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# **Tharbogang Quarry and Landfill Offset Monitoring Annual Monitoring Report 2018**



**Lots 181 and 182 // DP 756035**

Prepared for: Griffith City Council

**14 December 2018**

<b>PROJECT NUMBER</b>	2018-063		
<b>PROJECT NAME</b>	Tharbogang Quarry and Landfill Offset Monitoring, Annual Monitoring Report 2018		
<b>PROJECT ADDRESS</b>	Lot 181 and 182 // DP 756035, Hillside Drive, Tharbogang, NSW		
<b>PREPARED FOR</b>	Griffith City Council		
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<b>REVIEW</b>	<b>Technical</b>	<b>QA</b>	<b>Version</b>
	Bruce Mullins	Bruce Mullins	1.0
<b>VERSION</b>	<b>Version</b>	<b>Date to client</b>	
	1.0	14/12/2018	

This report should be cited as: 'Ecoplanning (2018). Tharbogang Quarry and Landfill Offset Monitoring, Annual Monitoring Report 2018. Prepared for Griffith City Council.'

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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 2018 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 kilometres (km) northwest of Griffith.

Monitoring of the offset site is undertaken annually, with this report documenting year 3 of monitoring under the Conservation Agreement.

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 also 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 the 17 to 19 September 2018.

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 2017 and benchmark data.

Surveys for microchiropteran bats were conducted in each management zone. The sites surveyed were the same as those in 2016 and 2017. An Anabat Express, Anabat Swift and Songmeter SM3Bat were used for the survey. Echolocation calls were recorded over two nights and were activated 1 hour before sunset until 1 hour after sunrise. A single night of data was collected from a fourth site in open woodland using both the Anabat Swift and Anabat Express.

Bird surveys were undertaken at the same sites as in 2016 and 2017: 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 consecutive days by two people. All birds seen or heard were recorded.

The offset site 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 3, 2018 monitoring period.

Management Action	Timing	Status
Monitoring Biobanking monitoring plots and photo points	Year 3	Complete – results of monitoring are provided
Recommend weed management thresholds and commence weed management actions in the Conservation Area in Year 1	Years 1 - 3	Weed management occurred during 2017 targeting <i>Lycium ferocissimum</i> (African Boxthorn) and <i>Opuntia</i> sp.
Pest animal control (local co-ordination with LLS and OEH)	Years 1 - 10	No pest animal control actions were undertaken.
	Years 1 – 3 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	No pest animal control actions were undertaken. Foxes were observed in the offset site.
	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	No pest animal control actions were undertaken. No Feral Cats, or 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	Fire trails were re-graded in the offset site on 25/11/2017. A track was created along the new fence along the northern boundary.
Fencing, gates and signage	Year 1	The boundary of the offset area has been fenced and signage erected. Western fence line completed in December 2017. The northern boundary fence completed in March 2018.
	Year 2-10 – maintain fences and gates	Fences and gates re inspected quarterly.

Management Action	Timing	Status
Quarterly inspections and stock management data	Years 1 - 10	Inspections were conducted in February, June/July, September and December 2018. No grazing occurred in year 3.
Annual Reports for Monitoring Program	Years 1 -10	Monitoring was conducted in September 2018.

## 4. Photo Monitoring Points and Quadrats

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

Photo point monitors an eroded channel and pasture weeds. During baseline survey erosion of the channel appeared stable and weeds were primarily *Echium plantagineum*, *Arctotheca calendula*, *Hordeum leporinum*, *Lolium rigidum*, and *Bromus* sp. There was no evidence of regeneration of the native canopy. The ground layer included scattered natives such as *Vittadinia cuneata*, *Maireana* sp. and *Erodium crinitum*. Minor dieback was evident in canopy trees to the south.

Erosion: Monitoring in 2018 did not observe any active erosion.

Vegetation - general: Vegetation height and biomass was low due to below average rainfall. Some weeds that were previously dominant (*Arctotheca calendula* and *Romulea rosea plantagineum*) provided a low cover in 2018. While other weeds previous recorded were not detected during the survey (*Echium plantagineum*)

Vegetation cover: Groundcover was estimated to be 30% in the area surrounding the photo point in 2018, which is lower than the estimated groundcover in 2017 (90%).

Canopy trees: Tree canopies appeared to be denser despite the dry year. There was no change to the recruitment of canopy species.

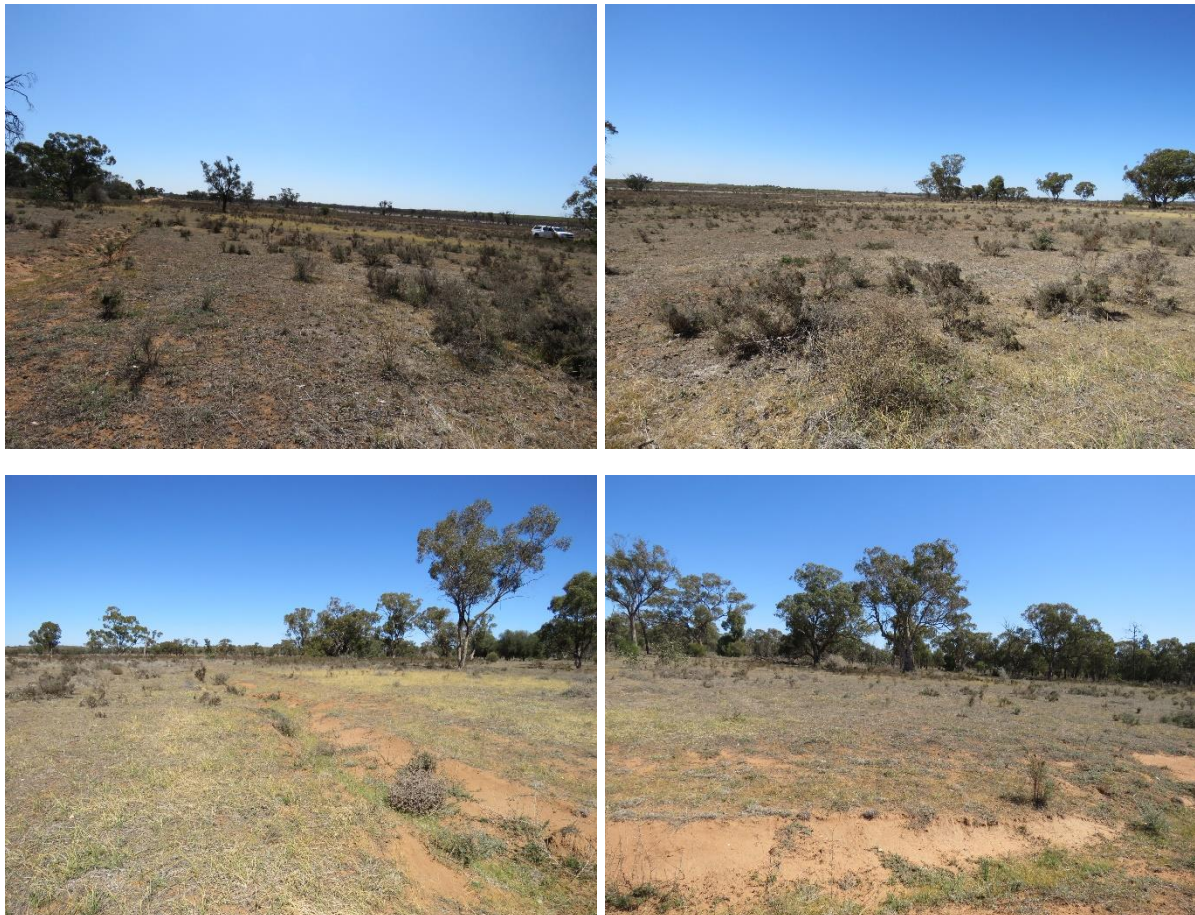




Photo point 2 (PP2) (N, E, S, W)

Photo point monitors an eroded channel, pasture weeds and woodland heath. During baseline survey common weeds were *Arctotheca calendula*, *Sisymbrium erysimoides*, *Hordeum leporinum* and *Bromus* sp. The canopy was in a relatively good condition with scattered regeneration of *Callitris glaucophylla* but no visible regeneration of eucalypts. Erosion appeared inactive along the drainage line and stabilised by vegetation cover.

Erosion: Monitoring in 2018 did not observe active erosion.

Vegetation – general: Vegetation height was low as in 2017. A predominantly dry year maintained a low biomass, and some weeds that were previously dominant were not recorded (*Echium plantagineum* and *Sisymbrium erysimoides*).

Vegetation cover: The groundcover was similar to 2017 (~20%) in the area surrounding the photo point, with a very high cover of litter (~70%). Canopy cover was the same as in 2017 (15%), while midstorey cover increased from 5% in 2017 to 10% in 2018.

Weeds: Contractors had sprayed *Opuntia* sp., however, plants still appeared “greenish” and were not completely dead.

Canopy trees: Tree canopies appeared to be in good condition. There was no change to the recruitment of canopy species.





Photo point 3 (PP3) (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*. The eucalypt canopy was in good condition but no regeneration was observed.

Vegetation - general: Vegetation height was low. A predominantly dry year maintained the low biomass recorded in 2017, with very high litter cover.

Vegetation cover: The groundcover was estimated to be similar between 2017 and 2018, with ~30% groundcover in the area surrounding the photo point. An excessive amount of litter was also observed in the area surrounding the photo point in 2018, similar to 2017 which also found a high cover of litter (~65%). The canopy increased in cover from 2017 (5%) to 10% cover in 2018. The midstorey stayed the same for both 2017 and 2018 (1%).

Weeds: Contractors had sprayed *Marrubium vulgare* and *Lycium ferocissimum* and all individuals found were dead.

Canopy trees: Regeneration of *Eucalyptus populnea* was observed. There were no signs of canopy dieback.





Photo point 4 (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.

Vegetation - general: Vegetation height was similar to 2017. A predominantly dry year maintained a low biomass.

Vegetative cover: The ground cover was estimated to be lower in 2018 compared to 2017, with an estimated 50% in the area surrounding the photo point. There was high cover of litter in both 2017 and 2018 (~45%). The estimated canopy cover was the same as in 2017 (10%). The midstorey cover also did not change between 2017 and 2018 (2%).

Weeds: Contractors had sprayed *Lycium ferocissimum*, with all individuals found dead. *Marrubium vulgare* had also been sprayed, however, some plants were resprouting and require follow up treatment.

Canopy trees: There were no signs of canopy dieback. Canopy trees appeared to be in good condition.





Photo point 5 (N, E, S, W)

Photo point monitors priority weeds and eucalyptus health. During baseline survey the priority weed *Marrubium vulgare* was recorded, with a high cover of other weeds (*Hordeum leporinum*) around the base of the eucalypts. Beyond this, vegetation was dominated by areas of low growing, native dominated ground covers. Canopy was in good condition with no evidence of dieback and eucalypt recruitment observed in the south.

Vegetation – general: Vegetation height low as in 2017. A predominantly year maintained a low biomass.

Vegetative cover: The ground cover was high in the area surrounding the photo point as in 2017 (85%). A high cover of litter was also seen in 2018. The canopy and midstorey cover were estimated at 10% and 1%, respectively, as in 2017.

Weeds: *Marrubium vulgare* had been treated and were dead. *Hordeum leporinum* was present in the ground layer.

Canopy trees: There were no signs of canopy dieback. Canopy trees appeared to be in good condition.





Photo point 6 (N, E, S, W)

Photo point monitors priority weeds and eucalyptus health. During baseline survey dense infestations of the priority weed *Opuntia* sp. were recorded. Other weeds at the site included *Sisymbrium erysimoides* and *Echium plantagineum*. This community was generally in good condition with some *Callitris* regrowth and the natives *Erodium crinitum* and *Maireana* sp. were common in the ground layer.

Erosion: Monitoring in 2018 did not observe active erosion around drainage line.

Vegetation – general: Vegetation height low as in 2017. A predominantly dry year maintained a low biomass. A low cover of *Hordeum leporinum* was common in 2018, and the cover of *Echium plantagineum* and *Arctotheca calendula* was very low to absent, respectively.

Vegetative cover: The ground cover was low in the area surrounding the photo point as in 2017 (30%), with a very high cover of litter similar to the year previous (~65%). The canopy did not change between 2017 and 2018, with an estimated cover of 15%. The midstorey had an estimated cover of 5% in 2018, which is higher than in 2017 (1%).

Weeds: *Opuntia* sp. had been sprayed, however, some individuals that were lying on the ground were still green. It is possible for these individuals to resprout.

Canopy trees: There were no signs of canopy dieback. Regeneration of *Eucalyptus populnea* and *Callitris glaucophylla* were observed. Canopy trees appeared to be in good condition.

Rubbish: Rubbish had blown from the tip into the area.

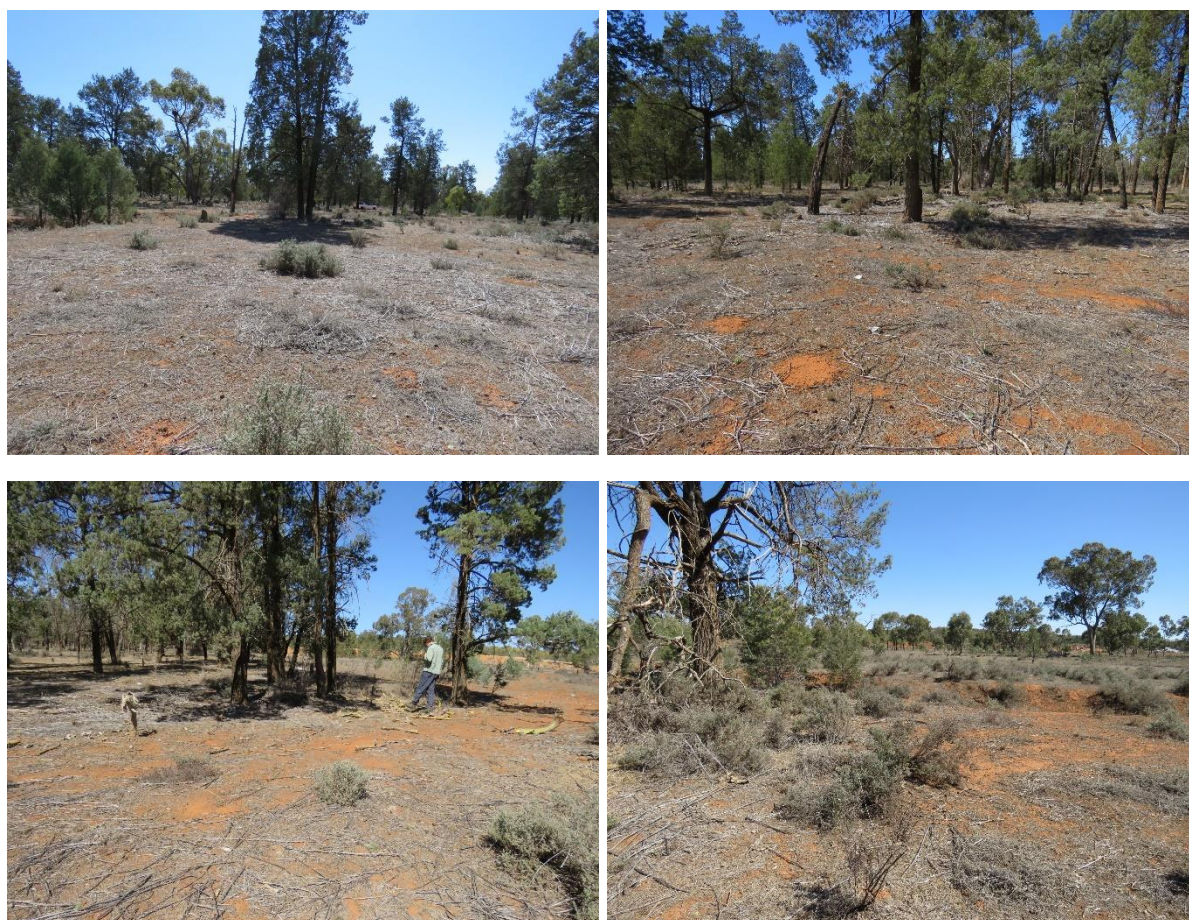




Photo point 7 (N, E, S, W)

Photo point monitors eucalyptus health and regrowth, and general woodland health. During baseline monitoring, regrowth of *Callitris* was observed but did not form a thicket, with stags present. Eucalypt regrowth was also present with minor dieback in the canopy. Foreground ground cover was predominantly native (including *Hyalosperma glutinosum*, *Triptilodiscus pygmaea*, *Maireana* sp. and *Goodenia* sp.). Few weeds were recorded but became more abundant beneath the denser stands of *Callitris* in the background.

Vegetation – general: Biomass was low with a low cover of weeds.

Vegetative cover: The vegetation ground cover was very low (~15%) in the area surrounding the photo point. There was a high cover of litter in 2018 (~50%). Estimated canopy cover increased from 5% (2017) to 15% in 2018. The midstorey cover decreased from 20% (2017) to 5% in 2018. This may reflect growth in smaller *Callitris* to form part of the canopy.

Threatened species sightings: Two vulnerable species, *Pomatostomus temporalis temporalis* (Grey-crowned Babbler) and *Phoenicia goodenovii* (Red-capped Robin), were recorded.

Pest animals: *Vulpes vulpes* (Red Fox) was recorded in the area surrounding the photo point.

Weeds: *Lycium ferocissimum* had been sprayed. Some individuals were dead, but others were alive. *Opuntia* sp. were alive.

Canopy trees: There were no new signs of canopy dieback and canopy regeneration is present. Canopy trees appeared to be in good condition.





Photo point 8 (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 (*Arctotheca calendula*, *Hordeum leporinum* and *Sisymbrium erysimoides*) in the area. Eucalypts were generally healthy with no sign of dieback, except for minor dieback in advanced regrowth in the south.

Vegetation – general: Vegetation height was low. A predominantly dry year maintained a reduced biomass.

Vegetative cover: The ground cover was lower in 2018 compared to 2017 (90%), and litter cover was higher in 2018 than in 2017 in the area surrounding the photo point. The canopy cover estimate was consistent at 5%. The midstorey increased from an estimated cover of 1% in 2017 to 5% in 2018.

Fire breaks: In good condition.

Weeds: Contractors had sprayed *Lycium ferocissimum* and *Marrubium vulgare*, with unrecognisable weedy vegetation found dead.

Canopy trees: There were no signs of canopy dieback. Regeneration of *Eucalyptus populnea* and *Callitris glaucophylla* were observed. Canopy trees were in good condition.





Photo point 9 (BOA1) (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*, *Goodenia pusilliflora* and *Hyalosperma glutinosum*) with a low cover of weeds (24%). Low levels of dieback in eucalypt were recorded within the area. Regrowth of *Callitris* was scattered.

Vegetation – general: Below average rainfall maintained a reduced biomass. *Austrostipa scabra* was the dominant native grass in the plot. All weed species scored a cover of <1%. The abundance of native and exotic annuals and winter growing perennials was low, which is attributed to low rainfall (**Table 2**). A full species list is provided in **Appendix A**.

Vegetative cover: There was disparity between data collected along the 50 m transect and total cover estimates from plot data. Plot data estimated that vegetative cover was very low at approximately 20%, while the transect determined native vegetation cover to be 72%. This is an artefact of the systematic sampling approach along the transect. Exotic cover was estimated at 10% along the transect. In 2017, native ground cover was 56%, and exotic cover was 6%. The canopy and midstorey were present, but did not score along the 50 m transect.

Weeds: *Opuntia* sp. had not been treated.

Canopy trees: Regeneration of *Eucalyptus populnea*, *Callitris glaucophylla* and *Pittosporum angustifolium* were observed. Canopy trees were in good condition.

Rubbish: Rubbish had blown from the tip into the area.





Photo point 10 (BOA2) (N, E, S, W)

This photo point monitors 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* sp.). The area was generally in good health with no signs of dieback.

Vegetation – general: Vegetation height low. A predominantly dry year reduced the biomass. A high cover of native species was present with *Austrostipa scabra*, *Callitris glaucophylla*, *Erodium crinitum* and *Rytidosperma* sp. common. The exotic species *Echium plantagineum*, *Romulea rosea*, *Medicago minima* and *Vulpia* sp. were common. Several species previously recorded in the plot were not recorded this year, which is attributed to low rainfall. A full species list is provided in **Appendix A**.

Vegetative cover: The native ground cover was higher than 2017 (2%), with 10% cover along the transect in the biometric plot. Exotic cover decreased from 10% in 2017 to 2% in 2018.

Weeds: *Opuntia* sp. was not recorded in the plot.

Canopy trees: There were no signs of canopy dieback. Regeneration of *Callitris glaucophylla* was observed. Canopy trees appeared to be in good condition. Growth is noted in regenerating canopy species.

Rubbish: Rubbish had blown from the tip into the area.





Photo point 11 (BOA3) (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*). Low levels of dieback in eucalypt and *Callitris* were recorded within the photo point and broader area.

Vegetation – general: Vegetation height was low. A predominantly dry year maintained a low biomass. *Austrostipa scabra*, *Rytidosperma* sp. and *Goodenia pusilliflora* were common ground covers species. Each exotic species recorded was estimated to have <1% cover. A full species list is provided in **Appendix A**.

Vegetative cover: The native ground cover was higher than 2017 (32%) with approximately 72% cover in the biometric plot in 2018. However, there was disparity between data collected along the 50 m transect and total cover estimates from plot data. Plot data estimated that the vegetative cover in the plot was approximately 20-30%. Exotic cover was approximately 10%.

Weeds: *Opuntia* sp. was not recorded in the plot.

Canopy trees: There were no signs of canopy dieback. Regeneration of *Callitris glaucophylla* and *Eucalyptus populnea* were observed. Canopy trees appeared to be in good condition.





Photo point 12 (BOA4) (N, E, S, W)

This photo point monitors a Biobanking plot located in derived native grassland (DNG) and was a former gravel extraction pit. During baseline survey both native and exotic vegetation were established within the photo monitoring point (*Austrostipa scabra* and *Rytidosperma* sp. dominant), including young canopy species. The priority weed *Opuntia* sp. was present.

Vegetation – general: Vegetation height was low. A predominantly dry year maintained a low biomass. *Austrostipa scabra* and *Rytidosperma* sp. were dominant ground cover, and each exotic species recorded was estimated to have a cover less than 1% with relatively low abundance. A full species list is provided in **Appendix A**.

Vegetative cover: The native ground cover increased from 50% in 2017 to 90% in 2018 in the biometric plot. Exotic cover did not change between 2017 and 2018 (2%). However, there was disparity between data collected along the 50 m transect and total cover estimates from plot data. Plot data estimated that the vegetative cover in the plot was approximately 10%.

Weeds: *Opuntia* sp. had not been treated.

Threatened species sightings: Two vulnerable species, *Pomatostomus temporalis temporalis* (Grey-crowned Babbler) and *Phoenicia goodenovii* (Red-capped Robin), were recorded.

Perimeter trail: The perimeter trail near the site had been regraded since 2016 monitoring.

Canopy trees: Regeneration of *Eucalyptus populnea* and *Callitris glaucophylla* were observed. Growth is noted in the regenerating canopy species from 2015.

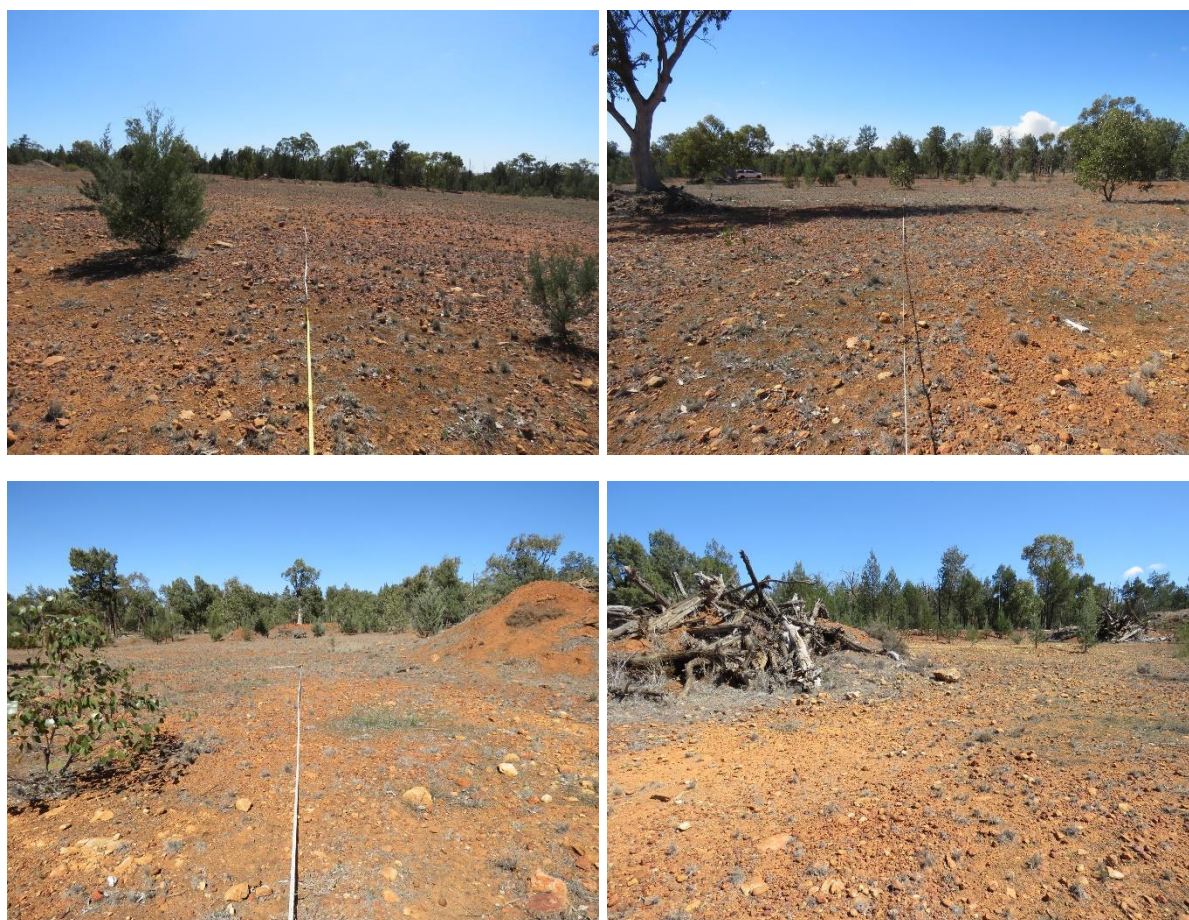




Photo point 13 (BOA5) (N, E, S, W)

This photo point monitors Biobanking plot located in a *Callitris* thicket. The start point is located on the edge of the thicket so that an increase in the size of the thicket to the west can be observed. During baseline survey *Callitris* were mostly low growing resulting in a “lock-up”, composed of dense *Callitris* to 4 m and 40% cover. The groundcover comprised both native and exotic species (*Austrostipa scabra*, *Cheilanthes sieberi*, *Stuartina muelleri*, *Hordeum leporinum* and *Sisymbrium erysimoides* common).

Vegetation – general: A predominantly dry year maintained a low biomass. Vegetation ground cover within the plot was very low. *Austrostipa scabra* had the highest cover at 1%. A full species list is provided in **Appendix A**.

Vegetative cover: The native ground cover along the transect increased from 2017 (6%) to 28% in 2018, however, plot data indicated that vegetation cover was very low (<5%) with low species abundance. Exotic cover along the transect increased from 4% (2017) to 6% in 2018.

Weeds: *Opuntia* sp. was recorded in the plot.

Canopy trees: Regeneration of *Callitris glaucophylla* and *Eucalyptus populnea* were observed.

Threatened species sightings: Two vulnerable species, *Pomatostomus temporalis temporalis* (Grey-crowned Babbler) and *Phoenicia goodenovii* (Red-capped Robin), were recorded.

Perimeter trail: The perimeter trail is in good condition.

Rubbish: Rubbish had blown from the tip into the area.





Photo point 14 (BOA6) (N, E, S, W)

Photo point monitors Biobanking plot located in woodland. During 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*). The area was generally in good health with some old stags present.

Vegetation – general: Vegetation height was low. A predominantly dry year maintained a reduced biomass. *Austrostipa scabra* and *Rytidosperma* sp. were the most common ground cover species. Each exotic species had a cover less than 1%. A full species list is provided in **Appendix A**.

Vegetative cover: The native ground cover was 16% cover in the biometric plot in 2018, which was higher than in 2017 (8%). Exotic cover decreased from 4% (2017) to 2% in 2018.

Weeds: *Opuntia* sp. had not been treated.

Canopy trees: There were no signs of canopy dieback. Regeneration of *Callitris glaucophylla* and *Eucalyptus populnea* were observed. Canopy trees appeared to be in good condition.





Table 4.1: Plant community type benchmarks and quadrat scores as at September 2018 (in bold), with the range of values from monitoring period in brackets, across all years. Values within benchmark highlighted 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>	<b>&gt;=23</b>	14-27	33-38	5-22	0-21	0-20	N/A	<b>&gt;=3</b>	1	<b>&gt;=33</b>
BOA1	<b>26</b> (26-38)	<b>0</b> (0)	<b>0.5</b> (0.5-3)	<b>72</b> (36-72)	<b>0</b> (0)	<b>30</b> (18-52)	<b>10</b> (6-52)	<b>0</b> (0)	<b>1</b> (0-1)	<b>0</b> (0-0.5)
BOA2	<b>22</b> (22-41)	<b>4</b> (1)	<b>4</b> (4-12.1)	<b>6</b> (2-6)	<b>2</b> (0-2)	<b>2</b> (0-24)	<b>2</b> (2-52)	<b>0</b> (0)	<b>0.5</b> (0-0.67)	<b>40</b> (37-40)
BOA3	<b>22</b> (22-35)	<b>0.5</b> (0-1.5)	<b>4.5</b> (1.1-5)	<b>52</b> (26-52)	<b>12</b> (0-12)	<b>8</b> (4-14)	<b>10</b> (10-78)	<b>0</b> (0)	<b>1</b> (0-1)	<b>2</b> (2-5)
BOA4	<b>22</b> (21-25)	<b>0</b> (0)	<b>1.5</b> (0-2)	<b>48</b> (34-48)	<b>2</b> (0-2)	<b>40</b> (14-40)	<b>2</b> (2-22)	<b>0</b> (0)	<b>1</b> (0-1)	<b>0</b> (0)
BOA5	<b>20</b> (20-38)	<b>0</b> (0)	<b>22.5</b> (22.5-30.5)	<b>16</b> (6-16)	<b>0</b> (0)	<b>12</b> (0-28)	<b>6</b> (4-42)	<b>0</b> (0)	<b>1</b> (0-1)	<b>2</b> (1-3)
BOA6	<b>18</b> (18-36)	<b>20.5</b> (14.5-20.5)	<b>1.5</b> (1.5-17.5)	<b>8</b> (5.5-8)	<b>2</b> (0-2)	<b>6</b> (0-30)	<b>2</b> (2-70)	<b>1</b> (1)	<b>1</b> (0-1)	<b>20</b> (14-20)

## 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.

Many of the vegetation attributes measured in Biobanking plots were similar to 2017, however, as 2018 was a drier year, some attributes declined. Most plots scored their lowest Native Species Richness during the monitoring period, which can be attributed to low rainfall. 2018 rainfall prior to survey was 97.4 mm in Griffith, which is well below the average rainfall 271.6 mm for the same period.

The cover and abundance of species within the 20x20 m plot was very low, with most species scoring a percent cover of less than 1%. However, the vegetation cover measured along the 50 m transect was much higher than expected at some sites (BOA1, BOA3 and BOA4). Only the perennial native grasses *Austrostipa scabra* and *Rytidosperma* sp. consistently had cover scores greater than 1% in the plot. Many annual or semi-perennial native species were either not recorded or had a much lower cover, similar to data in 2017. Low rainfall also reduced the abundance, diversity and cover of exotic species in the plots.

All sites, except for BOA1, were below benchmark for Native Species Richness. Sites BOA2, 5 and 6 continued to have a ground cover of grasses within benchmark, while sites BOA 1, , 3 and 4, continued to have a cover of grasses higher than benchmark. Exotic ground cover was also very low across all sites. It is expected that with higher rainfall, Native Species Richness will increase, along with exotic ground cover.

Litter levels were high during the survey, and there appeared to be an increase in bare ground. These inter-tussock spaces are important for the growth of native annuals.

Weed control appeared to be widespread across the site. Most of the *Lycium ferocissimum* (African Boxthorn) was dead, while a large number of *Opuntia* sp. appeared to have been sprayed but were not completely dead; time may be required for the full effects of the treatment to be apparent. Continued monitoring of this species and follow up spraying may be required to kill these individuals. Similarly, most *Marrubium vulgare* had been sprayed, but there was some regrowth on some plants that require follow up treatment.

The 2018 survey recorded 52 species of birds within the Conservation Area during the bird surveys (**Appendix A**), plus an additional species was recorded incidentally. Two of these species are listed under the *Biodiversity Conservation Act 2016* (Grey-crowned Babbler and Dusky Woodswallow), and six species (Southern Whiteface, Eastern Yellow Robin, Chestnut-rumped Thornbill, Red-capped Robin, Rufous Whistler and White-browed Woodswallow) that are identified as declining woodland species in south-western NSW (Reid 1999). Threatened species recorded in 2017 that were not recorded in this survey were Major Mitchell's Cockatoo and Superb Parrot.

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

The 2018 survey recorded eight species of bats within the Conservation Area during the bat surveys (**Appendix A**). This is two less than the 2017 survey which recorded ten species of bats. None of the microbats recorded in 2018 were threatened.

## 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 2018 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 2018 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 on the 25-26 June, 16 and 31 July 2018 (**Appendix D**). During monitoring, it was evident that *Lycium ferocissimum* (African Boxthorn), *Opuntia* sp. (Prickly Pear) and *Marrubium vulgare* (Horehound) were sprayed during the monitoring period. Most *Lycium ferocissimum* were dead, and a large number of *Opuntia* sp. and *Marrubium vulgare* were dead or showed the effects of treatment (such as, yellowing and browning). Primary treatment has been conducted with mixed success. Secondary treatment is recommended to ensure resprouting does not occur.

Several new observations of *Xanthium spinosum* (Bathurst Burr) were made during the monitoring period that were likely to have grown over the 2017/18 summer. Monitoring and primary treatment is advised over the 2018/19 summer. The most efficient and effective method of control should be discussed with the weed management contractor.

### 6.4 Pest Management

There was no evidence of Rabbits, Feral Cat or Feral Goat observed during the monitoring program. A Fox was observed on one occasion. Pest control measures have not commenced.

### 6.5 Fire Trail and Vehicle Access

A perimeter trail was established along the northern boundary during the monitoring period.

### 6.6 Fencing

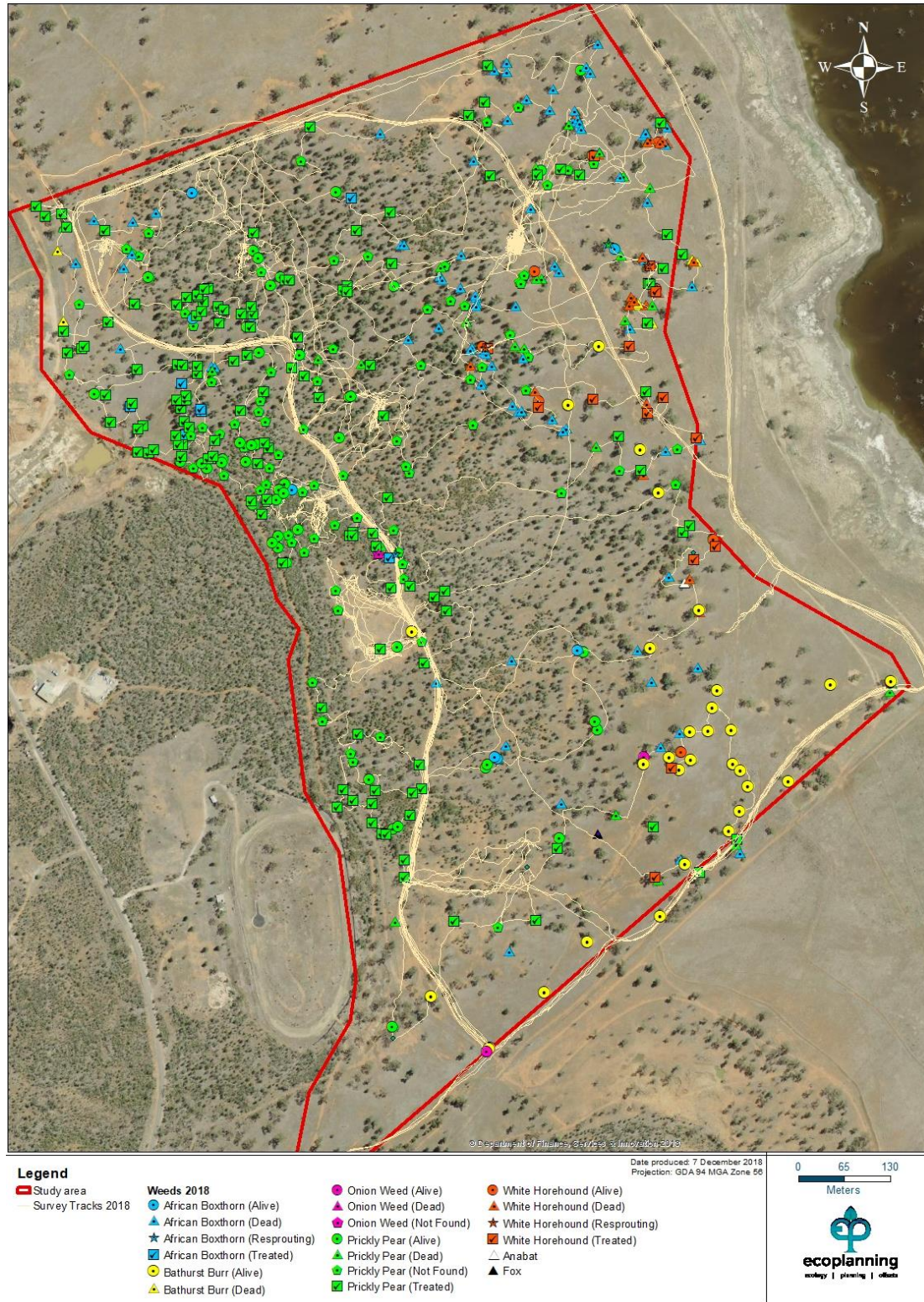
The boundary of the offset site was fenced during the monitoring period, enclosing the western and northern boundary.



## 6.7 Quarterly Inspections

The offset site was inspected in February, June/July, September and December 2018.

A map illustrating the areas inspected, observations of new weeds and of treated weeds is in **Figure 6.1**.



**Figure 6.1: Observations of new weed records and treated weeds.**

## 7. Recommendations

The following is recommended for the Offset site:

- Fox control is recommended for the offset site in accordance with the Conservation Agreement.
- Conduct secondary treatment for *Lycium ferocissimum*, *Opuntia* sp. and *Marrubium vulgare* as required. Consider digging out small *Opuntia* sp. rather than spraying.
- Conduct primary treatment for *Xanthium spinosum*.
- Maintain quarterly inspections. In particular, monitoring weed growth along the new northern perimeter track.

# Appendix A: Species List

## Biobanking plot species lists

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6				
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	
Exotic species																										
<i>Aira cupaniana</i>																			x	x				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	x	x
<i>Avena fatua</i>	Wild Oats														x											
<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	x		x	x	x	x	x	x	x	x	
<i>Carthamus lanatus</i>	Saffron Thistle											x		x	x	x	x					x				
<i>Centaurea</i> sp.											x															
<i>Cirsium vulgare</i>	Spear Thistle																	x								
<i>Echium plantagineum</i>	Patterson's Curse	x	x	x	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									x	x															
<i>Hedypnois rhagadioloides</i>	Cretan Weed	x	x							x	x				x	x										
<i>Hordeum leporinum</i>	Barley Grass	x	x	x		x	x	x		x	x				x			x	x	x	x	x	x	x		
<i>Hypochaeris glabra</i>		x				x		x				x							x			x		x		



Tharbogang Quarry and Landfill Offset Monitoring 2018

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<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							x	x	x		x	x		
<i>Lepidium</i> sp.											x														
<i>Lolium rigidum</i>	Wimmera Ryegrass						x	x			x				x			x		x		x	x	x	
<i>Rostratula pumila</i>	Rough-tail										x														x
<i>Medicago laciniata</i>	Cut-leaved Medic	x	x	x	x					x	x	x	x					x				x			
<i>Medicago minima</i>	Woolly Burr Medic					x	x	x	x					x	x	x									
<i>Medicago polymorpha</i>	Burr Medic														x										
<i>Medicago truncatula</i>	Barrel Medic		x	x	x		x	x	x	x		x		x		x					x		x		x
<i>Medicago</i> sp.						x												x		x		x			
<i>Moraea setifolia</i>	Thread Iris																								
<i>Opuntia stricta</i>															x	x				x				x	
<i>Opuntia</i> sp.	Prickly Pear													x			x		x		x				x
<i>Pentstemonis airoides</i>	False Hairgrass		x					x																	
<i>Petrorhagia nanteuilii</i>	Proliferous Pink														x				x						
<i>Polygonum aviculare</i>	Wireweed										x														
<i>Raphanus raphanistrum</i>	Wild Radish					x																			

Tharbogang Quarry and Landfill Offset Monitoring 2018

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<i>Romulea rosea</i>	Onion Grass								x			x	x								x				x
<i>Silene tridentata</i>	Catchfly													x								x			
<i>Sisymbrium erysimoides</i>	Smooth Mustard	x				x		x		x				x				x	x			x	x		
<i>Sisymbrium irio</i>	London Rocket	x				x	x															x			
<i>Sonchus asper</i>	Prickly Sowthistle																		x						
<i>Sonchus oleraceus</i>	Common Sowthistle	x				x	x			x	x			x	x			x	x			x	x		
<i>Trifolium arvense</i>	Haresfoot Clover		x			x	x	x		x	x				x				x	x		x		x	
<i>Trifolium glomeratum</i>	Clustered Clover							x				x								x				x	
<i>Trifolium</i> sp.							x				x								x			x	x		
<i>Veronica arvensis</i>	Wall Speedwell					x				x								x							
<i>Vulpia</i> sp.		x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x	x		x	x	x	
Unknown dead thistle																				x					
Unknown grass			x																						
<b>Native species</b>																									
<i>Actinobole uliginosum</i>	Flannel Cudweed	x	x	x		x	x	x		x	x	x						x	x	x		x	x	x	
<i>Aphanes australiana</i>							x												x			x	x		
<i>Aristida behriana</i>	Bunch Wiregrass	x	x	x			x	x	x	x	x	x			x	x	x				x				
<i>Arthropodium minus</i>	Small Vanilla Lily		x	x	x		x				x							x	x		x	x	x	x	

Tharbogang Quarry and Landfill Offset Monitoring 2018

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<i>Arthropodium</i> sp.						x																			
<i>Atriplex semibaccata</i>	Creeping Saltbush		x	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				
<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
<i>Austrostipa</i> sp.							x	x																	
<i>Brachychiton populneus</i>	Kurrajong					x	x	x	x																
<i>Brachyscome lineariloba</i>	Hard-headed Daisy	x																							
<i>Bulbine bulbosa</i>	Bulbine Lily	x	x			x	x					x		x				x	x		x	x	x		
<i>Bulbine semibarbata</i>																		x							
<i>Calandrinia eremaea</i>						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	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		
<i>Cheilanthes sieberi</i>	Mulga Fern	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</i> sp.																						x			
<i>Chloris</i> sp.		x	x	x	x	x				x	x	x	x					x		x	x				
<i>Chloris truncata</i>	Windmill Grass																								
<i>Chrysocephalum apiculatum</i>	Common Everlasting	x	x	x						x	x	x		x	x	x	x	x	x	x					

Tharbogang Quarry and Landfill Offset Monitoring 2018

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<i>Convolvulus erubescens</i> complex								x				x	x		x	x	x								
<i>Convolvulus</i> sp.														x											
<i>Crassula colorata</i>			x	x			x				x				x				x	x			x	x	
<i>Crassula decumbens</i>																			x			x			
<i>Crassula</i> sp.		x				x				x								x				x			
<i>Dianella</i> sp.		x	x	x	x																				
<i>Dichelachne</i> sp.																		x				x			
<i>Dichopogon fimbriatum</i>	Chocolate Lily		x	x	x			x			x	x	x						x	x	x		x	x	x
<i>Dichopogon</i> sp.		x				x				x								x				x			
<i>Einadia nutans</i>	Climbing Saltbush	x		x			x			x	x	x			x	x	x	x	x	x	x	x		x	
<i>Einadia nutans</i> subsp. <i>nutans</i>		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																
<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		x		x	
<i>Euphorbia drummondii</i> (syn. <i>Chamaesyce drummondii</i> )	Caustic Weed						x								x										
<i>Euphorbia</i> sp.							x				x							x	x				x		



Tharbogang Quarry and Landfill Offset Monitoring 2018

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<i>Goodenia cycloptera</i>		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	x	x
<i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i>			x	x	x		x	x	x		x	x	x		x	x	x		x				x	x	x
<i>Hyalosperma semisterile</i>		x				x		x	x	x			x	x							x				
<i>Hyalosperma</i> sp.							x				x							x	x						
<i>Hyalosperma</i> sp. 2		x																x				x	x		
<i>Hypoxis</i> sp.																							x		
<i>Isoetopsis graminifolia</i>	Grass Cushion	x	x			x				x	x		x	x	x			x	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	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	
<i>Millotia myosotidifolia</i>	Broad-leaved Millotia																	x							
<i>Minuria leptophylla</i>														x	x	x	x								
<i>Ophioglossum lusitanicum</i>	Adders Tongue	x	x			x	x																		
<i>Ophioglossum</i> sp.										x															
<i>Oxalis perennans</i>		x	x			x	x	x		x	x		x			x	x	x	x	x	x	x	x	x	x
<i>Pittosporum angustifolium</i>		x	x	x	x																				
<i>Pterostylis bicolor</i>	Black-tip Greenhood																	x							

Tharbogang Quarry and Landfill Offset Monitoring 2018

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<i>Ptilotus spathulatus</i>	Pussy Tails	x	x	x	x									x	x	x	x								
<i>Ranunculus sessiliflorus</i>						x	x															x	x		
<i>Rhodanthe diffusa</i>						x				x								x	x			x			
<i>Rhodanthe pygmaea</i>	Pygmy Sunray	x	x		x	x				x	x	x		x											
<i>Rytidosperma</i> sp.		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
<i>Rytidosperma</i> sp.2											x														
<i>Salsola australis</i>	Soft Roly Poly	x		x		x		x	x					x	x	x									
<i>Sclerolaena</i> sp.			x		x																				
<i>Senna artemisioides</i>	Silver Cassia					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	
<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	x	x	x
<i>Solanum esuriale</i>	Quena									x		x				x									
<i>Solanum</i> sp.								x																	
<i>Spergularia</i> sp.																		x							
<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		
<i>Thysanotus patersonii</i>	Twining Fringe Lily																	x							
<i>Tricoryne elatior</i>	Yellow Autumn-lily						x	x	x	x	x	x	x								x		x	x	x
<i>Triptilodiscus pygmaeus</i>	Common sunray	x	x			x				x	x	x						x	x	x		x	x	x	

Species Name	Common Name	BOA1				BOA2				BOA3				BOA4				BOA5				BOA6			
		2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
<i>Velleia paradoxa</i>	Spur Velleia																		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>Wahlenbergia communis</i>	Tufted Bluebell																		x						
<i>Wahlenbergia</i> sp.		x	x			x												x		x		x			
<i>Wahlenbergia</i> sp. (broad leaf)										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	
Unknown Asteraceae																									x
Unknown grass																	x	x		x			x		x

# Bird survey species list 2018

Species Name	Common Name	TSC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Previously recorded
<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater			X	X	X	X	X	X	
<i>Acanthiza apicalis</i>	Inland Thornbill					X				
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill					X		X	X	
<i>Acanthiza nana</i>	Yellow Thornbill			X		X		X		
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill			X			X	X		
<i>Acanthiza uropygialis</i>	Chestnut-rumped Thornbill			X		X	X		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>Artamus cyanopterus</i>	Dusky Woodswallow	V							X	
<i>Artamus leucorhynchus</i>	White-browed Woodswallow									X
<i>Artamus personatus</i>	Masked Woodswallow			X		X		X	X	
<i>Artamus superciliosus</i>	White-browed Woodswallow						X	X		
<i>Barnardius zonarius</i>	Australian Ringneck			X	X	X	X	X	X	
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo									X
<i>Cacatua leadbeateri</i>	Major Mitchell's Cockatoo	V								X
<i>Chroicocephalus novaehollandiae</i>	Silver Gull							X		
<i>Chrysococcyx basalis</i>	Horsefield's Bronze-Cuckoo					X	X			



Species Name	Common Name	TSC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Previously recorded
<i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo									X
<i>Colluricincla harmonica</i>	Grey Shrike-thrush			X						
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike					X	X		X	
<i>Corcorax melanorhamphos</i>	White-winged Chough			X	X				X	
<i>Corvus bennetti</i>	Little Crow			X	X	X	X	X	X	
<i>Corvus coronoides</i>	Australian Raven			X	X		X	X		
<i>Cracticus nigrogularis</i>	Pied Butcherbird			X	X	X	X		X	
<i>Cracticus tibicen</i>	Magpie			X	X	X	X	X	X	
<i>Cracticus torquatus</i>	Grey Butcherbird			X	X	X	X	X	X	
<i>Dacelo novaeguineae</i>	Laughing Kookaburra				X					
<i>Dicaeum hirundinaceum</i>	Mistletoe Bird				X				X	
<i>Eolophus roseicapilla</i>	Galah			X	X	X	X	X	X	
<i>Eopsaltria australis</i>	Eastern Yellow Robin						X			
<i>Falco berigora</i>	Brown Falcon					X			X	
<i>Falco cenchroides</i>	Nankeen Kestrel							X		
<i>Falco subniger</i>	Black Falcon						X			
<i>Geopelia placida</i>	Peaceful Dove			X	X	X	X	X	X	
<i>Gerygone fusca</i>	Western Gerygone			X				X		
<i>Grallina cyanoleuca</i>	Magpie Lark			X	X	X	X	X	X	
<i>Haliastur sphenurus</i>	Whistling Kite			X		X		X	X	
<i>Malurus lamberti</i>	Variegated Fairywren									X
<i>Manorina flavigula</i>	Yellow-throated Miner			X	X	X	X	X	X	

Species Name	Common Name	TSC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Previously recorded
<i>Merops ornatus</i>	Rainbow Bee-eater		M							X
<i>Milvus migrans</i>	Black Kite			X	X	X	X	X	X	
<i>Northiella haematogaster</i>	Blue Bonnet			X	X	X		X	X	
<i>Nymphicus hollandicus</i>	Cockatiel			X	X	X	X	X	X	
<i>Ocyphaps lophotes</i>	Crested Pigeon			X	X	X	X	X	X	
<i>Pachycephala rufiventris</i>	Rufous Whistler					X	X			
<i>Pardalotus striatus</i>	Straited Pardalote			X	X	X	X	X	X	
<i>Pelecanus conspicillatus</i>	Australian Pelican									X
<i>Petrochelidon nigricans</i>	Tree Martin				X				X	
<i>Petroica goodenovii</i>	Red-capped Robin			X		X	X	X	X	
<i>Phalacrocorax carbo</i>	Black Cormorant									X
<i>Phaps chalcoptera</i>	Common Bronzewing									X
<i>Platycercus eximius</i>	Eastern Rosella									X
<i>Polytelis swainsonii</i>	Superb Parrot	V	V							X
<i>Plectorhyncha lanceolata</i>	Striped Honeyeater			X	X	X	X	X		
<i>Pomatostomus 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	
<i>Rhipidura albiscapa</i>	Grey Fantail					X	X	X	X	
<i>Rhipidura leucophrys</i>	Willie Wagtail				X	X	X	X	X	
<i>Smicrornis brevirostris</i>	Weebill			X		X	X		X	
<i>Struthidea cinerea</i>	Apostlebird			X	X	X	X	X	X	
<i>Sturnus vulgaris</i>	Starling				X	X		X	X	



Species Name	Common Name	TSC Act Listing	EPBC Act Listing	BOA2	BOA3	BOA4	BOA5	BOA6	Bird 6	Previously recorded
<i>Taeniopygia bichenovii</i>	Double-barred Finch					X	X			
<i>Threskiornis moluccus</i>	White Ibis							X	X	
<i>Todiramphus sanctus</i>	Sacred Kingfisher									X
<i>Zosterops lateralis</i>	Silvereye									X

### Bat survey species list 2018

Species Name	Common Name	TSC Act Listing	EPBC Act Listing	2016	2017	2018
<i>Austronomus australis</i>	White-striped Freetail Bat			X		
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			X	X	X
<i>Chalinolobus morio</i>	Chocolate Wattled bat			X	X	X
<i>Chalinolobus picatus</i>	Little Pied Bat	V		X	X	
<i>Mormopterus (Ozimops) kitcheneri</i>	South-western Freetail Bat			X		
<i>Mormopterus (Ozimops) petersi</i>	Inland Freetail Bat			X	X	X
<i>Mormopterus (Ozimops) planiceps</i>	South-eastern Freetail Bat				X	X
<i>Nyctophilus sp.</i>	Long-eared Bat			X	X	X
<i>Scotorepens balstoni</i>	Inland Broad-nosed Bat			X	X	X
<i>Scotorepens greyii</i>	Little Broad-nosed Bat			X	X	X
<i>Vespadelus baverstocki</i>	Inland Forest Bat	V		X		
<i>Vespadelus darlingtoni</i>	Large Forest Bat				X	

Species Name	Common Name	TSC Act Listing	EPBC Act Listing	2016	2017	2018
<i>Vespadelus regulus</i>	Southern Forest Bat			Possible		
<i>Vespadelus vulturnus</i>	Little Forest Bat			X	X	X



## Appendix B: Completed Monitoring Data Sheets (including photos)

### Photo Point 1

Monitoring Data Sheet			
Monitoring Point Number	181	Date	17/10/18
1. Site Photo(s)	3043-3046		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:	5% E. pop, All leaf		
Midstorey:	1% E. pop, W. lge, Acacia		
Groundcover(grass):	<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 10px;">}</div> <div>low ground cover. Many dead stems + litter, cover ~ 30% including standing dead litter</div> </div>		
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating	1/2.		
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			N/A
Threatened species sightings			nil
Fire event/fuel/fire breaks			N/A
Weeds			Cape weed, bonnielea
Pest animals			nil
Visitor impact/vehicles			N/A
Rubbish dumping			N/A
Erosion			Nil - No active erosion
Fencing			N/A

## Photo Point 2

Monitoring Data Sheet			
Monitoring Point Number	PP 2	Date	18/9/18
1. Site Photo(s)	3113 — 3116		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:		15% call, E. pop	
Midstorey:		10% callitric	
Groundcover(grass):		very dry, high litter cover	
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			N/A
Threatened species sightings			N/A
Fire event/fuel/fire breaks			fire trail in good cond
Weeds			Opuntia sprayed - still greenish
Pest animals			N/A
Visitor impact/vehicles			N/A
Rubbish dumping			N/A
Erosion			stable
Fencing			N/A

## Photo Point 3

Monitoring Data Sheet			
Monitoring Point Number	PP3	Date	17/9/18
1. Site Photo(s)	3051	3054	
2. Floristic BioMetric attributes			
Native cover			
Overstorey:		10% E. pop.	
Midstorey:		10%	
Groundcover (grass):		} very dry, excessive litter. High cover of litter plus veg	
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel/fire breaks			Nil
Weeds			Lycium + Marrubium sprayed - dead
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil
Erosion			Nil
Fencing			Nil



## Photo Point 4

Monitoring Data Sheet			
Monitoring Point Number	PP4	Date	17/9/18
1. Site Photo(s)	3060 - 3062		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:	10% E. pop, Call glauc		
Midstorey:	2% C. glauc		
Groundcover(grass):	Very dry ground cover. High		
Groundcover (shrub):	water content.		
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel/fire breaks			Nil
Weeds			Hordeum regenerating. Lycium dead
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil
Erosion			Nil
Fencing			Nil

## Photo Point 5

Monitoring Data Sheet			
Monitoring Point Number	2PS	Date	17/9/18
1. Site Photo(s)	3055 - 3058		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:		10% E-pop.	
Midstorey:		1% Callitriche, Geryera	
Groundcover(grass):		} very dry high litter cover	
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			NA
Threatened species sightings			NA
Fire event/fuel/fire breaks			NA
Weeds			Horseweed dead - Morduna
Pest animals			NA
Visitor impact/vehicles			NA
Rubbish dumping			NA
Erosion			NA
Fencing			NA

## Photo Point 6

Monitoring Data Sheet			
Monitoring Point Number	PP6	Date	18/9/18
1. Site Photo(s)	3109 - 3112		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:		15% call glauc, e pop, brac pop	
Midstorey:		5% call glauc	
Groundcover(grass):		} very dry, high litter cover	
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel/fire breaks			fire trail in gravel cord
Weeds			Opuntia sprayed - some still green
Pest animals			and lying on ground - could resprout nil
Visitor impact/vehicles			Nil
Rubbish dumping			Blown rubbish
Erosion			Nil - drainage line stable
Fencing			Nil



## Photo Point 7

Monitoring Data Sheet			
Monitoring Point Number	PP7	Date	18/9/18
1. Site Photo(s)	3117 - 3120		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:		15% callitris, E. pop	
Midstorey:		5% callitris	
Groundcover(grass):		} very dry + very low cover of veg	
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			GCB, Red-cop
Fire event/fuel/fire breaks			Nil
Weeds			Oporaria alive Lychnis dead + alive
Pest animals			PS Fox
Visitor impact/vehicles			Nil
Rubbish dumping			Nil
Erosion			Nil
Fencing			Nil

## Photo Point 8

Monitoring Data Sheet			
Monitoring Point Number	PP8	Date	17/9/18
1. Site Photo(s)	3039-3042		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:		50% E. pop, C. glau, A. leuc	
Midstorey:		50%	
Groundcover (grass):		} high cover of litter + dead ground cover veg.	
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating		1/3.	
Exotic cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			—
Threatened species sightings			—
Fire event/fuel/fire breaks			fire breaks in good cond.
Weeds			old weedy veg. - dead.
Pest animals			nil
Visitor impact/vehicles			nil
Rubbish dumping			nil
Erosion			nil
Fencing			nil

BOA1

Monitoring Data Sheet				
Monitoring Point Number	BOA1		Date	18/9/18
1. Site Photo(s)	3105 - 3108			
2. Floristic BioMetric attributes				
Native cover				
Overstorey:	0% 5% E-pop, Callitris			
Midstorey:	1/2% 1% Callitris, Pitt phyl			
Groundcover(grass):	72% very dry high litter cover			
Groundcover (shrub):	~ 30%			
Groundcover (other):	30%			
Native species richness:				
Proportion of canopy species regenerating				
Exotic cover				
10%				
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			N/A	
Threatened species sightings			N/A	
Fire event/fuel/fire breaks			N/A	
Weeds				
Pest animals			N/A	
Visitor impact/vehicles			N/A	
Rubbish dumping			Blown rubbish from tip	
Erosion			N/A	
Fencing			N/A	



BOA2

Monitoring Data Sheet			
Monitoring Point Number	BOA 2	Date	18/9/18
1. Site Photo(s)	3121 - 3124		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:	4%	10% Callitris, E-pop., Kara	
Midstorey:	4%	15% Callitris, Pitt, Euc	
Groundcover(grass):	6%	very dry + bare.	
Groundcover (shrub):	2%		
Groundcover (other):	2%		
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover 2%			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			GCB
Fire event/fuel/fire breaks			NA
Weeds			
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Blown rubbish
Erosion			Nil
Fencing			Nil

BOA3

Monitoring Data Sheet				
Monitoring Point Number	BOA3		Date	17/9/18
1. Site Photo(s)	3047 - 3050			
2. Floristic BioMetric attributes				
Native cover				
Overstorey:				0.5%
Midstorey:				4.5%
Groundcover(grass):				26 - 52%
Groundcover (shrub):				6 - 12%
Groundcover (other):				4 - 8%
Native species richness:				
Proportion of canopy species regenerating				
Exotic cover				5 - 10%
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Nil	
Threatened species sightings			GCB	
Fire event/fuel/fire breaks			Nil	
Weeds			Vulpia, Medica	
Pest animals			Nil	
Visitor impact/vehicles			Nil	
Rubbish dumping			Nil	
Erosion			Nil	
Fencing			Nil	

BOA4

Monitoring Data Sheet			
Monitoring Point Number	BOA4	Date	12/9/18
1. Site Photo(s)			
2. Floristic BioMetric attributes			
Native cover			
Overstorey:	D.		
Midstorey:			
Groundcover(grass):	} very dry ground cover. low litter.		
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating 2/2.			
Exotic cover very low weed cover			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Callitris + Euc.
Threatened species sightings			GLB, red-capped robin.
Fire event/fuel/fire breaks			track in good cond
Weeds			low cover. Opuntia
Pest animals			nil
Visitor impact/vehicles			nil - old quarry.
Rubbish dumping			blown rubble
Erosion			nil
Fencing			nil



BOA5

Monitoring Data Sheet			
Monitoring Point Number	BOA5	Date	19/9/18
1. Site Photo(s)	3173 - 3176		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:	0%	5% Callitris + E. pop.	
Midstorey:	22.5%	35% Callitris	
Groundcover (grass):	16%	very dry, very low veg cover	
Groundcover (shrub):	0%		
Groundcover (other):	12%		
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover		6%	
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			GCB, red cap
Fire event/fuel/fire breaks			Nil
Weeds			Opuntia
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Blown rubbish
Erosion			Nil
Fencing			Nil

BOA6

Monitoring Data Sheet			
Monitoring Point Number	BOA6	Date	18/9/18
1. Site Photo(s)	3125 - 3128		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:	20.5%	~20% Callitris, E. pop	
Midstorey:	1.5%	5% Callitris	
Groundcover(grass):	8%	Very dry, high litter cover	
Groundcover (shrub):	2%		
Groundcover (other):	6%		
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover 2%			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			GrB
Fire event/fuel/fire breaks			Nil
Weeds			Opuntia
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			<del>Nil</del> Blown Rubbish
Erosion			Nil
Fencing			Nil

## Appendix C: Completed Quadrat Data Sheets

Species Name	Common Name	BOA 1	BOA2	BOA3	BOA4	BOA5	BOA6
<b>Exotics</b>							
<i>Aira cupaniana</i>							
<i>Arctotheca calendula</i>	Capeweed	✓ < 1 10	✓ < 1 10	✓ < 1 20	✓ < 1 50		✓ < 1 50
<i>Avena fatua</i>	Wild Oats						
<i>Bromus rubens</i>							
<i>Bromus sp.</i>			✓ < 1 50			✓ < 1 100	✓ < 1 10
<i>Carthamus lanatus</i>	Saffron Thistle				✓ < 1 50		
<i>Centaurea sp.</i>							
<i>Cirsium vulgare</i>	Spear Thistle						
<i>Echium plantagineum</i>	Paterson's Curse	✓ < 1 5	✓ < 1 100	✓ < 1 50			
<i>Erodium cicutarium</i>	Common Crowfoot						
<i>Hedypnois rhagadioloides</i>							
<i>Hordeum leporinum</i>	Barley Grass					✓ < 1 100	
<i>Hypochaeris glabra</i>							
<i>Hypochaeris radicata</i>	Catsear						
<i>Iris sp.</i>							
<i>Lactuca serriola</i>	Prickly Lettuce						
<i>Lepidium sp.</i>							
<i>Lolium rigidum</i>	Wimmera Ryegrass						
<i>Rostratula pumila</i>							
<i>Medicago lacinata</i>	Cut-leaved Medic	✓ < 1 50		✓ < 1 100			
<i>Medicago minima</i>	Woolly Burr Medic		✓ < 1 100				
<i>Medicago polymorpha</i>	Burr Medic						
<i>Medicago sp.</i>							
<i>Medicago truncatula</i>	Barrel Medic	✓ < 1 100	✓ < 1 50			✓ < 1 50	✓ < 1 50
<i>Opuntia stricta</i>	Prickly Pear				✓ < 1 3	✓ < 1 2	✓ < 1 1



Species Name	Common Name	BOA 1	BOA2	BOA3	BOA4	BOA5	BOA6
<i>Opuntia</i> sp.							
<i>Pentstemon</i> <i>airoides</i>	False Hairgrass						
<i>Polygonum</i> <i>aviculare</i>	Wireweed						
<i>Raphanus</i> <i>raphanistrum</i>	Wild Radish						
<i>Silene</i> <i>tridentata</i>	Catchfly						
<i>Sisymbrium</i> <i>erysimoides</i>							
<i>Sisymbrium</i> <i>ino</i>	London Rocket						
<i>Sonchus</i> <i>asper</i>	Prickly Sowthistle						
<i>Sonchus</i> <i>oleraceus</i>	Common Sowthistle						
<i>Trifolium</i> <i>arvense</i>	Haresfoot Clover						
<i>Trifolium</i> sp.							
<i>Veronica</i> <i>arvensis</i>							
<i>Vulpia</i> <i>myuros</i>	Rat's Tail Fescue						
<i>Vulpia</i> sp.		✓ < 100	✓ < 1 50	✓ < 1 100			
Natives							
<i>Actinobole</i> <i>uliginosum</i>	Flannel Cudweed		✓ dead			✓ dead	✓ dead
<i>Aphanes</i> <i>australiana</i>							
<i>Aristida</i> <i>behriana</i>	Bunch Wiregrass		✓ < 1 50		✓ < 1 20	✓ < 1 2	
<i>Arthropodium</i> <i>minus</i>	Small Vanilla Lily	✓ < 1 10				✓ < 1 50	
<i>Arthropodium</i> sp.							
<i>Atriplex</i> <i>semibaccata</i>	Creeping Saltbush	✓ < 1 1	✓ < 1 2	✓	✓ < 1 2		
<i>Atriplex</i> sp.							
<i>Austrostipa</i> <i>aristiglumis</i>	Plains Grass						
<i>Austrostipa</i> <i>bigeniculata</i>		✓ < 1 1	✓ < 1 10	✓ < 1 100		✓ < 1 1	
<i>Austrostipa</i> <i>scabra</i>	Speargrass	✓ 10 100	✓ 3 100	✓ 15 100	✓ 3 50	✓ 1 100	✓ 5 100
<i>Austrostipa</i> sp.							

*Ranunculus rosea*

✓ &lt; 1 100 ✓ &lt; 1 100

✓ &lt; 1 20 ✓ &lt; 1 100

*U. ...* - *Panicum* like

Species Name	Common Name	BOA 1	BOA2	BOA3	BOA4	BOA5	BOA6
<i>Brachychiton populneus</i>	Kurrajong		✓ 21 1				
<i>Brachyscome lineariloba</i>	Hard-headed Daisy						
<i>Bulbine bulbosa</i>	Bulbine Lily					✓ 21 2	
<i>Bulbine semibarbata</i>							
<i>Calandrinia eremaea</i>							
<i>Callitris glaucophylla</i>	White Cypress Pine	✓ 5 3	✓ 10 15	✓ 5 20	✓ 21 5	✓ 30 500	✓ 15 20
<i>Calotis hispidula</i>	Bogan Flea	✓ 21 10		✓ 21 20	✓ 21 1		
<i>Cassia artemisioides</i>							
<i>Cassia</i> sp.							
<i>Chamaesyce drummondii</i>	Caustic Weed						
<i>Cheilanthes sieberi</i>	Mulga Fern		✓ 21 10	✓ 21 20		✓ 21 500	✓ 21 50
<i>Chenopodium desertorum</i> subsp. <i>desertorum</i>							✓ 21 1
<i>Chenopodium nitraticeum</i>	Nitre Goosefoot						
<i>Chenopodium</i> sp.							
<i>Chloris</i> sp.		✓ 21 100		✓ 21 500		✓ 21 2	
<i>Chloris truncata</i>	Windmill Grass						
<i>Chrysocephalum apiculatum</i>	Common Everlasting	✓ dead			✓ 21 2		
<i>Convolvulus erubescens</i> complex				✓ 21 3	✓ 21 20		
<i>Convolvulus</i> sp.							
<i>Crassula colorata</i>							
<i>Crassula decumbens</i> var. <i>decumbens</i>							
<i>Crassula</i> sp.							✓ dead
<i>Dianella</i> sp.		✓ 21 1					
<i>Dichelachne</i> sp.							
<i>Dichopogon fimbriatum</i>	Chocolate Lily	✓ 21 500		✓ 21 100		✓ 21 100	✓ 21 500

*Sclerolaena diacantha*  
*Eriopogon* acic - unk grass  
*Senna* arte

✓ 21 1  
 ✓ 21 5  
 ✓ 21 1

Species Name	Common Name	BOA 1	BOA2	BOA3	BOA4	BOA5	BOA6
<i>Dichopogon</i> sp.							
<i>Einadia nutans</i>	Climbing Saltbush				✓ < 1	✓ < 1	4
<i>Einadia nutans</i> subsp. <i>nutans</i>		✓ < 1	1 -				
<i>Enchylaena tomentosa</i>	Ruby Saltbush	✓ < 1	5		✓ < 1	✓ < 1	✓ < 1
<i>Erodium crinitum</i>	Blue Storksbill	✓ < 1	50 -	✓ < 1	50 -	✓ < 1	✓ < 1
<i>Eucalyptus populnea</i>	Poplar Box	✓ < 1	1 -	✓ < 1	1 -	✓ < 1	3
<i>Euphorbia</i> sp.							
<i>Goodenia cycloptera</i>		✓ < 1	20 -				
<i>Goodenia fascicularis</i>							
<i>Goodenia pusilliflora</i>		✓ < 1	1000 -	✓ < 1	20	✓ < 1	5000
<i>Homopholis prolata</i>						✓ < 1	5
<i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i>		✓ < 1	500 -	✓ < 1	10	✓ < 1	500
<i>Hyalosperma semisterile</i>			✓ < 1	✓ < 1	150 -	✓ < 1	5
<i>Hyalosperma</i> sp.							
<i>Isoetopsis graminifolia</i>	Grass Cushion			✓ < 1	2 -		
<i>Maireana enchylaenoides</i>	Wingless Fissure Weed	✓ < 1	10 -	✓ < 1	50	✓ < 1	5
<i>Maireana excavata</i>		✓ < 1	500 -	✓ < 1	50	✓ < 1	100
<i>Millotia myosotidifolia</i>							
<i>Minuria leptophylla</i>					✓ < 1	10	
<i>Ophioglossum lusitanicum</i>	Adders Tongue						
<i>Ophioglossum</i> sp.							
<i>Oxalis perennans</i>			✓ dead	✓ < 1	1 -	✓ < 1	5
<i>Pittosporum phyllaenoides</i>		✓ < 1	15 -				
<i>Pterostylis bicolor</i>	Black-tip Greenhood						
<i>Ptilotus spathulatus</i>	Pussy Tails	✓ < 1	3 -		✓ < 1	3	
<i>Ranunculus sessiliflorus</i>							



Species Name	Common Name	BOA 1	BOA2	BOA3	BOA4	BOA5	BOA6
<i>Rhodanthe corymbiflora</i>	Small White Sunray						
<i>Rhodanthe diffusa</i>							
<i>Rhodanthe pygmaea</i>	Pygmy Sunray	✓ <1 10 -					
<i>Rytidosperma</i> sp.		✓ 1 500 -	✓ <1 100	✓ 2 500	✓ 3 500	✓ <1 100	✓ 1 100
<i>Salsola australis</i> (formerly <i>S. kali</i> and <i>S. tragus</i> )	Soft Roly Poly		✓ <1 2				
<i>Sclerolaena</i> sp.							
<i>Sida corrugata</i>	Corrugated Sida	✓ <1 1 -		✓ <1 1 -	✓ <1 1		
<i>Sida cunninghamii</i>	Ridged Sida	✓ <1 50 -	✓ <1 20	✓ <1 50 -	✓ <1 20	✓ <1 20	✓ <1 20
<i>Solanum esuriale</i>	Quena		✓ dead	✓ dead			
<i>Spergularia</i> sp.							
<i>Stackhousia monogyna</i>	Creamy Stackhousia		✓ <1 10				
<i>Stuartina muelleri</i>	Spoon Cudweed						
<i>Thysanotus patersonii</i>							
<i>Tricoryne elatior</i>	Yellow Autumn-lily		✓ <1 2	✓ <1 10 -		✓ <1 1	✓ <1 100
<i>Tripliodiscus pygmaeus</i>	Common sunray		✓ dead	dead		✓ dead	✓ dead
<i>Velleia paradoxa</i>							
<i>Vittadinia cuneata</i>	Fuzzweed	✓ <1 10 -	✓ <1 5	✓ <1 5 -	✓ <1 50	✓ <1 2	✓ <1 10
<i>Wahlenbergia</i> (broad leaf) sp.							
<i>Wahlenbergia communis</i>	Tufted Bluebell						
<i>Wahlenbergia</i> sp.							
<i>Wumbea dioica</i>							
<i>Xerochrysum bracteatum</i>	Golden Everlasting		✓ dead			✓ dead	
Unknown Asteraceae							
Unknown grass					✓ eat ✓ alive? <1 1		✓ eat alive? <1 1
<i>Eragrostis</i> sp.		✓					✓ <1 1

# Appendix D: Weed management receipt

## M.I.A. SPRAYING SERVICE



ABN 79 958 186 159

PO BOX 553, GRIFFITH NSW 2680

UHF 37 • MOBILE: 0428 676 207



PC.....

Specialising in Pest Control and Crop Spraying

### HERBICIDE & PESTICIDE REPORT

2640  
TAX INVOICE

Client: *Griffith City Council*

Farm: .....

Address: .....

Paddock No:.....Crop: .....

Crop Stage: .....

TIME	WEATHER	WIND DIRECTION	VELOCITY
	<i>Fine</i>	<i>E</i>	<i>light</i>
	<i>Cloudy</i>	<i>NE to NW</i>	<i>light to strong</i>
	<i>Fine</i>	<i>W</i>	<i>medium strong</i>

PESTICIDE 1: Name *Gregon Extra*  
Rate per Hectare *1 Lt. per 100 Lt.*  
L or Kg per Tank.....

PESTICIDE 1: Name *Veg. Dye*  
Rate per Hectare *500 ml. per 100 Lt.*  
L or Kg per Tank.....

PESTICIDE 1: Name .....  
Rate per Hectare .....  
L or Kg per Tank.....

WETTING AGENT/ADJAVANT: *Sprinter 250 ml. per 100 Lt.*  
Rate pr 100 L water: .....

Comments: *Land Fill*

<i>Bike</i>	<i>Gregon Extra</i>	<i>Dye</i>	<i>Sprinter</i>
<i>4 1/2</i>	<i>2</i>	<i>1</i>	<i>500 ml.</i>
<i>6 1/2</i>	<i>2</i>	<i>1 1/2</i>	<i>500 ml.</i>
<i>7</i>	<i>5</i>	<i>2 1/2</i>	<i>500 ml.</i>
<i>5 1/2</i>	<i>2</i>	<i>2</i>	<i>500 ml.</i>
<i>23 1/2 hrs</i>	<i>11 hrs</i>	<i>6 1/2 hrs</i>	<i>1-9 hrs</i>

*Spraying on offset. Landfill*

COST \$ *36.96 - 75*

GST \$ *36.9 - 6.7*

TOTAL \$ *40.66 - 4.2*

TOTAL AMOUNT PAYABLE:

\$ *40.66 - 4.2*

CASH/CHEQUE

7 DAY ACCOUNT

(unless prior arrangements made)

OPERATOR: *Ray*

DATE: *25-6-2018 26-6-2018 16-7-2018 31-7-2018*

CLIENTS SIGNATURE: .....

2% Book keeping fees apply on overdue accounts