Nil	

Photo point 9 (BOA 1)

Monitoring Data Sheet			
Monitoring Point Number	BOA1	Date	20/9/22
1. Site Photo(s)	9293-9296		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey: 5m	O =	O = 	17
Midstorey: 5m	M =	O S =	2
Groundcover (grass - shrubs - other): 1m		O = 	7
Litter: 1m		L =	2
Bare ground: 1m		B = 	6
Cryptogams: 1m		C = 	29
Proportion of canopy species regenerating		1/1	100%
Exotic cover: 1m		E =	4
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Callitris + E. bim + Senna + GCs
Threatened species sightings			Probs Babbler
Fire event/fuel/fire breaks			—
Weeds			Trifolium/Medic/Boathorn/Pappos
Pest animals			—
Visitor impact/vehicles			—
Rubbish dumping			—
Erosion			—
Fencing			—

Photo point 10 (BOA 2)

Monitoring Data Sheet			
Monitoring Point Number	BOA182	Date	22.5.22
1. Site Photo(s)	9305-9309		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	—	G = III (5)	
Midstorey:	—	S = I (1)	
Groundcover (grass - shrubs - other):		O = III II (7)	
Litter:		L = II (2)	
Bare ground:		B = III III III I (21)	
Cryptogams:		C = III III III II (17)	
Proportion of canopy species regenerating		" / III 66%	
Exotic cover		E — (0)	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Callitris / Bimble
Threatened species sightings			
Fire event/fuel/fire breaks			—
Weeds			
Pest animals			
Visitor impact/vehicles			—
Rubbish dumping			—
Erosion			—
Fencing			—

Photo point 11 (BOA 3)

Monitoring Data Sheet			
Monitoring Point Number	BOA 3.	Date	20/9/22
1. Site Photo(s)	29289 - 9292		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey: 5m	0	O = IIII	
Midstorey: 5m	3		
Groundcover (grass - shrubs - other):		G = IIII IIII IIII IIII	
Litter: 1m	3		
Bare ground:		S = II	
Cryptogams:		III III	
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Yes - Callitris + Bimble regen
Threatened species sightings			XXX — GCB.
Fire event/fuel/fire breaks			—
Weeds			Sarcocolla/Cape weed/Pastos. Trifolium/Lolium/Medics
Pest animals			—
Visitor impact/vehicles			—
Rubbish dumping			—
Erosion			—
Fencing			—

Photo point 12 (BOA 4)

Monitoring Data Sheet			
Monitoring Point Number	BOA 4	Date	22.9.2022
1. Site Photo(s)	99301 - 9304		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	1	G = (17)	
Midstorey:		S = (1)	
Groundcover(grass - shrubs - other):		O = (4)	
Litter:		L = (2)	
Bare ground:		B = (24)	
Cryptogams:		C = (18)	
Proportion of canopy species regenerating		" / 100% (100%)	
Exotic cover		E (0)	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Quarrie/Bimble/Cattitons
Threatened species sightings			Probs GC Babbler
Fire event/fuel/fire breaks			_____
Weeds			Archboldia
Pest animals			Fox scats
Visitor impact/vehicles			_____
Rubbish dumping			_____
Erosion			_____
Fencing			_____

Photo point 13 (BOA 5)

Monitoring Data Sheet			
Monitoring Point Number	BOA5	Date	20/9/22
1. Site Photo(s)	9301-9305		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:		G =	7
Midstorey:	—	S =	0
Groundcover(grass – shrubs - other):		O =	3
Litter:		L =	18
Bare ground: *		B =	19
Cryptogams:		C =	5
Proportion of canopy species regenerating		/ =	100%
Exotic cover		E =	0
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Callitris
Threatened species sightings			Probably Babblers
Fire event/fuel/fire breaks			—
Weeds			Arctotheca/Sonchus/Potto/Opuntia
Pest animals			Fox tracks on road
Visitor impact/vehicles			—
Rubbish dumping			—
Erosion			—
Fencing			—

Photo point 14 (BOA 6)

Monitoring Data Sheet				
Monitoring Point Number	BOA6		Date	20/9/22
1. Site Photo(s)	9297 - 9300			
2. Floristic BioMetric attributes				
Native cover		% cover	Dominant species	
SM LM	Overstorey:		G =	
	Midstorey:		S =	
	Groundcover (grass - shrubs - other):		O =	
	Litter:		L =	
	Bare ground:		B =	
	Cryptogams:		C =	
	Proportion of canopy species regenerating		" / " = 100%	
Exotic cover			E = 1	
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Callitris + Bimble Box	
Threatened species sightings			Probs Babbler	
Fire event/fuel/fire breaks			_____	
Weeds			Patio/Haresfoot Clover/Medics + Trifolium Vulpia/Sonchus/Arctotheca/Syntherisma	
Pest animals			_____	
Visitor impact/vehicles			_____	
Rubbish dumping			_____	
Erosion			_____	
Fencing			_____	

Appendix C Completed quadrat data sheets

20/9/22

Tharbogang flora biometric data

Scientific Name	Common name		BOA1	BOA2	BOA3	BOA4	BOA5	BOA6
			cover	abundance	cover	abundance	cover	abundance
<i>Arctotheca calendula</i>	Capeweed	Exotic	✓0.2	100	✓0.1	20	✓0.1	50
<i>Brassica tournefortii</i>		Exotic			✓0.1	50	✓0.3	50
<i>Bromus rubens</i>	Red Brome	Exotic			✓0.1	50	✓0.1	50
<i>Bromus arenarius</i>		Exotic			✓0.1	100		
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	Exotic					✓0.1	20
<i>Carthamus lanatus</i>	Saffron Thistle	Exotic				✓0.1	100	
<i>Chenopodium melanocarpum</i>	Black Crumbweed	Exotic						
<i>Echium plantagineum</i>	Paterson's Curse	Exotic	✓0.5	500	✓0.3	50	✓0.1	50
<i>Phyllanthus fuemrohi</i>	Common Crowfoot	Exotic					✓0.2	50
<i>Euphorbiaceae indeternina</i>	Spurges	Exotic						
<i>Hedynois rhagadioloides</i>		Exotic						
<i>Hedynois rhagadioloides</i>	Cretean Weed	Exotic	✓0.1	10	✓0.2	100	✓0.5	500
<i>Hordeum leporinum</i>	Barley Grass	Exotic	✓0.1	10			✓0.1	50
<i>Hypochaeris glabra</i>		Exotic	✓0.2	100	✓0.1	50	✓0.1	50
<i>Hypochaeris radicata</i>	Catsear	Exotic	✓0.1	20	✓0.2	100	✓0.1	10
<i>Lactuca serriola</i>	Prickly Lettuce	Exotic	✓0.1	2	✓0.1	1	✓0.1	50
<i>Lamarckia aurea</i>	Goldentop	Exotic					✓0.3	100
<i>Leptorhynchus sp.</i>		Exotic						
<i>Lolium rigidum</i>	Wimmera Ryegrass	Exotic	✓0.1	100	✓0.1	100	✓0.1	50
<i>Lycium ferocissimum</i>	African Boxthorn	Exotic	✓0.1	1			✓0.1	50
<i>Medicago lacinata</i>	Cut-leaved Medic	Exotic	✓1	500	✓0.2	50	✓0.2	100
<i>Medicago minima</i>	Woolly Burr Medic	Exotic			✓0.5	500	✓0.1	100
<i>Medicago sp.</i>		Exotic			✓0.1	50	✓0.1	50
<i>Medicago truncatula</i>	Barrel Medic	Exotic			✓0.3	100	✓0.5	100
<i>Opuntia stricta</i>	Prickly Pear	Exotic	✓0.1	1			✓0.1	100
<i>Pentstemonis airoides</i>	False Hairgrass	Exotic			✓0.1	20	✓0.1	100
<i>Romulea rosea</i>	Onion Grass	Exotic	✓0.1	500	✓0.1	100	✓0.1	10
<i>Silene tridentata</i>	Catchfly	Exotic			✓0.1	5		
<i>Sisymbrium erysimoides</i>	Smooth Mustard	Exotic					✓0.1	20
<i>Sisymbrium irio</i>	London Rocket	Exotic	✓0.2	50	✓0.3	100	✓0.1	20
<i>Sonchus oleraceus</i>	Common Sowthistle	Exotic			✓0.2	100	✓0.5	100
<i>Trifolium arvense</i>	Haresfoot Clover	Exotic			✓0.1	1	✓0.2	100
					✓0.1	1	✓0.1	2
					✓0.1	1	✓0.1	1
					✓0.1	1	✓0.1	1
					✓0.1	1	✓0.1	1

Centauria sp.
Conyza sp.
Chenopodium juncea

			BoA 1	2	3	4	5	6
Trifolium sp.		Exotic						
Vulpia myuros	Rat's Tail Fescue	Exotic	✓ 0.3 1000	✓ 0.1 500	✓ 0.5 1			✓ 0.1 1
Unknown green fleshy lily		Exotic			✓ 0.5 1000		✓ 1 1000	
Unknown weedy grass		Exotic						
Vulpia sp.		Exotic						
Actinobole uliginosum	Flannel Cudweed	Native	✓ 0.1 100	✓ 0.15 1000	✓ 0.2 1000	✓ 0.1 20	✓ 1 500	✓ 0.3 500
Anshda jenhoensis var. sub. Spicifera				✓ 0.2 100	✓ 2 50	✓ 0.2 100		
Aphanes australiana	Parsley-piert	Native		✓ 0.1 500	✓ 0.1 100		✓ 0.5 1000	✓ 0.2 1000
Aristida behriana	Bunch Wiregrass	Native	✓ 5 500	✓ 0.3 50	✓ 1 100	✓ 0.2 50		
Aristida sp.		Native						
Arthropodium minus	Small Vanilla Lily	Native					✓ 5 1000	✓ 0.2 500
Asteraceae indeterminate	Daisies	Native						
Atriplex semibaccata	Creeping Saltbush	Native	✓ 0.1 1	✓ 0.1 2				
Austrostipa bigeniculata		Native	✓ 0.1 5		✓ 0.2 5			
Austrostipa scabra	Speargrass	Native	✓ 20 500	✓ 5 500	✓ 20 1000	✓ 5 500	✓ 5 500	✓ 15 500
Brachychiton populneus	Kurrajong	Native		✓ 0.1 1				
Bulbine bulbosa	Bulbine Lily	Native	✓ 0.1 20	✓ 0.1 100	✓ 0.1 20	✓ 0.1 1	✓ 0.3 500	✓ 0.2 100
Bulbine semibarbata		Native					✓ 0.1 20	
Calandrinia eremaea		Native					✓ 0.1 5	✓ 0.1 20
Callitris glaucophylla	White Cypress Pine	Native	✓ 5 4	✓ 15 15	✓ 10 20	✓ 0.1 5	✓ 25 100	✓ 15 15
Calotis hispidula	Bogan Flea	Native	✓ 0.3 500	✓ 0.3 500	✓ 0.3 500	✓ 0.1 2	✓ 0.1 100	✓ 2 1000
Chamaesyce drummondii	Caustic Weed	Native		✓ 0.1 1		✓ 0.1 1		
Cheilanthes sieberi	Mulga Fern	Native	✓ 0.1 100	✓ 0.1 10	✓ 0.3 100		✓ 1 500	✓ 5 500
Chenopodium desertorum subsp. desertorum		Native	✓ 0.1 1					✓ 0.1 10
Chloris sp. truncata		Native				✓ 0.1 5		
Chrysoccephalum apiculatum	Common Everlasting	Native	✓ 0.1 3		✓ 0.1 1	✓ 0.1 5	✓ 0.1 3	
Convolvulus erubescens complex		Native	✓ 0.1 20	✓ 0.1 2	✓ 0.2 50	✓ 0.1 50	✓ 0.1 10	
Crassula colorata		Native	✓ 0.1 50	✓ 0.1 500	✓ 0.2 500		✓ 0.1 100	✓ 0.5 1000
Crassula sp.		Native						
Dianella sp.		Native	✓ 0.1 2					
Dichopogon fimbriatum	Chocolate Lily	Native	✓ 2 500		✓ 2 100		✓ 0.2 100	✓ 3 1000
Einadia nutans subsp. nutans		Native	✓ 0.2 5	✓ 0.1 5	✓ 0.1 5	✓ 0.2 10	✓ 0.3 100	✓ 0.3 50
Enteropogon aciculans	Curly Windmill Grass	Native	✓ 0.1 5	✓ 0.1 10		✓ 0.1 1	✓ 0.1 10	✓ 0.1 10
Enchylaena tomentosa	Ruby Saltbush	Native	✓ 0.5 10	✓ 3 50	✓ 0.3 10	✓ 0.2 20	✓ 0.5 100	✓ 2 50
Eragrostis spp.	A Lovegrass	Native	✓ 0.1 5	✓ 0.1 10			✓ 0.1 20	✓ 0.1 10
Erodium cicutarium	Blue Storksbill	Native	✓ 0.1 10	✓ 0.1 10	✓ 0.1 20		✓ 0.1 20	✓ 0.1 20
Danais glycy			✓ 0.1 1			✓ 0.1 1		
Lychnis sp							✓ 0.1 100	✓ 2 500

			BaA 1	2	3	4	5	6
<i>Eucalyptus populnea</i>	Poplar Box	Native	✓ 0.5 100		✓ 0.1 1	✓ 5 4	✓ 0.1 2	✓ 0.1 1
<i>Goodenia cycloptera</i>		Native	✓ 0.2 20		✓ 0.1 2	✓ 0.1 20		
<i>Goodenia pusilliflora</i>		Native	✓ 5 1000	✓ 1 1000	✓ 1 1000	✓ 0.2 500	✓ 0.1 10	
<i>Velleia glabrata</i>		Native					✓ 0.2 500	✓ 1 1000
<i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i>		Native						
<i>Hyalosperma semisterile</i>		Native	✓ 5 1000	✓ 2 1000	✓ 3 1000	✓ 0.1 500	✓ 0.1 500	✓ 1 1000
<i>Isoetes graminifolia</i>	Grass Cushion	Native	✓ 0.1 5	✓ 0.1 10	✓ 0.1 20	✓ 0.1 10	✓ 0.1 1	✓ 0.1 2
<i>Leptorhynchus squamatus</i>	Scaly Buttons	Native	✓ 0.2 100					
<i>Limonium lobatum</i>		Native						
<i>Maireana enchylaenoides</i>	Wingless Fissure Weed	Native		✓ 0.1 2	✓ 0.1 1		✓ 0.1 2	✓ 0.1 1
<i>Maireana excavata</i>	Bottle Bluebush	Native	✓ 1 1000	✓ 0.1 10	✓ 0.3 100	✓ 0.1 5		✓ 0.1 20
<i>Millotia myosolidifolia</i>	Broad-leaved Millotia	Native					✓ 0.2 500	
<i>Minuria leptophylla</i>		Native				✓ 0.1 10		
<i>Ophioglossum lustranicum</i>	Adders Tongue	Native	✓ 0.2 1000	✓ 0.5 1000	✓ 0.1 500			✓ 0.3 1000
<i>Ophioglossum</i> sp.		Native						
<i>Oxalis perennans</i>		Native	✓ 0.1 2		✓ 0.1 5	✓ 0.1 2	✓ 0.1 10	✓ 0.1 20
<i>Paspalum distans</i>		Native		✓ 0.1 10		✓ 0.1 1		
<i>Paspalum</i> spp.		Native					✓ 0.1 1	✓ 0.1 1
<i>Pittosporum angustifolium</i>	Weeping Pittosporum	Native	✓ 0.2 10	✓ 0.1 1				
<i>Plantago debilis</i>		Native						
<i>Ptilotus spathulatus</i>	Pussy Tails	Native	✓ 0.1 3			✓ 0.1 20		
<i>Ranunculus sessiliflorus</i>	Small-flowered Buttercup	Native		✓ 0.1 10				✓ 0.1 20
<i>Rhodanthe corymbiflora</i>	Small White Sunray	Native						
<i>Rhodanthe diffusa</i>	Ascending Sunray	Native		✓ 0.1 50	✓ 0.1 50		✓ 0.1 20	✓ 0.1 100
<i>Rhodanthe laevis</i>	Smooth Sunray	Native					✓ 0.1 100	✓ 0.1 1
<i>Rhodanthe pygmaea</i>	Pygmy Sunray	Native	✓ 0.1 10		✓ 0.1 5			
<i>Rytidosperma auriculata</i>		Native						
<i>Rytidosperma caespitosum</i>		Native			✓ 1 100	✓ 0.1 5		
<i>Rytidosperma</i> sp.		Native	✓ 5 500			✓ 2 100	✓ 1 100	✓ 2 500
<i>Salsola australis</i> (formerly <i>S. Soft Roly Poly</i>)		Native						
<i>Sclerolaena diacantha</i>		Native	✓ 0.5 20	✓ 0.1 1	✓ 0.1 1		✓ 0.1 2	
<i>Senna artemisioides</i> subsp. <i>Silver Cassia</i>		Native		✓ 0.1 1				
<i>Sida corrugata</i>	Corrugated Sida	Native	✓ 0.1 10	✓ 0.1 1	✓ 0.1 1			✓ 0.1 1
<i>Sida cunninghamii</i>	Ridged Sida	Native	✓ 0.1 10	✓ 0.1 10	✓ 0.1 1	✓ 0.1 20	✓ 0.1 20	✓ 0.1 10
<i>Solanum esuriale</i>	Quena	Native						
<i>Stackhousea monogyna</i>	Creamy Stackhousea	Native		✓ 0.2 100			✓ 0.5 500	✓ 0.1 10
<i>Monardella paradoxa</i>			✓ 2 100		✓ 5 500		✓ 0.1 5	✓ 0.1 5
<i>Hypoxis globella</i>			✓ 0.1 1		✓ 0.1 2			

			2	3	4	5	6
<i>Stuartina muelleri</i>	Spoon Cudweed	Native	✓ 0.3 500	✓ 0.2 500	✓ 0.1 20	✓ 1 1000	✓ 2 1000
<i>Thysanotus patersonii</i>	Twining Fringe Lily	Native					
<i>Tricoryne elatior</i>	Yellow Autumn-lily	Native	✓ 0.1 5	✓ 0.1 10		✓ 0.1 5	✓ 0.1 20
<i>Tripogon liliiformis</i>	Fiveminute Grass	Native	✓ 0.1 20	✓ 0.1 50	✓ 0.2 100	✓ 0.1 50	✓ 0.1 20
<i>Triptilodiscus pygmaeus</i>	Common sunray	Native	✓ 0.1 10	✓ 0.5 1000	✓ 0.2 500	✓ 0.1 100	✓ 0.1 50
<i>Vittadinia cuneata</i>	Fuzzweed	Native	✓ 0.1 20	✓ 1 100	✓ 0.2 50	✓ 0.3 100	
<i>Vittadinia</i> spp.	Fuzzweed	Native	✓ 0.1 20	✓ 0.2 20	✓ 0.1 2		✓ 0.1 20
<i>Wahlenbergia</i> (broad leaf) sp.		Native		✓ 2 1000	✓ 0.5 1000	✓ 0.2 100	✓ 0.1 50
<i>Wahlenbergia communis</i>	Tufted Bluebell	Native	✓ 0.1 50				
<i>Wahlenbergia</i> sp.		Native		✓ 0.1 10			
<i>Wahlenbergia stricta</i>	Tall Bluebell	Native				✓ 0.5 500	
<i>Wurmbea dioica</i>	Early Nancy	Native					
<i>Xerochrysium bracteatum</i>	Golden Everlasting	Native	✓ 0.1 2	✓	✓ 0.1 20	✓ 0.1 50	✓ 0.5 500
<i>Phyllanthus fruenrohnii</i>						✓ 0.1 1	✓ 0.1 2
<i>Vicia</i> sp							0.1
	Total Native Species		0	0	0	0	0
	Total Exotic Species		0	0	0	0	0
<i>Pterostylis bicolor</i>					✓ 0.1 1	✓ 0.1 1	
<i>Goodenia darkei</i>					✓	✓ 0.5 50	
<i>Dodonaea</i> sp					✓	✓ 0.1 1	
<i>Taraxacum officinale</i>					✓	✓ 0.1 1	
<i>P. mellea</i>					✓ 0.1 3		
<i>Tetraragis rosea</i>					✓ 0.1 20		
<i>Salvia verbe</i>					✓ 0.1 20		
<i>Cirsium vulgare</i>					✓ 0.1 1		
<i>Agerula conferta</i>			✓				
<i>Alysha hary</i>			✓				
<i>Emilia</i> sp			✓				