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Tharbogang Quarry and Landfill Offset Monitoring



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

Annual monitoring report 2021

Prepared for: Griffith City Council

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Contents

1	Introduction.....	1
2	Monitoring methodology	2
3	Completed management actions	3
4	Photo monitoring points and quadrats	5
5	Condition of conservation values	20
6	Effectiveness of management actions	21
6.1	Monitoring Biobanking monitoring plots and photos points	21
6.2	Annual reports for monitoring program	21
6.3	Weed management.....	21
6.4	Pest management.....	21
6.5	Fire trail and vehicle access.....	21
6.6	Fencing	21
6.7	Quarterly inspections	22
7	Recommendations	24

Appendices

Appendix A	Species list	25
Appendix B	Completed monitoring data sheets	38
Appendix C	Completed quadrat data sheets	52

Figures

Figure 6.1:	Weeds recorded as living, treated or resprouting in the Conservation Area.	23
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Tables

Table 3.1:	Management actions for Year 6, 2021 monitoring period.....	3
Table 4.1:	Plant community type benchmarks and quadrat scores as at September 2021, with the range of values from monitoring periods across all years (in brackets). Values within benchmark are highlighted in green.	19



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 2021 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 6 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 24 to 26 September 2021.

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. 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 2018 and benchmark data.

Surveys for microchiropteran bats were conducted in each management zone. The sites surveyed were the same as those in 2016, 2017, 2018, 2019 and 2020. 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 2016, 2017, 2018, 2019 and 2020: 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 6, 2021 monitoring period.

Management action	Timing	Status
Monitoring Biobanking monitoring plots and photo points	Year 6	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 2021
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. Evidence of foxes were observed in the Conservation Area.
	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. Evidence of Feral Cats, were observed during the survey.
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 2017. The northern boundary fence completed in 2018.

Management action	Timing	Status
	Year 2-10 – maintain fences and gates	Fences and gates re-inspected during monitoring.
Quarterly inspections and stock management data	Years 1 - 10	Inspections were conducted in December 2020, March, June, and September 2021. Weed control works August to November 2021 Pest control (vertebrate) April 2021 No grazing occurred in year 6.
Annual Reports for Monitoring Program	Years 1 -10	Monitoring was conducted in September 2021.

4 Photo monitoring points and quadrats

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

This photo point monitors an eroded channel and pasture weeds.

Erosion: Monitoring in 2021 did not observe any active erosion.

Vegetation- general: Vegetation appears to be in good condition. Vegetation cover was similar to the previous year, with a high cover of exotic annual grasses and forbs, and perennial native shrubs. No visible recruitment of canopy species.

Vegetation cover: Groundcover was estimated to be 60% in the area surrounding the photo point in 2021, which is less than the groundcover in 2020 (75%).

Weeds: *Echium plantagineum* (Paterson's Curse), *Arctotheca calendula* (Capeweed), *Hordeum leporinum* (Barley Grass), *Medicago* sp. were observed in 2021.

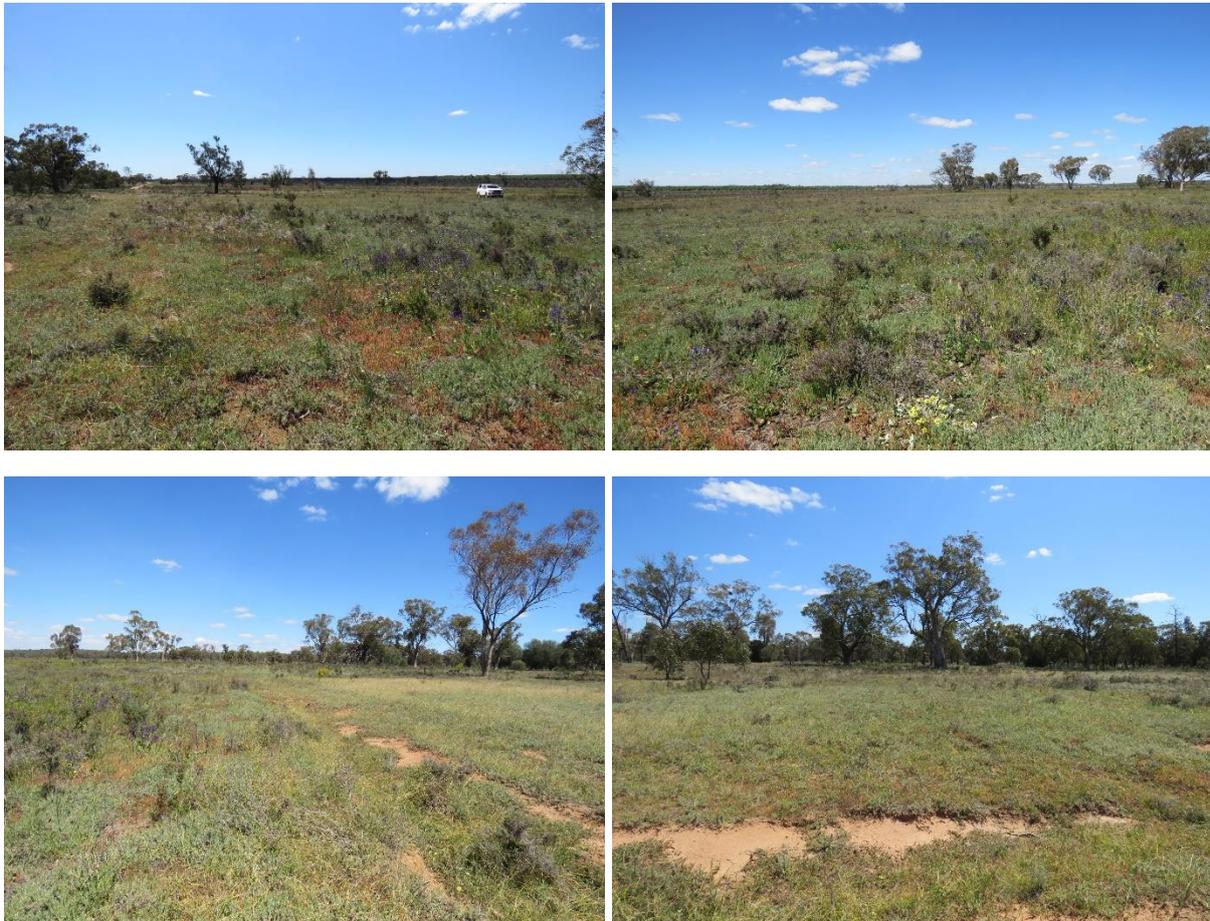


Photo Point 2 (PP2) (from top left bearing N, E, S, W)

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

Erosion: Monitoring in 2021 did not observe active erosion.

Vegetation – general: Vegetation is in good health with no signs of dieback. Annual native grasses and forbs, and annual exotic grasses common in the understorey.

Vegetation cover: The ground cover in 2021 was 35% which was less than 2020 of 45% in the area surrounding the photo point. The canopy cover was lower (5%) than 2020 (15%) and the midstory was the same (5%) than 2020 (10%).

Weeds: *Echium plantagineum*, *Medicago* sp., *Arctotheca calendula* and *Vulpia* sp. were recorded in 2021.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

Fire event/fuel/fire breaks: The fire road was intact.

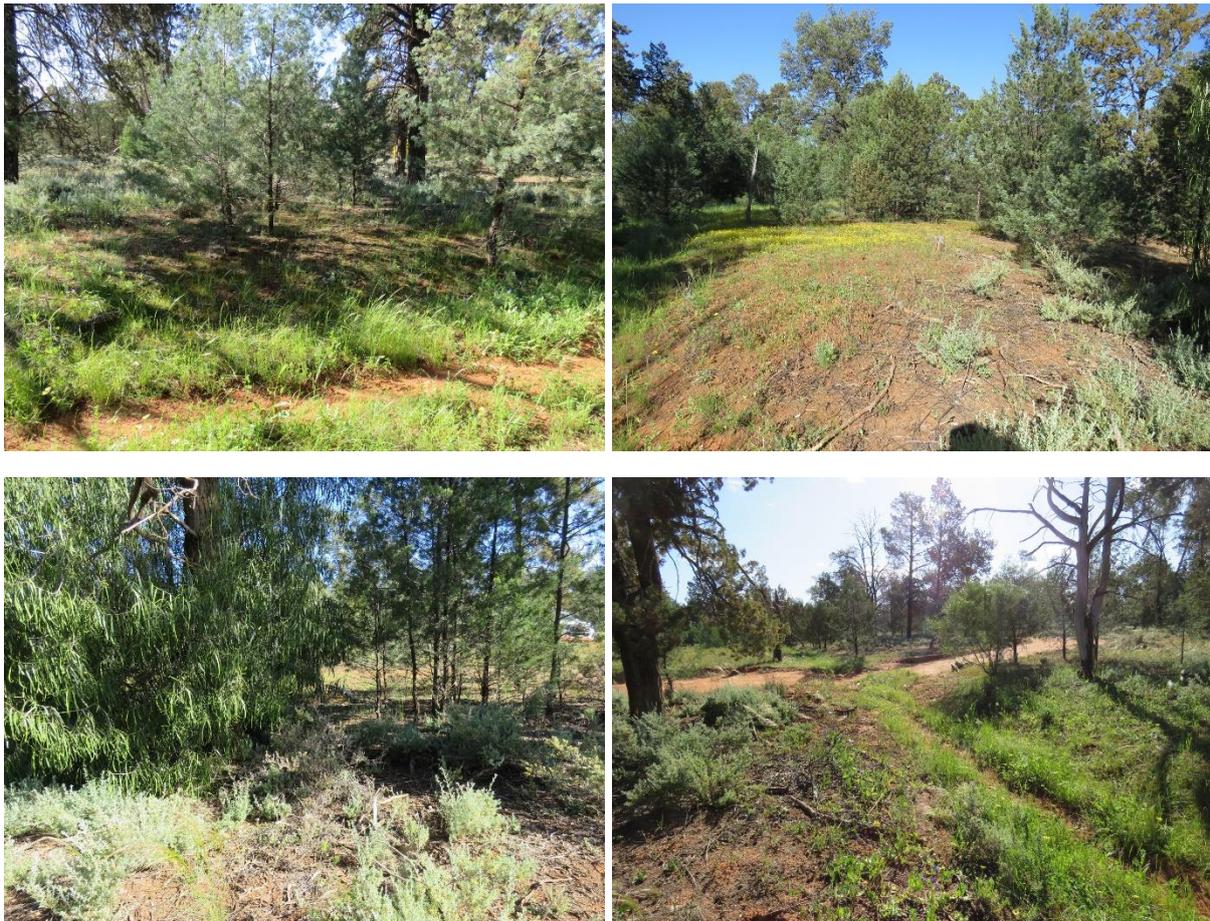


Photo Point 3 (PP3) (from top left bearing N, E, S, W)

Photo point 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 2021 did not observe active erosion.

Vegetation- general: There was a reduction in weeds and biomass, however, there was observed a concentration of weeds under trees. No visible recruitment of canopy species.

Vegetation cover: The groundcover in 2021 was 30% which was less than 2020 of 40% surrounding the photo point. Canopy cover was the same as 2019 with 5% canopy cover.

Weeds: *Echium plantagineum*, *Marrubium vulgare*, *Hordeum leporinum* and *Sisymbrium erysimoides* were recorded in 2020.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

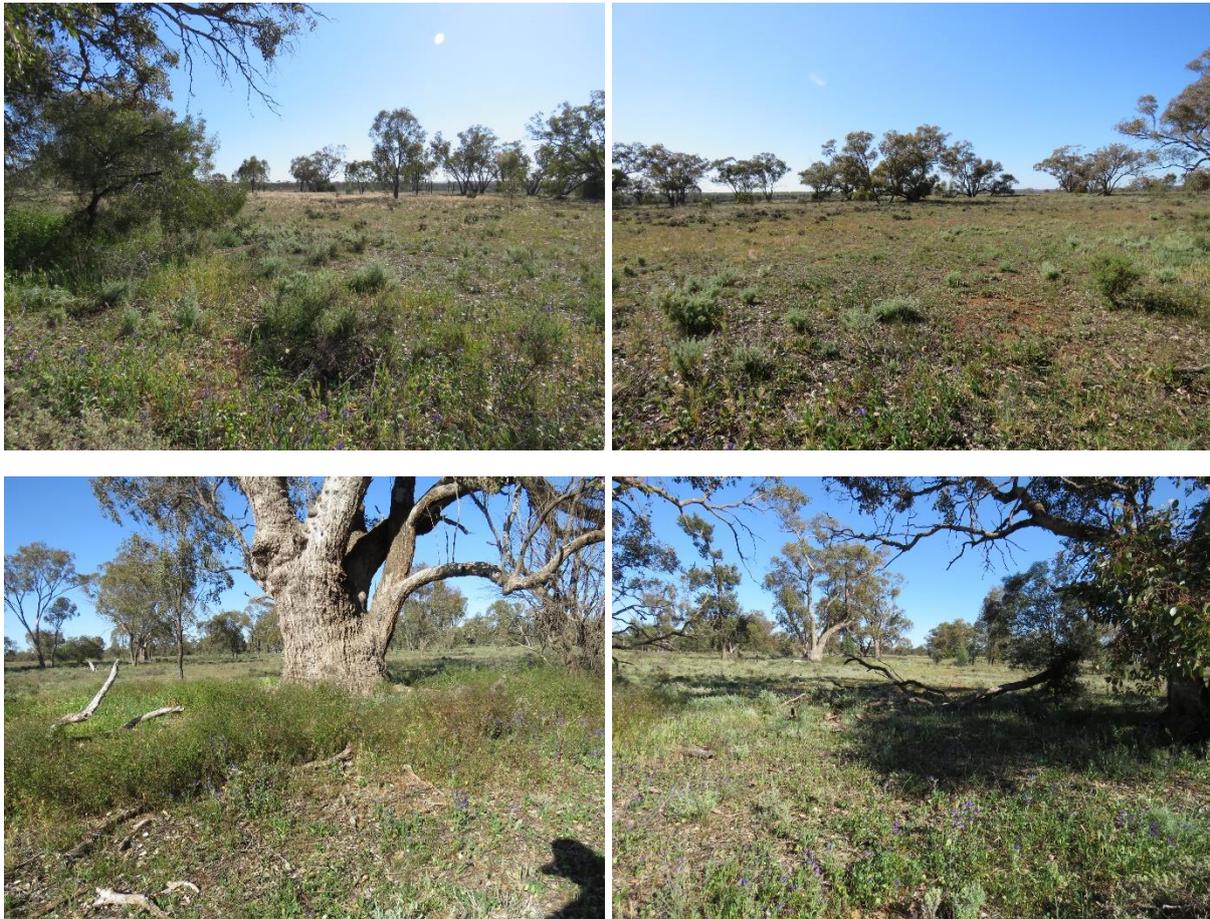


Photo Point 4 (PP4) (from top left bearing N, E, S, W)

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 2021 did not observe active erosion.

Vegetation – general: Vegetation was in good health with no recent dieback and a cover similar to 2020. A high proportion of native perennial shrubs, exotic grasses and forbs were present. Mechanical removal of some African Boxthorn noted.

Vegetation cover: The groundcover in 2021 was 30% which was less than 2020 of 55% surrounding the photo point. Canopy cover was 10% in 2021 which was higher than 2020 with 5% canopy cover. There was a high litter cover of 45% similar to previous years.

Weeds: *Echium plantagineum*, *Arctotheca calendula*, *Medicago* sp. and *Sisymbrium erysimoides*, *Hordeum leporinum* were recorded in 2021. In addition the priority weed *Marrubium vulgare* (Horehound) was also recorded.

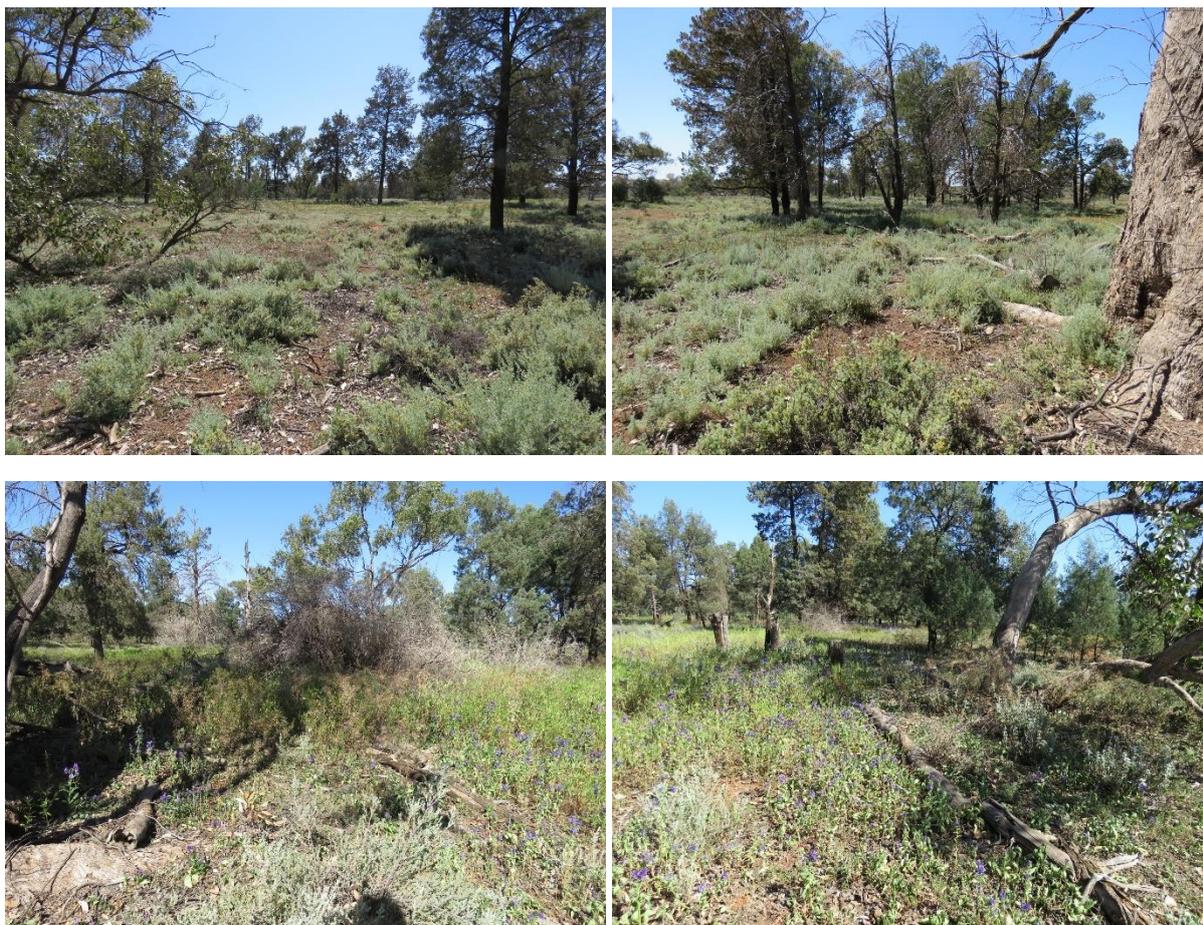


Photo Point 5 (PP5) (from top left bearing N, E, S, W)

Photo point monitors priority weeds and eucalyptus health.

Erosion: Monitoring in 2021 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.

Vegetation cover: The ground cover was 35% in 2021 which was less than 2020 (40%) in the area surrounding the photo point. The canopy and midstory cover were estimated at 5% and 1%, respectively, which was the same as in 2020.

Weeds: *Sisymbrium erysimoides*, *Hordeum leporinum* and *Echium plantagineum* were recorded in 2021. In addition the priority weed *Marrubium vulgare* (Horehound) was also recorded.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.



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

The photo point monitors priority weeds and eucalyptus health. During baseline survey dense infestations of the priority weed *Opuntia* sp. were recorded. Significant effort has been applied to the area to remove *Opuntia* sp. from the area.

Erosion: Monitoring in 2021 did not observe active erosion around the drainage line.

Vegetation – general: Vegetation cover and biomass was similar to the previous year. There was a high cover of native perennial shrubs, and annual native and exotic grasses and forbs.

Vegetation cover: The groundcover was 35% in 2021 which was less than 2020 (40%) in the area surrounding the photo point. The mid and overstorey were 1% and 5%, respectively.

Weeds: *Echium plantagineum* and *Hordeum leporinum* were recorded in 2021. In addition the priority weed *Marrubium vulgare* (Horehound) was also recorded.

Threatened species sightings: Grey-crowned Babbler was recorded at this photo point.

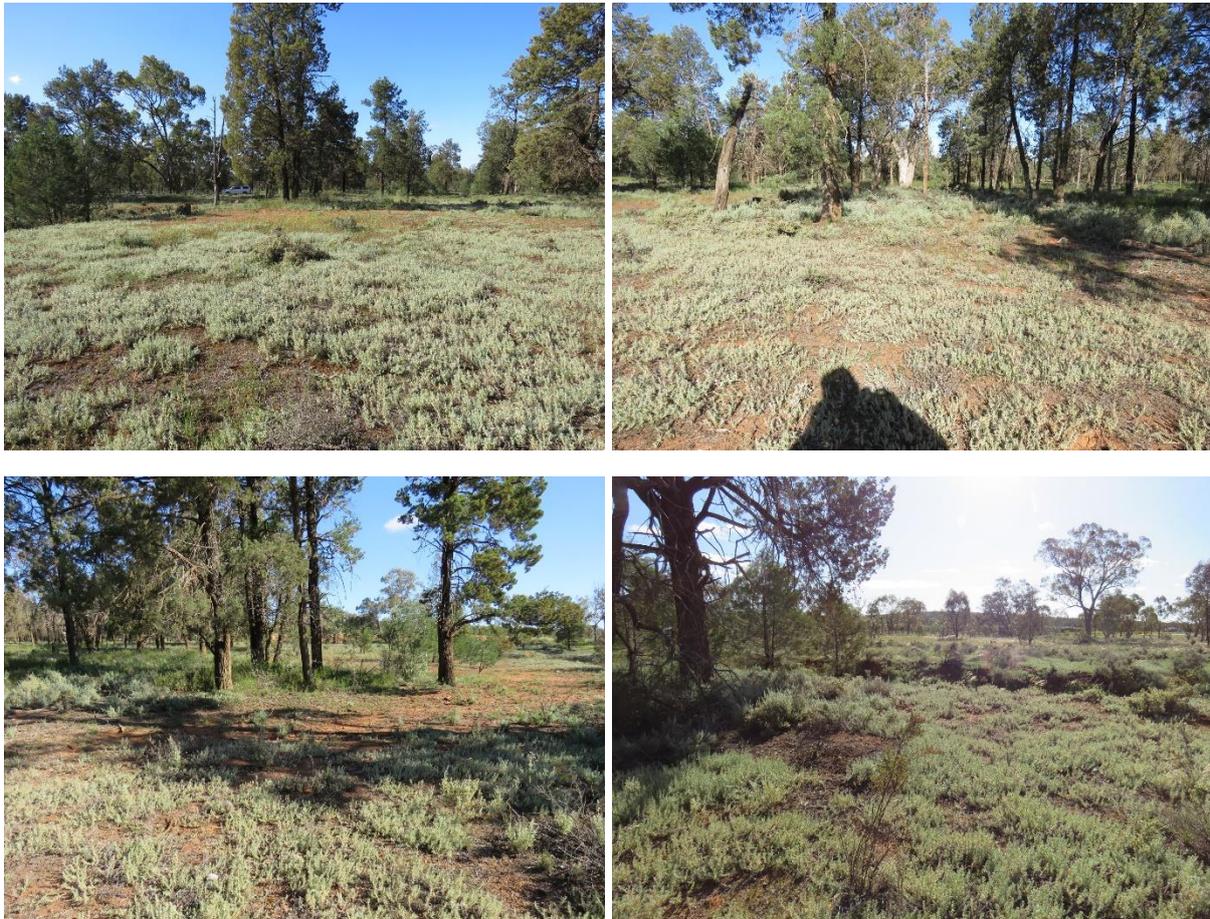


Photo Point 7 (PP7) (from top left bearing N, E, S, W)

Photo point 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 2021 did not observe active erosion.

Vegetation – general: Vegetation cover and biomass was similar to the previous year.

Vegetation cover: Ground cover increased from 2020 (27%) to 35% in 2021 in the area surrounding the photo point. The overstorey was at an estimated 10% and the midstory at 5%.

Weeds: *Arctotheca calendula* and *Medicago* sp. 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 monitors priority weeds, perimeter track, pasture weeds 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 2021 did not observe active erosion.

Vegetation – general: Vegetation cover and biomass was similar to the previous year, with a high cover of exotic annual forbs and grasses, particularly along the road edge. *Lycium ferocissimum* has been mechanically removed from the road edge.

Vegetation cover: In the area surrounding the photo point the ground cover was estimated to be 35% which decreased from 2020 (60%). The midstory cover and canopy cover were 1% and 5%, respectively.

Weeds: *Hordeum leporinum*, *Sisymbrium erysimoides*, *Echium plantagineum* and *Medicago* sp. were recorded in 2021.

Threatened species sightings: Monitoring observed Grey-crowned Babbler.

Fire event/fuel/fire breaks: The fire break was in good condition.

Fencing: A new boundary fence on the neighbouring property restricts macropod movement onto and off the site.



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 (24%).

Erosion: Monitoring in 2021 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 biomass was similar to the previous year.

Vegetation cover: The ground cover in the area surrounding the photo point was estimated at 58% in 2021 compared with 70% in 2020. The midstorey in 2021 was 0% which was less than 2020 (5%) and the overstorey was similar in 2021 0% and 2020, <1%.

Natural regeneration: Disturbed areas were found to have regeneration in the form of *Callitris glaucophylla*, *Eucalyptus populnea* and *Pittosporum angustifolium* at all less than 2 m in growth.

Weeds: There was a decrease in weed species in 2021, with no target species observed and one *Opuntia stricta* found just outside the plot, which was present in 2020.

Rubbish dumping: Bicycle parts were observed adjacent to the site.

Visitor impact/ vehicles: There were recent vehicle tracks through the site.

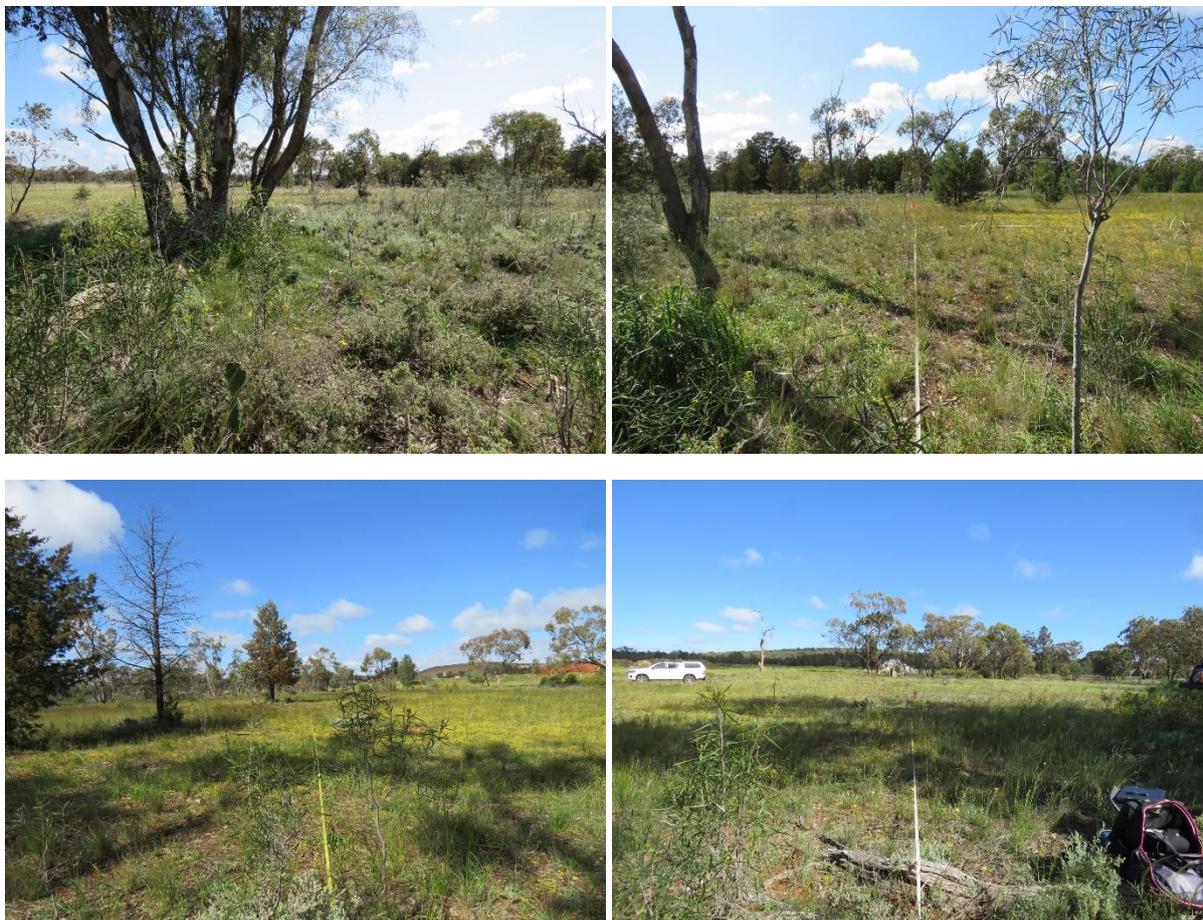


Photo Point 10 (BOA2) (from top left bearing N, E, S, W)

This photo point monitors a Biobanking plot located in woodland. During baseline survey the plot had a high cover of weeds (*Bromus* sp., *Vulpia* sp., *Echium plantagineum*, and *Hypochaeris radicata*), but high diversity of native flora (*Austrostipa scabra* and *Rytidosperma semisterile*). The area was generally in good health with no signs of dieback.

Erosion: Monitoring in 2021 did not observe active erosion.

Vegetation – general: Vegetation biomass was lower than the previous year, however, the vegetation appeared to be in good health with a high cover of native forbs. No signs of canopy recruitment.

Vegetation cover: In 2020 the groundcover was observed at 20% and in 2021 it decreased to 8% in the area surrounding the photo point. The mid and overstorey were 0% and 2% respectively.

Weeds: In 2021 there was a reduction in weed species with only *Medicago minima* being observed.



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 2021 did not observe active erosion.

Vegetation – general: There was a slight reduction in vegetation cover and biomass from the previous year. The vegetation appears to be in good health with no signs of canopy recruitment.

Vegetation cover: Ground cover was similar in 2021 (58%) compared to 2020 (64%) in the area surrounding the photo point. The overstorey and midstorey decreased in 2021 to 0.5% and 7%, respectively.

Natural regeneration: Regeneration in the form of eight *Callitris glaucophylla* trees, with all observed at less than 1 m in growth.

Weeds: The weeds *Arctotheca calendula*, *Echium plantagineum*, *Sisymbrium erysimoides* and *Sonchus oleraceus* were present.

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) and was a former gravel extraction pit.

Erosion: Monitoring in 2021 revealed minor sheet erosion evidence by small stone wash.

Vegetation – general: There has been notable growth of *Eucalyptus* and *Callitris* saplings over time. However, there is no evidence of recent recruitment of canopy species.

Vegetation cover: Vegetation cover in 2021 was similar to the cover in 2020 in the area surrounding the photo point with groundcover estimated at 24%, midstorey at 3.5% and overstorey at 0%.

Natural regeneration: Disturbed areas were found to have regeneration in the form of *Callitris glaucophylla*, *Eucalyptus populnea* and *Dodonaea viscosa* at all less than 1 m in growth.

Weeds: *Arctotheca calendula* was present as well as scattered dead *Carthamus* sp.

Pest animals: Fox and rabbit scats were observed within the site.

Rubbish: Small amounts of blown rubbish were observed.

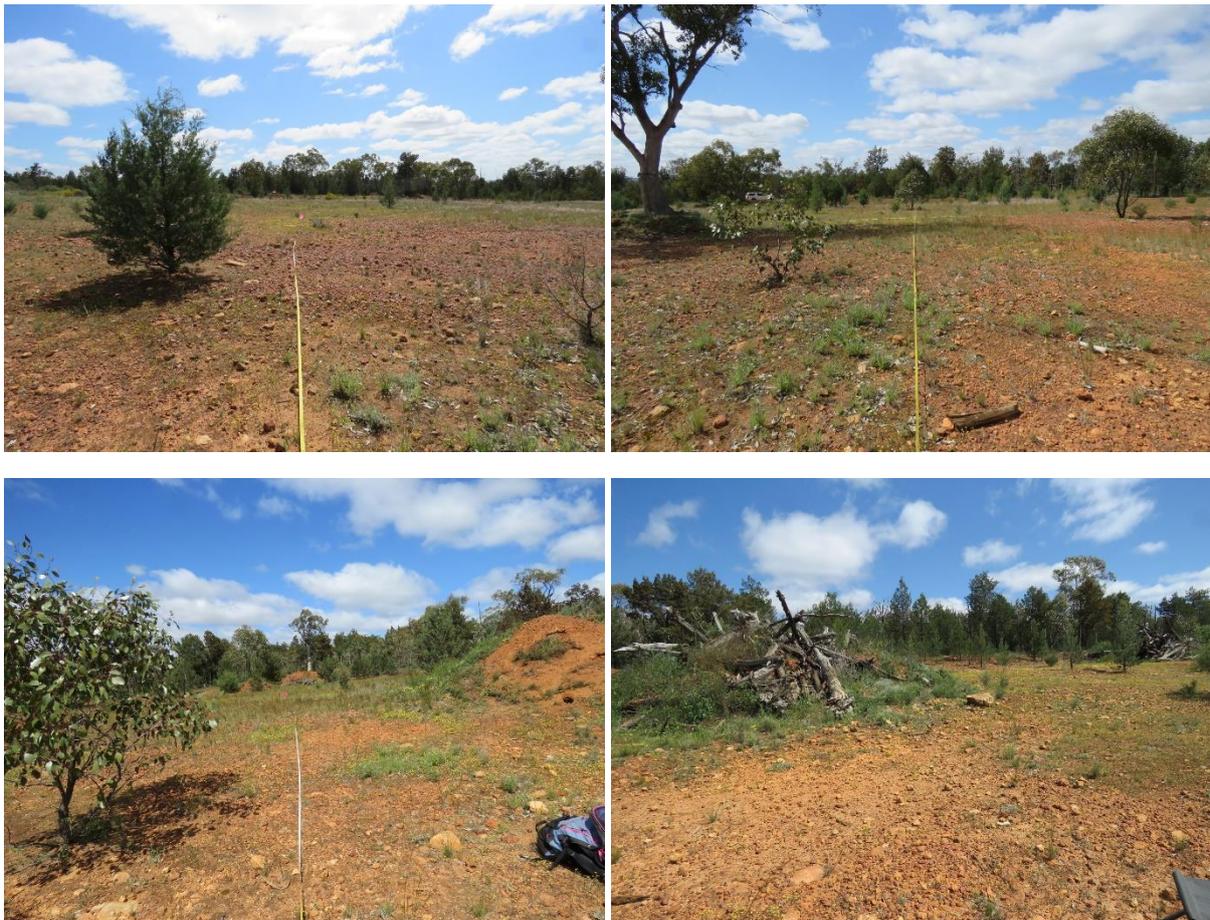


Photo Point 13 (BOA5) (from top left bearing N, E, S, W)

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

Erosion: Monitoring in 2021 revealed minor sheet erosion evidence litter dams and micro terraces.

Vegetation – general: Native vegetation was in good condition, however, with a low vegetative cover. The dense mistorey of *Callitris glaucophylla* is likely to limit ground cover diversity and recruitment of eucalypts.

Vegetation cover: Groundcover was similar to the previous year, estimated in 2021 (16%) compared to 2020 (14%). The midstorey at 20.5% (60% in 2019) decreased in the area surrounding the photo point.

Natural regeneration: Disturbed areas were found to have regeneration in the form of *Callitris glaucophylla*, *Eucalyptus populnea* and *Dodonaea viscosa*.

Weeds: The only weed species to occur in the site was *Vulpia* sp.

Rubbish: Minor rubbish had blown into the area.



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

Photo point 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 2021 revealed minor sheet wash erosion.

Vegetation – general: Vegetation is in good condition, however, there was likely a lower biomass in 2021. The cover of *Dichopogon fimbriatum* was lower than previous years.

Vegetation cover: The groundcover in 2021 did not change from the previous year which was observed to be 26% in the area surrounding the photo point. The midstorey and canopy was similar in 2% and 16% respectively, within the plot.

Weeds: No target weed species were recorded in 2021.



Table 4.1: Plant community type benchmarks and quadrat scores as at September 2021, 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	42 (26-42)	0 (0-0)	0 (0-5)	22 (0-72)	0 (0-0)	36 (0-80)	4 (0-52)	0 (0-0)	0 (0-1)	0 (0-0)
BOA2	47 (22-47)	2 (0-4)	0 (0-12.1)	2 (0-14)	0 (0-4)	6 (0-34)	4 (0-52)	0 (0-0)	0.5 (0-0.67)	24.5 (0-51)
BOA3	48 (22-48)	0.5 (0-2.1)	7 (0-10)	26 (0-50)	2 (0-4)	30 (0-68)	0 (0-48)	0 (0-0)	0 (0-1)	1.5(0-30)
BOA4	39 (21-39)	0 (0-0)	3.5 (0-4)	8 (0-26)	0 (0-4)	16 (0-50)	0 (0-28)	0 (0-0)	1 (0-1)	0 (0-0)
BOA5	44 (20-44)	0 (0-0)	20.5 (0-60)	4 (0-16)	0 (0-0)	12 (0-78)	4 (0-42)	0 (0-0)	1 (0-1)	2.5 (0-5)
BOA6	43 (18-43)	16 (0-36)	2 (0-6)	6 (0-16)	6 (0-8)	14 (0-38)	2 (0-70)	1 (0-1)	1 (0-1)	10 (0-22)

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.

Native species richness increased to the highest recorded during the monitoring period at all sites since monitoring commenced. It is possible that favourable rainfall has made it possible to identify more specimens to species level elevating the total native species richness score.

Data for groundcover “shrubs” and “other” were recorded as separate scores during the surveys in 2021, compared to the survey in 2020 which lumped these scores with groundcover “grasses”. It is evident from the data collected along the 50 m transect that groundcover “grasses” and “other” were the dominant form of ground cover in 2021, with half of these scores over six plots being within the benchmark.

Overstorey cover and midstorey cover was like previous years and not within benchmark, with the exception of BOA6 which had overstorey cover within the benchmark. However, there was marked variation in the cover of overstorey and midstorey at some sites from 2020 data. It is unlikely that the position of the tape measure is a reason for this variability given that the start and end point of the tape is permanently marked. Changes in cover could be attributed to some small, young trees in the shrub layer, now being part of the canopy. Differences in cover could also be attributed to fallen branches over the transect and different observers.

The cover of exotic species scored lower along the transect in 2021. *Arctotheca calendula* and *Echium plantagineum* were present at most sites, as in previous years. The cover of weeds varies from year to year in the offset area, and is influenced by rainfall and other climatic factors.

Figure 6.1 illustrates the distribution of weeds in the Conservation Area. Several weeds were dead or not found during the survey. Follow up spraying is required for some weeds as some have resprouted or remain untreated. Weed control has proven to be effective for most *Opuntia stricta* (Prickly Pear) and *Lycium ferocissimum* (African Boxthorn). Very few *Xanthium spinosum* were found in the 2021 survey. As an annual species, it is presumed that conditions were not suitable for the species to germinate and grow in 2021.

The 2021 survey recorded 53 species of birds within the Conservation Area during the bird surveys with one additional species recorded incidentally (**Appendix A**). One of these species is listed under the *Biodiversity Conservation Act 2016* (Grey-crowned Babbler) and three species (Pacific Black Duck, Pallid Cuckoo and Olive-backed Oriole) were recorded for the first time.

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

The 2021 survey recorded 10 species of microbat within the Conservation Area during bat surveys, and three possible identifications (**Appendix A**). This is two less than the 2020 survey which recorded 12 species of microbat. One possible threatened microbat was recorded, *Vespadelus baverstocki* (Inland Forest Bat). The calls of Inland Forest Bat are similar to other *Vespadelus* spp. However, on this occasion, there were calls that more closely aligned with this species. 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 2021 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 2021 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 August to November 2021, 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).

Figure 6.1 shows the weeds that require treating (i.e. not the weeds that were recorded as dead or not found). There is a notable decrease in the abundance of weeds, particularly *Opuntia stricta*.

6.4 Pest management

There was evidence of Fox and Rabbit scats during the monitoring program in 2021. Pest control activities in April 2021 removed two Foxes and two Cats over 1.5 hrs.

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. There was a new fence installed at PP8 which was observed to restrict macropod movement onto and off the site.

6.7 Quarterly inspections

Quarterly inspections of the Conservation Area were conducted in December 2020, March, June and September 2021 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.

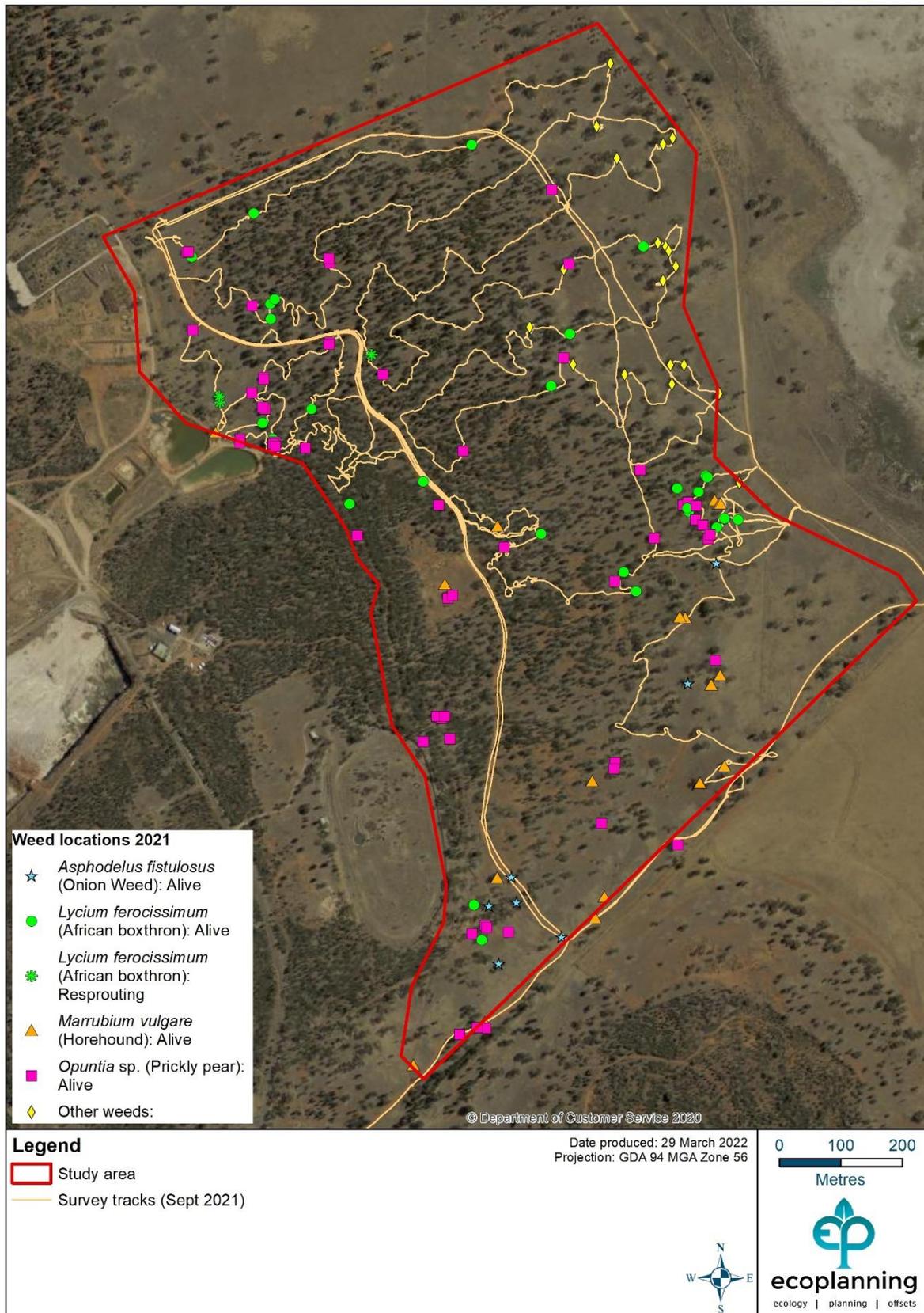


Figure 6.1: Weeds recorded as living, treated or resprouting in the Conservation Area.

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.



Species name	Common name	BOA1					BOA2					BOA3					BOA4					BOA5					BOA6													
		2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021			
<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	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
<i>Lamarckia aurea</i>	Goldentop																																							
<i>Lepidium</i> sp.						x																																		
<i>Leptorhynchos</i> sp.					x																																			
<i>Lolium rigidum</i>	Wimmera Ryegrass					x		x		x	x																													
<i>Lycium ferocissimum</i>	African Boxthorn				x	x	x																																	
<i>Medicago laciniata</i>	Cut-leaved Medic	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																													
<i>Medicago truncatula</i>	Barrel Medic		x	x	x			x	x	x																														
<i>Medicago</i> sp.								x																																
<i>Opuntia stricta</i>																																								
<i>Opuntia</i> sp.	Prickly Pear																																							
<i>Pentaschistis airoides</i>	False Hairgrass					x		x		x	x																													
<i>Raphanus raphanistrum</i>	Wild Radish							x																																
<i>Romulea rosea</i>	Onion Grass				x				x	x	x																													
<i>Salvia verbenaca</i>																																								

Species name	Common name	BOA1					BOA2					BOA3					BOA4					BOA5					BOA6																						
		2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021												
<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			x	x	x									
<i>Sisymbrium irio</i>	London Rocket	x						x			x	x																									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	x								
<i>Trifolium arvense</i>	Haresfoot Clover						x	x	x																																x	x	x						
<i>Trifolium glomeratum</i>	Clustered Clover									x																																	x						
<i>Trifolium sp.</i>											x																																	x					
<i>Veronica arvensis</i>	Wall Speedwell							x																																									
<i>Vulpia myuros</i>	Rat's Tail Fescue					x	x					x	x	x																																	x	x	
<i>Vulpia sp.</i>		x	x	x	x			x	x	x																																							
Unknown dead thistle																																																	
Unknown grass																																																	
Unknown green fleshy lily																																																	
Native species																																																	
<i>Actinobole uliginosum</i>	Flannel Cudweed	x	x		x	x	x	x	x		x	x	x	x	x																																		
<i>Aphanes australiana</i>																																																	
<i>Aristida behriana</i>	Bunch Wiregrass	x	x		x	x	x		x	x																																							
<i>Aristida sp.</i>																																																	

Species name	Common name	BOA1					BOA2					BOA3					BOA4					BOA5					BOA6											
		2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	
<i>Aristida jerichoensis</i>																																						
<i>Arthropodium minus</i>	Small Vanilla Lily		x	x	x		x																				x		x	x	x	x	x			x	x	x
<i>Atriplex semibaccata</i>	Creeping Saltbush		x	x			x	x	x	x												x	x	x	x	x	x											
<i>Austrostipa aristiglumis</i>	Plains Grass																																					
<i>Austrostipa bigeniculata</i>		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	x	x	x	x	x	x	x	x	x	x	x	x	x		x	
<i>Austrostipa</i> sp.									x																													
<i>Brachychiton populneus</i>	Kurrajong								x	x	x	x	x																									
<i>Brachyscome lineariloba</i>	Hard-headed Daisy	x																																				
<i>Bulbine bulbosa</i>	Bulbine Lily	x			x	x	x																				x											
<i>Bulbine semibarbata</i>																																						
<i>Calandrinia eremaea</i>					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	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						
<i>Euphorbia drummondii</i>	Caustic Weed				x	x	x																															

Species name	Common name	BOA1					BOA2					BOA3					BOA4					BOA5					BOA6								
		2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019
<i>Cheilanthes sieberi</i>	Mulga Fern	x	x				x	x	x	x		x	x	x	x	x	x							x	x	x	x	x	x	x	x	x	x	x	x
<i>Chenopodium desertorum</i>					x	x					x																								
<i>Chenopodium sp.</i>																																			
<i>Chloris sp.</i>		x	x	x	x		x					x	x	x										x	x	x	x								
<i>Chrysocephalum apiculatum</i>	Common Everlasting	x	x		x	x	x						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	x	x						x	x				x	x	
<i>Convolvulus sp.</i>																		x																	
<i>Crassula colorata</i>			x			x	x					x	x					x	x							x				x	x			x	x
<i>Crassula decumbens</i>																																			
<i>Crassula sp.</i>		x			x		x			x		x			x								x				x								
<i>Dianella sp.</i>		x	x	x	x	x	x																												
<i>Dichelachne sp.</i>																							x												
<i>Dichopogon fimbriatum</i>	Chocolate Lily		x	x	x	x	x		x		x	x	x		x	x	x	x								x	x	x	x	x			x	x	x
<i>Dichopogon sp.</i>		x						x					x										x												
<i>Einadia nutans</i>	Climbing Saltbush	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	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	x	
<i>Enteropogon acicularis</i>						x				x																	x	x							
<i>Eragrostis spp.</i>	A Lovegrass																																		

Species name	Common name	BOA1					BOA2					BOA3					BOA4					BOA5					BOA6																				
		2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021	2015	2017	2018	2019	2020	2021										
<i>Wahlenbergia communis</i>	Tufted Bluebell									x																																					
<i>Wahlenbergia</i> sp.		x			x		x	x				x																	x	x											x						
<i>Wahlenbergia</i> sp. (broad leaf)												x																																			
<i>Wahlenbergia stricta</i>	Tall Bluebell					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
Unknown Asteraceae																																															x
Unknown grass																																															

Bird survey species lists 2021

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					x
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill					x			x		x
<i>Acanthiza nana</i>	Yellow Thornbill			x		x	x		x		x
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill					x	x	x	x		x
<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill			x	x	x	x		x		x
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk										x
<i>Anas superciliosa</i>	Pacific Black Duck							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
<i>Barnardius zonarius</i>	Australian Ringneck			x	x	x	x	x	x		x
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo				x			x			x
<i>Cacatua leadbeateri</i>	Major Mitchell's Cockatoo	V									x
<i>Cacomantis pallidus</i>	Pallid Cuckoo									x	
<i>Chalcites basalus</i>	Horsefield's Bronze-Cuckoo										x
<i>Chenonetta jubata</i>	Australian Wood Duck										x
<i>Chroicocephalus novaehollandiae</i>	Silver Gull					x					x
<i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo				x	x					x
<i>Cincloramphus mathewsi</i>	Rufous Songlark							x			x
<i>Colluricincla harmonica</i>	Grey Shrike-thrush										x
<i>Columba livia</i>	Rock Dove										x
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike					x			x		x
<i>Corcorax melanorhampus</i>	White-winged Chough			x				x	x		x

Species Name	Common Name	BC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Incidentals	Previously recorded
<i>Corvus bennetti</i>	Little Crow										X
<i>Corvus coronoides</i>	Australian Raven			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		X
<i>Cracticus tibicen</i>	Australian Magpie			X	X	X	X	X	X		X
<i>Cracticus torquatus</i>	Grey Butcherbird			X				X	X		X
<i>Dacelo novaeguineae</i>	Laughing Kookaburra							X			X
<i>Dicaeum hirundinaceum</i>	Mistletoe Bird										X
<i>Egretta novaehollandiae</i>	White-faced Heron								X		X
<i>Eolophus roseicapilla</i>	Galah			X	X	X	X	X	X		X
<i>Eopsaltria australis</i>	Eastern Yellow Robin						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					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 sphenurus</i>	Whistling Kite			X	X	X	X	X	X		X
<i>Lalage sueurii</i>	White-winged Triller			X		X	X				X
<i>Manorina flavigula</i>	Yellow-throated Miner			X	X	X		X	X		X
<i>Manorina melanocephala</i>	Noisy Miner				X						
<i>Melopsittacus undulatus</i>	Budgerigar			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	X		X
<i>Ocyphaps lophotes</i>	Crested Pigeon			X	X	X		X	X		X
<i>Oriolus sagittatus</i>	Olive-backed Oriole							X			
<i>Pachycephala rufiventris</i>	Rufous Whistler			X		X	X		X		X
<i>Pardalotus striatus</i>	Striated Pardalote				X	X		X			X
<i>Pelecanus conspicillatus</i>	Australian Pelican								X		X

Species Name	Common Name	BC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Incidentals	Previously recorded
<i>Petrochelidon nigricans</i>	Tree Martin								x		x
<i>Petroica goodenovii</i>	Red-capped Robin					x					x
<i>Phalacrocorax carbo</i>	Black Cormorant										x
<i>Phaps chalcoptera</i>	Common Bronzewing							x	x		x
<i>Philemon citreogularis</i>	Little Friarbird								x		x
<i>Plectorhyncha lanceolata</i>	Striped Honeyeater			x		x	x	x	x		x
<i>Polytelis swainsonii</i>	Superb Parrot	V	V								x
<i>Pomastomus temporalis temporalis</i>	Grey-crowned Babbler	V		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		x		x
<i>Rhipidura leucophrys</i>	Willie Wagtail			x	x	x	x	x			x
<i>Smicromis brevirostris</i>	Weebill										x
<i>Struthidea cinerea</i>	Apostlebird			x	x			x			x
<i>Sturnus vulgaris</i>	Common Starling				x			x	x		x
<i>Taeniopygia bichenovii</i>	Double-barred Finch					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
<i>Todiramphus sanctus</i>	Sacred Kingfisher								x		x
<i>Trichoglossus haematodus</i>	Rainbow lorikeet									x	x
<i>Vanellus miles</i>	Masked Lapwing										
<i>Zosterops lateralis</i>	Silvereye										x

Bat survey species list 2021

Species Name	Common Name	BC Act Listing	EPBC Act Listing	2016	2017	2018	2019	2020	2021
<i>Austronomus australis</i>	White-striped Freetail Bat			X			X	X	X
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			X	X	X	X	X	X
<i>Chalinolobus morio</i>	Chocolate Wattled Bat			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 sp.</i>	Long-eared Bat			X	X	X	X	X	X
<i>Ozimops ridei</i>	Ride's Freetail Bat								P
<i>Ozimops petersi</i>	Inland Freetail Bat			X	X	X	X	X	X
<i>Ozimops planiceps</i>	South-eastern Freetail Bat				X	X	X	X	X
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat						X		
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail Bat	V						X	
<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat			X	X	X	X	X	X
<i>Scotorepens greyii</i>	Little Broad-nosed Bat			X	X	X	X	X	X
<i>Vespadelus baverstocki</i>	Inland Forest Bat	V		X					P
<i>Vespadelus darlingtoni</i>	Large Forest Bat				X				P
<i>Vespadelus regulus</i>	Southern Forest Bat			P			X	X	X
<i>Vespadelus vulturnus</i>	Little Forest Bat			X	X	X	X	X	X

Appendix B Completed monitoring data sheets

Photo point 1

Monitoring Data Sheet			
Monitoring Point Number	PP1	Date	26/9/21
1. Site Photo(s)	7991 - 7994		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	50%	E. populnea	
Midstorey:	1%	Acacia oswaldii E. populnea, Senna artem	
Groundcover(grass):	60%	Grass 15% - Scleria diaca Ma's deul, Sipa, Crasm	
Litter:	30%		
Bare ground:	10%		
Cryptogams:	0%		
Proportion of canopy species regenerating	1/1		
Exotic cover	10%	Aristidaea, Comulca, med Echinin	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen
Threatened species sightings			Nd
Fire event/fuel/fire breaks			Nd
Weeds			No priority weeds visible
Pest animals			Nd
Visitor impact/vehicles			Nd
Rubbish dumping			Nd
Erosion			Drainage channel stable No new erosion
Fencing			Nd

Photo point 2

Monitoring Data Sheet			
Monitoring Point Number	PP2	Date	25/9/21
1. Site Photo(s)	7956 — 7959		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	10%	Callitris glauca & populus	
Midstorey:	5%	Geijera parv Callitris glauca, Dodonaea viscosa	
Groundcover(grass):	35%	Alysicarpus, Arctotheca, Hypochaeris Erodium, Crassula, Medicago	
Litter:	40%		
Bare ground:	20%		
Cryptogams:	5%		
Proportion of canopy species regenerating	1/2	Callitris	
Exotic cover	5%	Medicago, Echinium Arctotheca	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Geb
Fire event/fuel/fire breaks			Nil
Weeds			Arctotheca, Medicago, Echinium Vulpia
Pest animals			Nil
Visitor impact/vehicles			No new impacts
Rubbish dumping			Blown rubbish from tip
Erosion			Nil, stable
Fencing			Nil



Photo point 3

Monitoring Data Sheet			
Monitoring Point Number	PP3	Date	26/7/21
1. Site Photo(s)	7973 - 7977 (no 7976)		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	50%	Callitriche E. populnea	
Midstorey:	10%	Acacia oswaldii Callitriche, E. populnea	
Groundcover(grass):	35%	Eriochloa, Sclerolaena Austrostipa, Hyalospenna + weed	
Litter:	50%		
Bare ground:	15%		
Cryptogams:	5%		
Proportion of canopy species regenerating	2/2		
Exotic cover	2%	concentrated under trees Echinium, Sisymbrium, Arctostaphylos	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen
Threatened species sightings			GCB
Fire event/fuel/fire breaks			Nil
Weeds			Echinium, Sisymbrium Marrubium vulgare, Hordeum
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil
Erosion			No erosion evident
Fencing			No

Tree Monitor

Partial Cutover

Photo point 4

Monitoring Data Sheet			
Monitoring Point Number	114	Date	26/9/21
1. Site Photo(s)	7987 - 7990		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	10%	Callitris E. populnea	
Midstorey:	5%	Callitris E. populnea	
Groundcover(grass):	30%	Grass 100% Stipa, Eriochloa Crassula, Side cor, Eriodum	
Litter:	45%		
Bare ground:	20%		
Cryptogams:	5%		
Proportion of canopy species regenerating	2/2		
Exotic cover	10%	Sisymbrium, Echinum, Marrubium Arctotheca, Hordeum, Medicago	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen
Threatened species sightings			Nd
Fire event/fuel/fire breaks			Nd
Weeds			Lycium mech removed. weeds recolon Marrubium persists
Pest animals			fox den close by
Visitor impact/vehicles			Nd
Rubbish dumping			Nd
Erosion			Nd
Fencing			Nd

Photo point 5

Monitoring Data Sheet			
Monitoring Point Number	PP5	Date	26/9/21
1. Site Photo(s)	7983 - 7986		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	5%	E. papulnea Callitris	
Midstorey:	1%	E. papulnea, Grevia Callitris, Acacia oswaldii	
Groundcover(grass):	35%	Grass 100%, Atriplex, Eragrostis Brya, Maireana decalvent + we	
Litter:	35%		
Bare ground:	25%		
Cryptogams:	5%		
Proportion of canopy species regenerating	2/2		
Exotic cover	5%	Marrubium, Hordeum Echium, Sida	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen.
Threatened species sightings			GCB
Fire event/fuel/fire breaks			nil
Weeds			Echium, Hordeum. Marrubium still persistent
Pest animals			nil
Visitor impact/vehicles			nil
Rubbish dumping			nil
Erosion			No erosion evident
Fencing			nil



Photo point 6

Monitoring Data Sheet			
Monitoring Point Number	PP6	Date	25/9/21
1. Site Photo(s)	7960 - 7964		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	10%	Callitris glaucophylla E. populnea	
Midstorey:	3%	Gerya parviflora Callitris glaucophylla	
Groundcover(grass):	50%	25% sclerolaena, enchyliaca 15% Grass + other - Austrospica, etc	
Litter:	25%		
Bare ground:	15%		
Cryptogams:	10%		
Proportion of canopy species regenerating	2/2	Callitris + E. populnea	
Exotic cover	< 5% Grass + forbs		
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen
Threatened species sightings			Nil
Fire event/fuel/fire breaks			Nil
Weeds			No target sp. Aristida, Sisymbrium, Vulpia
Pest animals			Starlings
Visitor impact/vehicles			Nil
Rubbish dumping			Blown rubbish
Erosion			No new erosion
Fencing			Nil

Photo point 7

Monitoring Data Sheet			
Monitoring Point Number	PP7	Date	25/9/21
1. Site Photo(s)	7969 - 7972		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	10%	Callitriche E. populnea	
Midstorey:	5%	Callitriche	
Groundcover(grass):	35%	Austrostipa 10% grass Erodium, Gouardia, Echium	
Litter:	5%		
Bare ground:	50%		
Cryptogams:	10%		
Proportion of canopy species regenerating			
Exotic cover	3%	Medicago Aristida	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen
Threatened species sightings			GCB
Fire event/fuel/fire breaks			Nil
Weeds			Echium, Medicago
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil
Erosion			No new erosion
Fencing			Nil



Photo point 8

Monitoring Data Sheet			
Monitoring Point Number	PP8	Date	25/9/21
1. Site Photo(s)	7965 - 7968		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey:	50%	E. populnea, A. melmannii, C. glaucophylla	
Midstorey:	10%	E. populnea, Mairana decalver, Acacia oswaldii	
Groundcover(grass):	35%	Sclero diacantha, Echinum, Austrostipa, Mairana	
Litter:	40%	10% grass	
Bare ground:	25%		
Cryptogams:	0%		
Proportion of canopy species regenerating	1/3	E. populnea	
Exotic cover	10%	Echinum, Hordeum, Medicago	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No new regen
Threatened species sightings			GCB
Fire event/fuel/fire breaks			Nil
Weeds			Echinum, Medicago, Sisymbrium, Hordeum
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil
Erosion			No new erosion
Fencing			New fence on neighbours property restricting macropod movement onto + off site

Photo point 9 (BOA 1)

Monitoring Data Sheet			
Monitoring Point Number	BOA 1	Date	25-9-21 EM LN
1. Site Photo(s)	7941 - 7944 S-W-N-E		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey: 0/0/0/0/0/0/0/0/0	0		
Midstorey: 0/0/0/0/0/0/0/0/0	0	Callitris glaucophylla adjacent at 24m	
Groundcover(grass): 6 IIII IIII 5 IIII IIII IIII IIII	22 } 58% 36	Austrostipa scabra Gonolobus pusilliflorus, Halesperma	
Litter: IIII	8		
Bare ground: IIII	12		
Cryptogams: IIII IIII	18		
Proportion of canopy species regenerating	100	Callitris glaucophylla Eucalyptus populnea	
Exotic cover II	4	Madranga	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Callitris glaucophylla - 6 x 2.1m Eucalyptus populnea - 1 x 2m Ptilotheca angustifolia - 16 - 0.3 x 1.8m
Threatened species sightings			nil
Fire event/fuel/fire breaks			nil
Weeds			not target species detected in plot 1 x opuntia just outside of plot near start
Pest animals			none observed
Visitor impact/vehicles			vehicle tracks (car, or ute) through site - recent
Rubbish dumping			bicycle parts (wheels) adjacent
Erosion			none observed
Fencing			nil

Logs - nil
 HBT - nil
 1x stag - Callitris glaucophylla

Photo point 10 (BOA 2)

Monitoring Data Sheet			
Monitoring Point Number	BOA 2	Date	24.9.21 Bm EN
1. Site Photo(s)	7933 - 7936 S-W-N-E		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey: 0/0/0/0/0/0/0/0/20	2	Callitris glaucophylla	
Midstorey: 0/0/0/0/0/0/0/0/0	0		
Groundcover(grass): $\frac{6}{3}$ I 0 III	2 0 6	Austroshya scabra Hyalosperma tenuistele	
Litter: IIII IIII IIII II	34		
Bare ground: IIII IIII I	22		
Cryptogams: IIII IIII IIII I	32		
Proportion of canopy species regenerating	50%	Callitris glaucophylla	
Exotic cover II	4	Medicago minima	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	in 20x50 plot		Callitris glaucophylla - 6 < 1m
Threatened species sightings			nil seen/heard
Fire event/fuel/fire breaks			nil
Weeds			nil target species detected
Pest animals			nil observed
Visitor impact/vehicles			nil
Rubbish dumping			nil
Erosion			minor sheet erosion (small litter dams)
Fencing			nil

66B, Crested Agave } W
 Inland TB }
 Ringneck }
 Black Kite
 Woodswallows (both)
 White Ibis

Logs : 24.5 m (on ground)
 Meat ants predominate
 Nil H&T



Photo point 12 (BOA 4)

Monitoring Data Sheet			
Monitoring Point Number	BOA4	Date	25-9-21 BM LN
1. Site Photo(s)	7948 - 7951 S-E-N-W		
2. Floristic BioMetric attributes			
Native cover		% cover	Dominant species
Overstorey:	0/0/0/0/0/0/0/0/0/0/	0	
Midstorey:	0/0/0/0/0/0/35/0/0/	3.5	Callitris glauco-phylla in plot Euc. populneus @ 35m point - 35% cover
Groundcover(grass):	0 IIII 0 IIII 0 IIII	8 } 16 } 24	Austrobaileya scabra, Rytidosperma sp. Sporobolus furcilliflorus, Helictotermis scabra
Litter:	III+ III+	20	
Bare ground:	III+ I Rocks: III+ III+	85-12 2-20	
Cryptogams:	III+ III+ I	22	
Proportion of canopy species regenerating		100	
Exotic cover		0	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Eucalyptus populnea - 2x < 30cm (3 others 1m-3.5m) Callitris glauco-phylla - 5x < 50cm Ixobryonia viscosa ~ 1m xl, diverse ground layer
Threatened species sightings			none observed or heard
Fire event/fuel/fire breaks			nil
Weeds			no target weed observed scattered dead Carthamus + live seedling Aristida contorta
Pest animals			fox scat, rabbit scat
Visitor impact/vehicles			none observed
Rubbish dumping			wind blown rubbish - minor only
Erosion			minor sheet erosion - evidenced by small stone wash
Fencing			nil



Photo point 13 (BOA 5)

Monitoring Data Sheet													
Monitoring Point Number	BOA 5	Date	25-9-21 BM LN										
1. Site Photo(s)	7952 - 7955												
2. Floristic BioMetric attributes													
Native cover	% cover	Dominant species											
Overstorey: —	—	—											
Midstorey: 55/50/0/5/35/20/40/0/0/0	20.5	Callitris glaucophylla											
Groundcover(grass): <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>e</td><td> </td></tr><tr><td>3</td><td> </td></tr><tr><td>0</td><td> </td></tr></table>	e		3		0		<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>4</td><td>16</td></tr><tr><td>12</td><td>16</td></tr></table>	4	16	12	16	Austrospora scabra	
e													
3													
0													
4	16												
12	16												
Litter:	50	mainly Callitris leaves											
Bare ground: Rock: 1	0.2 Rock 17 BF												
Cryptogams:	10												
Proportion of canopy species regenerating	100	Callitris glaucophylla 2 x c 50cm Euc populnea - 1 x 1.3m											
Exotic cover	4												
3. Opportunistic observations	GPS coordinates	Photo number	Observations										
Natural regeneration of disturbed areas			Callitris glaucophylla + Euc pop. Fr Dodonaea in plot; ground layer diverse dominated by Asteraceae + Vulpia. Ground layer patchy but diverse - 55 species										
Threatened species sightings			none seen or heard in zone										
Fire event/fuel/fire breaks			nil										
Weeds			target species not detected in plot Vulpia common.										
Pest animals			nil scats observed										
Visitor impact/vehicles			nil										
Rubbish dumping			wind blown rubbish - minor										
Erosion			sheet erosion evidenced by little dams/ micro terraces										
Fencing			nil										

Stags: ||| || - 8 large + scattered smaller one present
 Logs: 2.5 m - abundant woody debris scattered throughout plot but majority all under 5cm diam

in the stier

Photo point 14 (BOA 6)

Monitoring Data Sheet			
Monitoring Point Number	BOA6	Date	24-9-21 BM LN
1. Site Photo(s)	7937-7940 S-W-N/E		
2. Floristic BioMetric attributes			
Native cover	% cover	Dominant species	
Overstorey: 0/5/10/10/30/70/0/0/35/0	16	Callitris glaucophylla (hits tangent) Eucalyptus populneus	
Midstorey: 0/0/0/0/5/0/0/0/0/15	2		
Groundcover(grass): 6 III 2 III 0 IIII	6 6 12 } 26	Austroblechna scabra Encyrtodesmia tamentosa Dichopogon	
Litter: IIII IIII IIII IIII IIII	46		
Bare ground: IIII	12		
Cryptogams: IIII	14		
Proportion of canopy species regenerating	100%		
Exotic cover	2		
3. Opportunistic observations			
	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			III III 8x Callitris < 1m IIII 100% 6x E. populneus < 1m
Threatened species sightings			nil heard
Fire event/fuel/fire breaks			nil
Weeds			no target species observed
Pest animals			nil seen
Visitor impact/vehicles			nil
Rubbish dumping			nil
Erosion			minor sheet wash
Fencing			nil

heard
Red mps
Aspartic
heard
Pec Mrs
Little Raven
Emysceth

Logs on ground - 10m (Callitris)
 Stags: III IIII = 11 in total with 9 being just trunks
 HBT - 1 - Euc populneus & 2 Imb hollows

Appendix C Completed quadrat data sheets

THARBOGANG OFFSET MONITORING

Date: 24-25/9/21 Observers: BM + CW

Species Name	Common Name	BOA 1	BOA 2	BOA 3	BOA 4	BOA 5	BOA 6
Exotics							
<i>Aira cupariana</i>							
<i>Arctotheca calendula</i>	Capeweed	✓ 0.1 20	✓ 0.2 10	✓ 0.1 10	✓ 0.1 50	✓ 0.2 50	✓ 0.1 10
<i>Avena fatua</i>	Wild Oats						
<i>Brassicacea</i> sp.							
<i>Bromus rubens</i>			✓ 0.1 1	✓ 0.1 6	✓ 0.1 100		
<i>Bromus</i> sp.			✓ 0.2 100		✓ 0.1 20		✓ 0.2 100
<i>Carthamus lanatus</i>	Saffron Thistle				✓ 0.1 50		
<i>Centaurea</i> sp.							
<i>Cirsium vulgare</i>	Spear Thistle						
<i>Echium plantagineum</i>	Paterson's Curse	✓ 0.5 100	✓ 0.2 100	✓ 0.1 30	✓ 0.1 100	✓ 0.3 50	✓ 0.2 100
<i>Erodium cicutarium</i>	Common Crowfoot						
<i>Helipopsis rhagadioloides</i>					✓ 0.3 500		
<i>Hordeum leporinum</i>	Barley Grass	✓ 0.1 1	✓ 0.1 100			✓ 0.1 50	✓ 0.1 50
<i>Hypochoeris glabra</i>		✓ 0.1 2	✓ 0.1 10	✓ 0.1 5	✓ 0.5 500	✓ 0.1 50	
<i>Hypochoeris radicata</i>	Catsear		✓ 0.1 1	✓ 0.1 2	✓ 0.1 5		
<i>Iris</i> sp.							✓ 0.1 2
<i>Lactuca seriola</i>	Prickly Lettuce	✓ 0.1 1	✓ 0.1 3			✓ 0.1 1	✓ 0.1 2
<i>Lepidium</i> sp.		✓ 0.1 1					
<i>Lolium rigidum</i>	Wimmera Ryegrass	✓ 0.1 5	✓ 0.1 50		✓ 0.1 2		
<i>Lycium ferocissimum</i>	African Boxthorn	✓ 0.1 1					
<i>Rostratula pumila</i>							
<i>Medicago lecinata</i>	Cut-leaved Medic	✓ 0.5 500		✓ 0.1 100		✓ 0.2 100	✓ 0.1 10
<i>Medicago minima</i>	Woolly Burr Medic		✓ 0.1 50	✓ 0.1 1	✓ 0.2 100		✓ 0.3 500

Brown Falcon
 budgies
 pelican



Species Name	Common Name	BOA 1	BOA 2	BOA 3	BOA 4	BOA 5	BOA 6
<i>Medicago polymorpha</i>	Burr Medic						
<i>Medicago sp.</i>							
<i>Medicago truncatula</i>	Barrel Medic		✓ 0.3 100		✓ 0.1 50	✓ 0.3 100	✓ 0.3 50
<i>Opuntia stricta</i>	Prickly Pear				✓ 0.1 2		
<i>Opuntia sp.</i>							
<i>Pentstemonis airoides</i>	False Hairgrass	✓ 0.1 5	✓ 0.1 20	✓ 0.1 20		✓ 0.1 20	✓ 0.1 20
<i>Polygonum aviculare</i>	Wireweed						
<i>Raphanus raphanistrum</i>	Wild Radish						
<i>Rumex rosea</i>	Onion Grass	✓ 0.1 10	✓ 0.1 50	✓ 0.1 10		✓ 0.1 10	✓ 0.1 50
<i>Silene tridentata</i>	Catchfly		✓ 0.1 50		✓ 0.1 10		✓ 0.1 50
<i>Sisymbrium erysimoides</i>			✓ 0.1 50		✓ 0.1 20		✓ 0.1 50
<i>Sisymbrium irio</i>	London Rocket						✓ 0.1 5
<i>Sonchus asper</i>	Prickly Sowthistle						
<i>Sonchus oleraceus</i>	Common Sowthistle	✓ 0.1 10	✓ 0.1 5	✓ 0.1 5	✓ 0.1 5	✓ 0.1 50	✓ 0.1 20
<i>Trifolium arvense</i>	Haresfoot Clover	✓ 0.1 5	✓ 0.1 50	✓ 0.2 50		✓ 0.1 50	✓ 0.1 50
<i>Trifolium sp.</i>							
<i>Veronica arvensis</i>							
<i>Vulpia myuros</i>	Rat's Tail Fescue	✓ 0.2 50	✓ 0.1 50	✓ 0.1 50		✓ 0.1 50	✓ 0.3 50
<i>Vulpia sp.</i>							
Natives							
<i>Actinobole utiginosum</i>	Flannel Cudweed	✓ 0.1 100	✓ 0.2 50	✓ 0.3 50		✓ 0.1 50	✓ 1 1000
<i>Aphanes australiana</i>			✓ 0.3 50	✓ 0.1 50		✓ 0.1 50	✓ 0.2 50
<i>Anisida behriana</i>	Bunch Wiregrass	✓ 1 100		✓ 0.3 20	✓ 1 100		
<i>Aristida sp. yerdensis</i>				✓ 0.1 3	✓ 0.5 100		
<i>Arthropodium minus</i>	Small Vanilla Lily	✓ 0.1 5		✓ 0.2 100		✓ 0.1 100	✓ 0.5 1000
<i>Arthropodium sp.</i>							

Species Name	Common Name	BOA 1	BOA 2	BOA 3	BOA 4	BOA 5	BOA 6
<i>Atriplex semibaccata</i>	Creeping Saltbush	✓ 0.1 5	✓ 0.1 3		✓ 0.1 3		
<i>Atriplex</i> sp.							
<i>Austrostipa aristiglumis</i>	Plains Grass						
<i>Austrostipa bigeniculata</i>							
<i>Austrostipa scabra</i>	Speargrass	✓ 5 500	✓ 2 100	✓ 5 500	✓ 2 400	✓ 0.5 100	✓ 7 1000
<i>Austrostipa</i> sp.							
<i>Brachychiton populneus</i>	Kurrajong		✓ 0.3 1				
<i>Brachyscome lineariloba</i>	Hard-headed Daisy			✓ 0.1 1			
<i>Bulbine bulbosa</i>	Bulbine Lily	✓ 0.3 500	✓ 0.3 100	✓ 0.1 20	✓ 0.1 1	✓ 0.2 500	✓ 0.3 500
<i>Bulbine semibarbata</i>						✓ 0.1 100	
<i>Calandrinia eremaea</i>			✓ 0.1 5	✓ 0.1 1		✓ 0.1 20	
<i>Callitris glaucophylla</i>	White Cypress Pine	✓ 5 6	✓ 8 20	✓ 10 20	✓ 0.2 2	✓ 25 100	✓ 12 15
<i>Calotis hispidula</i>	Bogan Flea	✓ 0.5 500	✓ 0.3 100	✓ 0.3 500	✓ 0.1 50	✓ 0.1 100	✓ 0.1 100
<i>Cassia artemisioides</i>			✓ 0.1 1				
<i>Cassia</i> sp.							
<i>Euphorbia</i>							
<i>Gnaphalium drummondii</i>	Caustic Weed	✓ 0.1 5		✓ 0.1 1	✓ 0.1 2	✓ 0.1 5	✓ 0.1 1
<i>Chenanthus sieberi</i>	Mulga Fern		✓ 0.1 50	✓ 0.2 100		✓ 0.3 100	✓ 0.5 1000
<i>Chenopodium desertorum</i> subsp. <i>desertorum</i>		✓ 0.1 3			✓ 0.1 2		✓ 0.3 20
<i>Chenopodium nitriaceum</i>	Nitre Goosefoot						
<i>Chenopodium</i> sp.							
<i>Chloris</i> sp.							
<i>Chloris truncata</i>	Windmill Grass				✓ 0.1 10		
<i>Chrysocephalum apiculatum</i>	Common Everlasting	✓ 0.1 5	✓ 0.2 20		✓ 0.2 20		
<i>Convolvulus erubescens</i> complex		✓ 0.5 50	✓ 0.1 1	✓ 0.3 100	✓ 0.2 50	✓ 0.1 3	✓ 0.1 1
<i>Convolvulus</i> sp.							
<i>Crassula colorata</i>		✓ 0.3 500	✓ 0.2 1000	✓ 0.3 500		✓ 0.1 100	✓ 0.2 1000

Species Name	Common Name	BOA 1	BOA 2	BOA 3	BOA 4	BOA 5	BOA 6
<i>Crassula decumbens</i> var <i>decumbens</i>							
<i>Crassula</i> sp.		✓ 0.1 5					
<i>Dianella</i> sp.							
<i>Dichelachne</i> sp.							
<i>Dichopogon fimbriatum</i>	Chocolate Lily	✓ 3 500	✓ 0.2 400	✓ 1 500		✓ 2 500	✓ 5 500
<i>Dichopogon</i> sp.							
<i>Einadia nutans</i>	Climbing Saltbush						
<i>Einadia nutans</i> subsp <i>nutans</i>		✓ 0.3 10	✓ 0.2 20	✓ 0.2 20	✓ 0.2 10	✓ 0.7 50	✓ 0.2 50
<i>Enchylaena tomentosa</i>	Ruby Saltbush	✓ 0.5 20	✓ 2 50	✓ 0.2 10	✓ 0.2 5	✓ 0.5 50	✓ 1 100
<i>Erodium cicutarium</i>	Blue Storksbill	✓ 0.3 100	✓ 0.3 100	✓ 0.2 50		✓ 0.1 5	✓ 0.2 100
<i>Eucalyptus populnea</i>	Poplar Box	✓ 0.5 1		✓ 0.1 1	✓ 10 4	✓ 0.1 1	✓ 0.1 1
<i>Euphorbia</i> sp.							
<i>Goodenia cycloptera</i>		✓ 0.5 500			✓ 0.2 50	✓ 0.3 100	
<i>Goodenia fascicularis</i>							
<i>Goodenia pusilliflora</i>		✓ 2 1000	✓ 0.5 500	✓ 1 1000	✓ 0.5 500	✓ 0.1 100	✓ 0.3 500
<i>Hornopholis prolata</i>							
<i>Hyalosperma glutinosum</i> subsp <i>glutinosum</i>							
<i>Hyalosperma semisterite</i>		✓ 10 1000	✓ 2 500	✓ 5 1000	✓ 0.3 500	✓ 0.1 500	✓ 0.5 500
<i>Hyalosperma</i> sp.							
<i>Isoetes graminifolia</i>	Grass Cushion	✓ 0.1 50	✓ 0.1 20	✓ 0.1 50	✓ 0.1 500	✓ 0.1 50	✓ 0.1 20
<i>Maireana enchytaenoides</i>	Wingless Fissure Weed	✓ 0.1 10	✓ 0.1 5	✓ 0.1 5	✓ 0.1 50	✓ 0.1 100	✓ 0.1 20
<i>Maireana excavata</i>		✓ 2 500	✓ 0.3 100	✓ 1 500	✓ 0.1 10		✓ 0.2 50
<i>Mitella myosotidifolia</i>						✓ 0.5 100	
<i>Minuria leptophylla</i>							
<i>Ophioglossum lusitanicum</i>	Adders Tongue		✓ 0.2 1000	✓ 0.1 20	✓ 0.1 10		✓ 0.1 100



Species Name	Common Name	BOA 1	BOA 2	BOA 3	BOA 4	BOA 5	BOA 6
<i>Ophioglossum</i> sp.		✓ 0.2 50	✓ 0.5 100	✓ 0.1 20	✓ 0.3 100	✓ 0.6 500	✓ 2 500
<i>Oxalis perennans</i>		✓ 0.2 12	✓ 0.1 1				
<i>Ptilosporum angustifolium</i>							
<i>Pterostylis bicolor</i>	Black-tip Greenhood						
<i>Ptilotus spathulatus</i>	Pussy Tails	✓ 0.1 10	✓ 0.1 10		✓ 0.1 20	✓ 0.1 1	✓ 0.1 20
<i>Ranunculus sessiliflorus</i>							
<i>Rhodanthe corymbiflora</i>	Small White Sunray						
<i>Rhodanthe diffusa</i>			✓ 0.3 100	✓ 0.3 100		✓ 0.1 100	✓ 0.1 100
<i>Rhodanthe pygmaea</i>	Pygmy Sunray	✓ 0.1 100	✓ 0.1 10	✓ 0.2 500	✓ 0.1 50		✓ 0.5 100
<i>Ryfitosperma</i> sp. 1 (along with <i>Thymolobos</i> 1.12)		✓ 2 100	✓ 0.1 5	✓ 3 500			
<i>Salsola australis</i> (formerly <i>S. kali</i> and <i>S. fragus</i>)	Soft Roly Poly	✓ 0.1 20			✓ 0.1 1		✓ 0.1 1
<i>Sclerolaena</i> sp. <i>diacantha</i>		✓ 0.3 50	✓ 0.1 5	✓ 0.1 5	✓ 0.1 1		
<i>Sida corrugata</i>	Corrugated Sida	✓ 0.1 20	✓ 0.1 1	✓ 0.1 10	✓ 0.1 20	✓ 0.1 20	✓ 0.2 100
<i>Sida cunninghamii</i>	Ridged Sida	✓ 0.2 50	✓ 0.2 20	✓ 0.2 50	✓ 0.1 20	✓ 0.2 50	✓ 0.2 50
<i>Solanum esuriiale</i>	Quena				✓ 0.1 2		
<i>Spergularia</i> sp.							
<i>Stackhousia monogyne</i>	Creamy Stackhousia		✓ 0.1 20			✓ 0.2 100	
<i>Stuartina muelleri</i>	Spoon Cudweed		✓ 0.1 50	✓ 0.2 500		✓ 0.2 500	✓ 0.1 50
<i>Thysanotus patersonii</i>						✓ 0.1 2	
<i>Tricoryne elatior</i>	Yellow Autumn-lily		✓ 0.1 20	✓ 0.1 30			✓ 0.1 100
<i>Tripliodiscus pygmaeus</i>	Common sunray		✓ 0.5 500	✓ 0.1 50		✓ 0.2 500	✓ 0.1 100
<i>Vellisia paradoxa</i>							
<i>Vittadinia cuneata</i>	Fuzzweed	✓ 0.1 5	✓ 0.3 50	✓ 0.2 50	✓ 1 500	✓ 0.1 1	✓ 0.1 10
<i>Wahlenbergia (broad leaf) sp.</i>	<i>Gracillenta?</i>						
<i>Wahlenbergia communis</i>	Tufted Bluebell						
<i>Wahlenbergia</i> sp.		✓ 0.1 50	✓ 0.1 500	✓ 0.1 500		✓ 0.1 10	✓ 0.1 100

✓ 0.2 20

Phyllanthus jacobinoides



