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## Annual Monitoring Report 2021

Gullen Range Wind Farm Offset

Report prepared for New Gullen Range Wind Farm Pty Ltd

March 2022



# NARLA

*environmental*

<b>Report:</b>	Annual Monitoring Report 2021
<b>Prepared for:</b>	New Gullen Range Wind Farm Pty Ltd
<b>Prepared by:</b>	Narla Environmental Pty Ltd
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# 1. Introduction

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## 1.1 Overview

Narla Environmental Pty Ltd (Narla) was commissioned by New Gullen Range Wind Farm Pty Ltd to conduct annual ecological monitoring at Gullen Range Wind Farm (GRWF) within the GRWF Offset Area (**Figure 1**). The GRWF project involves the operation of 73 wind turbines at Gullen Range in the Southern Tablelands region of NSW. A Compensatory Habitat Package (CHP), prepared by NGH Environmental Pty Ltd (NGH Environmental 2016a) as a condition of consent for the project, identifies a number of management zones within the GRWF Offset Area (**Figure 1**), and recommends specific management actions that are to be implemented within the site to improve its biodiversity values. These management actions have been incorporated into a Conservation Property Vegetation Plan (CPVP) for the site. The CPVP details the required management actions for each management zone, and includes monitoring and reporting requirements. The ongoing approval of the GRWF project requires compliance with the Compensatory Habitat Package and CPVP, which sets a goal of improving the site towards or to benchmark levels within 5 years and 20 years, respectively.

## 1.2 Scope of works

The purpose of this report was to outline the monitoring of native vegetation, pest species, weed species and nestboxes that have been conducted within the GRWF Offset Area in 2021, and to assess compliance with the CHP and CPVP. The report will detail the following:

- A compilation and analysis of monitoring results from 2016-2021;
- Presentation of photographic evidence (photo points) to illustrate progress of weed management and native regeneration;
- Details of pest fauna species found to be within the Offset Area;
- Management actions undertaken within the site;
- Overall compliance with the CHP and CPVP; and
- Recommendations to improve biodiversity values within the site.

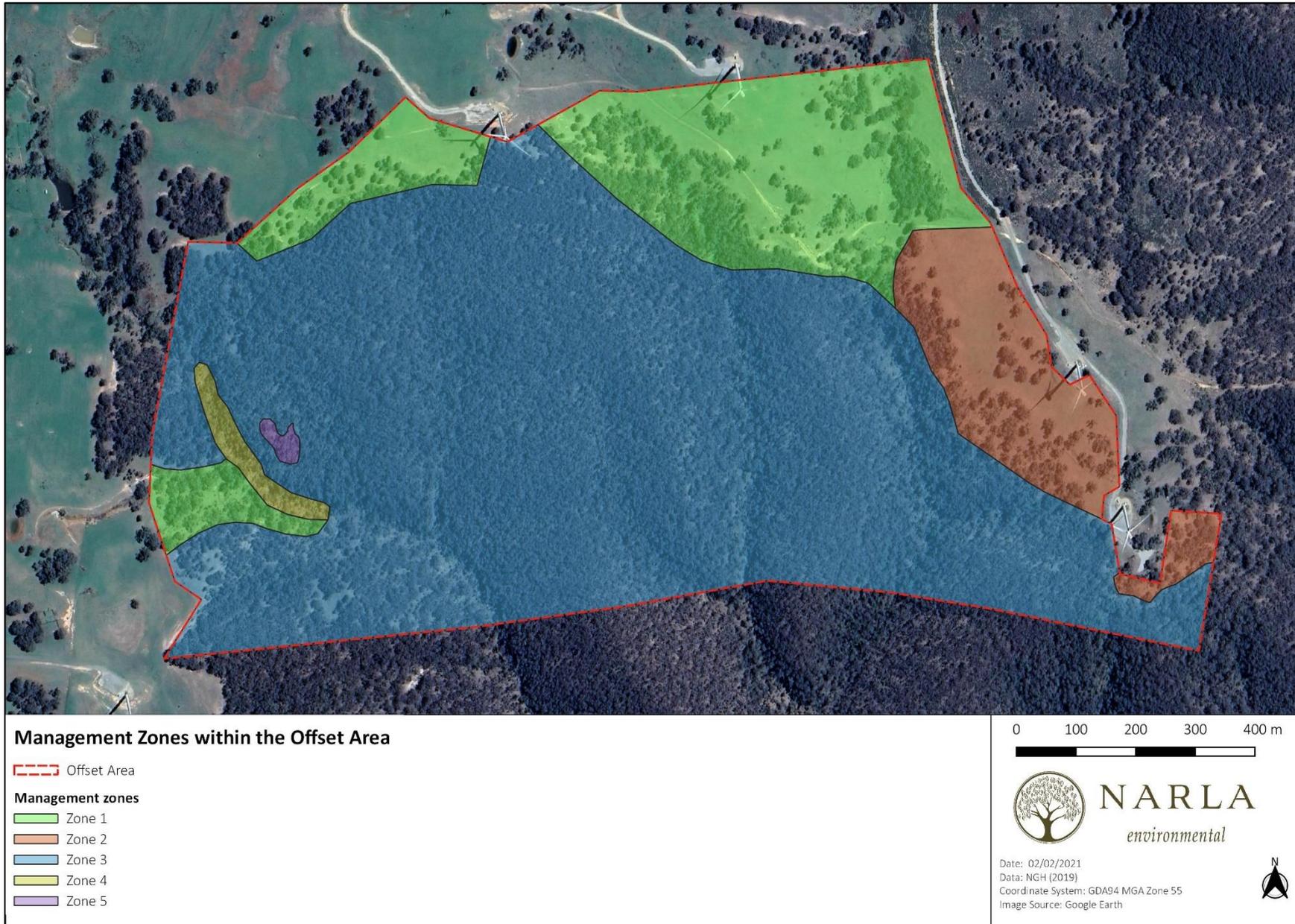


Figure 1. Management zones within the GRWF Offset Area (based on NGH Environmental 2019).

## 2. Methodology

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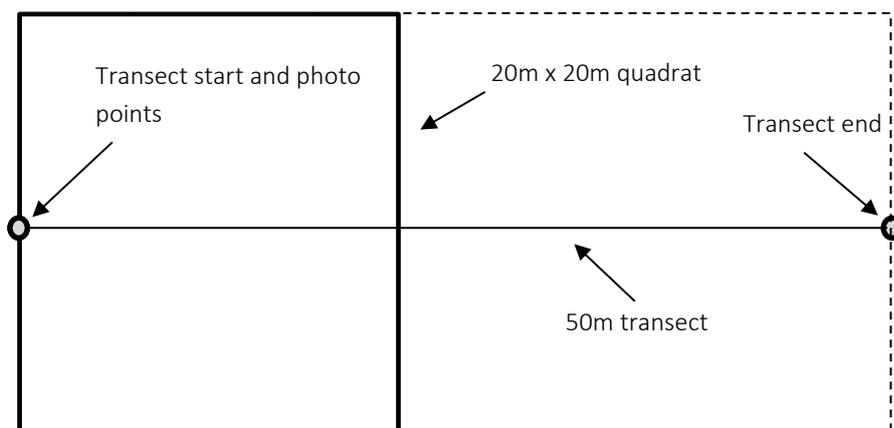
### 2.1 Vegetation Monitoring

Baseline vegetation condition monitoring was undertaken by NGH Environmental within the GRWF Offset Area in November 2016 to meet the requirements of management actions 3 and 4 of Schedule 2 of the CPVP. The monitoring plots have been permanently marked in the field using high visibility star posts at the beginning and end of the transects to facilitate replication. Management Action 38 of the CPVP specifies the following requirement for ongoing monitoring of vegetation condition data:

*“38. The Landholder must conduct annual monitoring at the monitoring points shown on Map 1. Monitoring involves collecting plot data according with the Biobanking methodology and taking photographs from fixed photographic points at these monitoring sites.”*

Vegetation monitoring was conducted within the GRWF Offset Area on the 16<sup>th</sup> and 17<sup>th</sup> November, 2021, to satisfy this requirement. Monitoring was conducted at eleven (11) previously established 20m x 50m Biometric Plots. The locations of the monitoring points are shown in **Figure 3** and **Table 1**.

The layout of each plot is shown in **Figure 2**. The starting post was used as a photo-point with images taken along the transect and at 90-degree intervals around the starting post. The exception is plot GRMP1 where the monitoring point was established at the transect end and this has been maintained for consistency.



**Figure 2. 20m x 50m vegetation plots established within the GRWF Offset Area.**

The following data were collected within each plot:

- At each 1m interval along the 50m transect:
  - Percentage native and exotic cover in the overstorey (woody plants with >10m height) and midstorey (woody plants with 1-10m height); and
  - Counts of ground cover (<1m height) including native shrubs, native grasses, native other and exotic using the point intersect method.
- Within a 400m<sup>2</sup> area (20m x 20m quadrat):
  - A list of native and exotic species.
  - Native species abundance as per the modified Braun-Blanquet Scale (NGH 2019):
    - R = Rare (<4) individuals present
    - + = Few (4-15) individuals present

- 1 = A number of individuals present, less than 5% cover
  - 2 = 5 - <20% cover
  - 3 = 20 - <50% cover
  - 4 = 50 - <75% cover
  - 5 = 75-100% cover
- Within a 1000m<sup>2</sup> area (20m x 50m plot):
    - Number of individual trees with hollows (only hollows ≥5cm diameter);
    - Total length of fallen logs in meters (only logs >10cm width).

The data recorded from each monitoring plot were then compared with the benchmark data, baseline data, and data from subsequent monitoring years (2017, 2018, 2019 and 2020; **Section 3.1**).

**Table 1. Location of vegetation monitoring plots within the GRWF Offset Area.**

Plot Name	Zone	Vegetation type/condition	Transect Start		Transect End	
			Easting	Northing	Easting	Northing
GRMP1	2	Apple Box – Yellow Box Woodland with a predominately exotic understorey	726922.2	6165757.2	726936.4	6165819
GRMP2	3	Broad-leaved Peppermint – Brittle Gum Dry Forest with a diverse native understorey	726630.4	6165990.9	726605.3	6165949.5
GRMP3	1	Apple Box – Yellow Box Woodland with a predominately low diversity native understorey	726545.7	6166159.3	726573	6166197
GRMP4	3	Broad-leaved Peppermint – Brittle Gum Dry Forest with a diverse native understorey	726138.9	6166164.7	726127.3	6166208
GRMP5	1	Apple Box – Yellow Box Woodland with a predominately low diversity native understorey	725866.5	6166183.9	725810	6166177.8
GRMP6	3	Mountain Gum – Broad-leaved Peppermint Forest/Apple Box – Broad-leaved Peppermint Forest with a diverse native understorey	725671.1	6165777.9	725654.5	6165828.8
GRMP6a	5	Localised Apple Box dominated area where a more open canopy has facilitated the invasion of Serrated Tussock	725671.1	6165777.9	725697.6	6165370.9
GRMP7	4	Ribbon Gum Forest with a mixed native and exotic understorey	725620.6	6165753.6	725612.4	6165798.7

Plot Name	Zone	Vegetation type/condition	Transect Start		Transect End	
			Easting	Northing	Easting	Northing
GRMP8	3	Broad-leaved Peppermint – Brittle Gum Dry Forest with a diverse native understorey	725623.2	6165528.1	725624.8	6165569.8
GRMP9	2	Apple Box – Yellow Box Woodland with a predominately exotic understorey (no overstorey)	726861	6165991	726863	6165941
GRMP10	1	Apple Box – Yellow Box Woodland with a predominately low diversity native understorey (derived grassland)	726533	6166243	726567	6166282

## 2.2 Weed Monitoring

Baseline weed mapping was undertaken by NGH Environmental within the GRWF Offset Area in November 2016, and focussed on mapping the extent and density of noxious weeds (now referred to as priority weeds under the Biosecurity Act 2015). Subsequent monitoring events were undertaken in 2017, 2018, 2019 and 2020. Annual weed monitoring has been conducted to ensure compliance with the CPVP management action: “*Weed control – Noxious Weed Management*”. At the time of establishment of the CPVP, landowners and managers had legal obligations to control noxious weeds under the NSW Noxious Weeds Act 1993. The Biosecurity Act 2015 has now superseded the Noxious Weeds Act 1993, which lists ‘Priority Weeds’ in lieu of ‘Noxious Weeds’. Section 32 of the Biosecurity Act 2015 (NSW) states “A priority weed is any weed identified in a local strategic plan, for a region that includes that land or area, as a weed that is or should be prevented, managed, controlled or eradicated in the region.”

Weed monitoring was conducted within the GRWF Offset Area on the 16<sup>th</sup> and 17<sup>th</sup> November, 2021. Various weed points and polygons (areas) have been mapped and annotated with details of weed species, locations and abundance (Narla Environmental 2020). All of these areas were visited during the November 2021 monitoring and inspected for any change. Weed extent and density were recorded at these locations. Additional weed points were also mapped during this monitoring period. Further to this, eleven (11) existing photo-points (**Table 2; Figure 3**) were visited on the 16<sup>th</sup> and 17<sup>th</sup> November, 2021. Photos were captured to the north, east, south and west, as per previous monitoring events.

**Table 2. Location of weed photo monitoring points within the Offset Area.**

Monitoring Photo-point ID	Coordinates	
	Easting	Northing
GRWPP1	727211	6165533
GRWPP2	727133	6165473
GRWPP3	726879	6165745
GRWPP4	726888	6166017
GRWPP5	726734	6166346
GRWPP6	726466	6166285
GRWPP7	726268	6166198
GRWPP8	725573	6165828
GRWPP9	725727	6165567

Monitoring Photo-point ID	Coordinates	
	Easting	Northing
GRWPP10	725696	6165735
GRWPP11	725915	6166233

### 2.3 Pest species monitoring

Pest animal control within the GRWF Offset Area is a requirement of the approved Compensatory Habitat Package (CHP; NGH Environmental 2016). The following auditable measures are listed in the CHP:

- Feral Animal Control Plan prepared and implemented.
- Correspondence with adjacent landowners documented.
- Control measures and their location recorded.

An Integrated Pest Management Plan (IOPMP, NGH 2016c) has also been implemented within the GRWF Offset Area. Section 5.1 of the IPMP ‘Subsequent years – implementation of control methods (if required) and monitoring’, specifies the following:

- Undertake monitoring.
- The landholder, with the aid of LLS, will determine if pest management is required after results are received from monitoring each year. Action thresholds and control objectives should be developed at this time.
- The type and extent of pest control implemented will be determined and developed in accordance with the South East LLS pest management practices and regional strategies, if applicable.

To undertake the 2021 annual pest species monitoring, a total of 12 remote motion activated cameras were deployed between 8<sup>th</sup> September and the 16<sup>th</sup> November, 2021 (69 nights). These were positioned in the same locations and orientation as the previous years of monitoring (**Table 3; Figure 3**). Motion sensing camera traps were set to record still images for the entire monitoring period (i.e. day and night with a 30s delay between triggers). The activity of pest species within the zone was determined by their presence or absence per camera, per trap night. Overall, there were a total of 828 trap nights for the 2021 monitoring period.

**Table 3. Location of camera traps within the Offset Area.**

Camera Trap	Coordinates	
	Easting	Northing
Camera 1	727126.11	6165450.89
Camera 2	726724.64	6166271.06
Camera 3	726812.49	6165814.59
Camera 4	726229.58	6166221.80
Camera 5	726168.83	6165655.31
Camera 6	726340.42	6165844.96
Camera 7	726470.96	6165773.54
Camera 8	726383.11	6166118.35
Camera 9	725893.80	6166020.66
Camera 10	725738.63	6165899.15
Camera 11	725567.86	6165662.29
Camera 12	725802.67	6165491.52

## 2.4 Weather Conditions

Weather conditions taken from the nearest weather station (Goulburn TAFE; Station No. 070263) in the months and years leading up to and during monitoring surveys are outlined in **Table 4**. The amount of rainfall in the year leading up to and during the surveys was noticeably higher than the first four years of monitoring (2016-2019), although similar to the previous monitoring year (2020). Both 2020 and 2021 have had annual rainfall that has exceeded the annual mean. This has provided ideal conditions for the germination and growth of both native and exotic species, included seeded and installed native plants.

**Table 4. Weather conditions taken from the nearest weather station (Station number 070263) in the lead up and during the field survey (BOM 2021a; BOM 2021b).**

Month	Year	Mean Temperature		Monthly Total Rainfall (mm)	Annual Total Rainfall (mm)
		Min	Max		
-	2016	-	-	-	721.4
-	2017	-	-	-	497.2
-	2018	-	-	-	485.2
-	2019	-	-	-	481.4
-	2020	-	-	-	825.0
January	2021	13.5	26.6	73.0	793.8 (to date)
February		13.6	24.6	107.0	
March		11.5	21.6	154.6	
April		5.8	19.4	2.8	
May		4.4	14.8	58.0	
June		3.4	12.0	60.8	
July		2.1	11.0	41.0	
August		2.7	13.4	71.2	
<b>September</b>		<b>4.9</b>	<b>16.6</b>	<b>36.4</b>	
<b>October</b>		<b>6.7</b>	<b>18.6</b>	<b>34.6</b>	
<b>November (first 24 days)</b>		<b>9.9</b>	<b>19.6</b>	<b>154.4</b>	

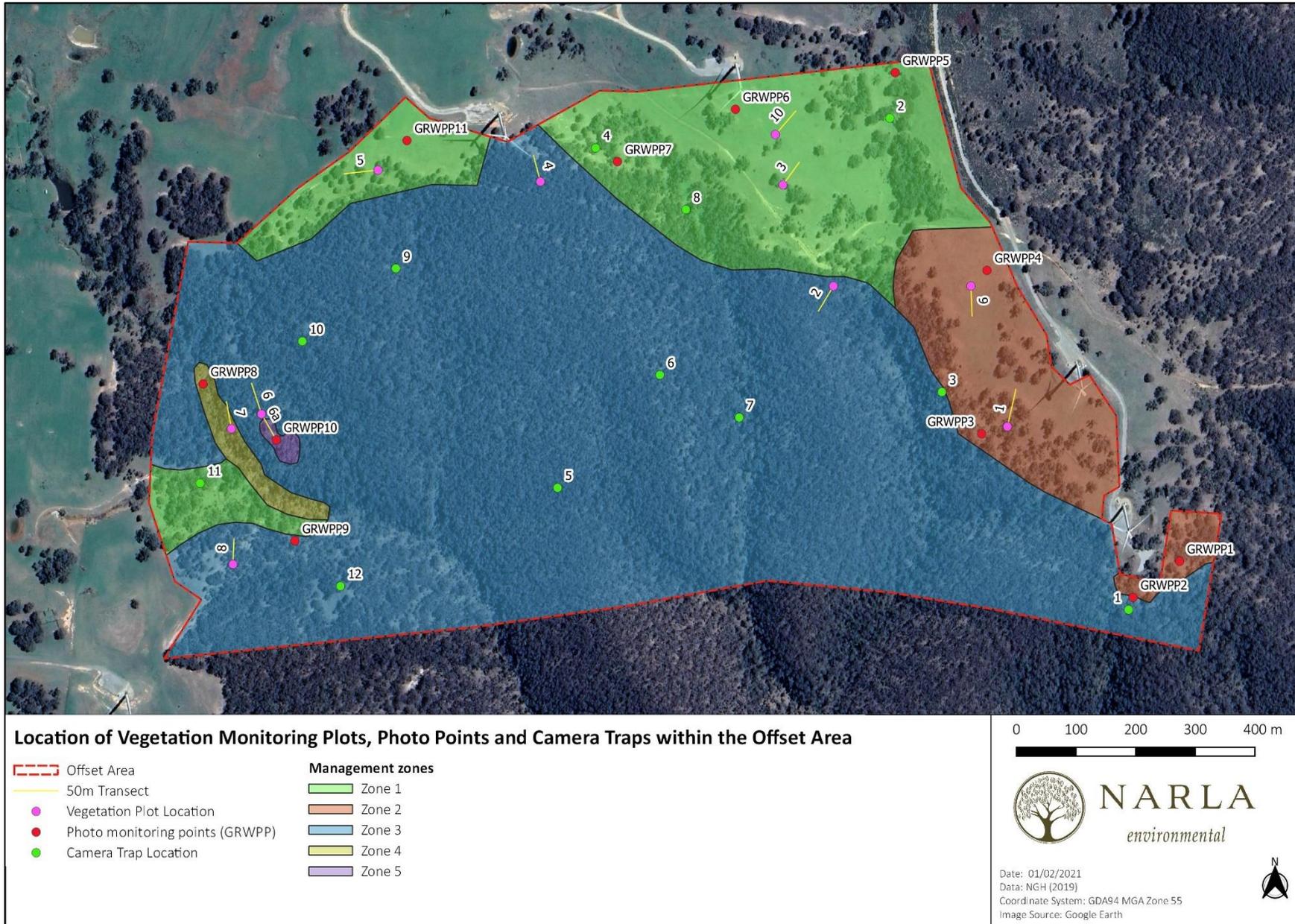


Figure 3. Location of vegetation monitoring plots, photo points and camera traps within the offset area.

## 3. Results & Discussion

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### 3.1 Vegetation Monitoring

The data from the 2021 vegetation monitoring (see **Appendix B** for raw data) was compared against previous years and benchmark data to provide an indication of overall vegetation condition and the vegetation trajectory (**Figure 4; Figure 5; Figure 6; Figure 7; Figure 8**). Noticeably across the GRWF Offset Area was a marked increase in vegetation growth, a result of favourable weather conditions within the previous two years. This is also evident in photo-monitoring points (**Appendix A**) when compared to previous years. All management zones displayed an increase in groundcover vegetation (grasses, shrubs and other), with exotic cover (mostly perennial and annual grasses) also increasing in Zones 3, 4 and 5. Increases in exotic cover has the potential to result in a decrease in native species richness, which was evident in both Zone 4 and 5. Conversely, species richness increased in Zone 1 and 2, which also saw a slight decrease in exotic cover.

**Table 5** provides a summary of how each vegetation attribute is performing against benchmark data, and whether any future actions are required to improve current values to comply with the CHP and CPVP. Although benchmark values for native overstorey and midstorey cover within Zone 2 have not been achieved (as required by the CHP and CPVP), a number of plantings have been installed over a 4-year period since 2017 within the existing cleared areas, totalling 380 overstorey and midstorey species (152 plants per ha). This is more than the 25 plants per ha required as per item no. 30 of the CPVP. Overstorey and midstorey plantings are slowly establishing within the zone, with a marked increase in growth since the previous year. It is anticipated that with continued maintenance of these plantings (including replacement of dead plantings), overstorey and midstorey cover will continue to increase (as the plants mature), gradually approaching benchmark values.

Similarly, benchmark values have not been achieved for overstorey and midstorey cover in Zone 1, and midstorey cover in Zone 3 and Zone 5. However, it is not a requirement as per the CHP and CPVP to achieve benchmark for such attributes within these zones. Nonetheless, a planting program has been implemented within these zones to further improve biodiversity values. Overstorey and midstorey species have been planted over a 4-year period since 2017 in Zone 1 (287 plants), Zone 3 (93 plants) and Zone 5 (40 plants). It is anticipated that continued maintenance of these plantings (including replacement of dead plantings) will allow the vegetation within these zones to approach benchmark over the coming years.

A requirement of the CHP and CPVP is to improve native groundcover and species diversity within Zone 1, 2 and 5. A marked increase in groundcover growth since 2020 has seen groundcover vegetation in Zone 1 and Zone 5 either approaching, within or exceeding benchmark range (**Table 5**). In addition, groundcover vegetation (shrubs and other) in Zone 2 is within or exceeding benchmark range, although an increase in groundcover vegetation (grasses) is required to achieve benchmark. Native species richness has also increased within Zone 1 (**Figure 4**), Zone 2 (**Figure 5**) and Zone 5 (**Figure 8**), although further increases are required to achieve benchmark in Zone 1 and Zone 2. Revegetation efforts have been previously conducted in Zone 1 and 2, including the broadcast of seed and installation of hiko grasses. A number of native grasses have emerged across these two zones over the past year, with large clumps of *Poa labillardierei* particularly evident. Revegetation was also conducted in 2021, with 10kg of native seed broadcast in Zones 1, 2, 3 and 5. Such efforts will be required over a number of years to gradually increase the groundcover and diversity within these zones. These future actions will be discussed in **Section 4.3**.

Table 5. Performance summary of vegetation attributes against benchmark data. Data compiled from November 2021 monitoring.

Zone	Vegetation attribute	Average value across plots	Benchmark range	Within benchmark range? *	Action required? (See Section 4.3)
1	Native species richness	12	20	↑ required	Yes
	Native cover (overstorey)	6.3%	17-27%	↑ required	No
	Native cover (midstorey)	0.5%	7.5-12.5%	↑ required	No
	Native groundcover (grasses)	38%	24-30%	Exceeds benchmark range	No
	Native groundcover (shrubs)	0.7%	0-5%	Within benchmark range	No
	Native groundcover (other)	32.7%	12.75-18.75%	Exceeds benchmark range	No
	Exotic cover	89.3%	0%	↓ required	Yes
	Hollow-bearing Trees	0	1	-	-
	Logs	0.7m	35m	-	-
2	Native species richness	10	20	↑ required	Yes
	Native cover (overstorey)	2.3%	17-27%	↑ required	No
	Native cover (midstorey)	0%	7.5-12.5%	↑ required	No
	Native groundcover (grasses)	8%	24-30%	↑ required	Yes
	Native groundcover (shrubs)	1%	0-5%	Within benchmark range	No
	Native groundcover (other)	59%	12.75-18.75%	Exceeds benchmark range	No
	Exotic cover	92%	0%	↓ required	Yes
	Hollow-bearing Trees	0.5	1	-	-
	Logs	11m	35m	-	-
3	Native species richness	24	20	Exceeds benchmark range	No
	Native cover (overstorey)	19%	20.5-22.5%	→ Benchmark range	No

Zone	Vegetation attribute	Average value across plots	Benchmark range	Within benchmark range? *	Action required? (See Section 4.3)
	Native cover (midstorey)	0%	8.5-13.5%	↑ required	No
	Native groundcover (grasses)	26%	1-10%	Exceeds benchmark range	No
	Native groundcover (shrubs)	8%	4.7-8.7%	Within benchmark range	No
	Native groundcover (other)	13.3%	8.5-12.5%	Exceeds benchmark range	No
	Exotic cover	6.7%	0%	↓ required	No
	Hollow-bearing Trees	0.3	1	-	-
	Logs	64m	30m	-	-
4	Native species richness	22	13	Exceeds benchmark range	No
	Native cover (overstorey)	19.5%	26-44%	→ Benchmark range	No
	Native cover (midstorey)	0%	0-20%	Within benchmark range	No
	Native groundcover (grasses)	18%	16-38%	Within benchmark range	No
	Native groundcover (shrubs)	32%	0-5%	Exceeds benchmark range	No
	Native groundcover (other)	68%	9-21%	Exceeds benchmark range	No
	Exotic cover	88%	0%	↓ required	No
	Hollow-bearing Trees	1	-	-	-
	Logs	81m	-	-	-
5 (including Zone 3)	Native species richness	29	20	Exceeds benchmark range	No
	Native cover (overstorey)	15.5%	17-27%	→ Benchmark range	No
	Native cover (midstorey)	0%	7.5-12.5%	↑ required	No

Zone	Vegetation attribute	Average value across plots	Benchmark range	Within benchmark range? *	Action required? (See Section 4.3)
	Native groundcover (grasses)	23%	24-30%	→ Benchmark range	No
	Native groundcover (shrubs)	4%	0-5%	Within benchmark range	No
	Native groundcover (other)	66%	12.75-18.75%	Exceeds benchmark range	No
	Exotic cover	91%	0%	↓ required	Yes
	Hollow-bearing Trees	0.5	2	-	-
	Logs	39m	25m	-	-

\*↑ = increase; ↓ = decrease; → = approaching

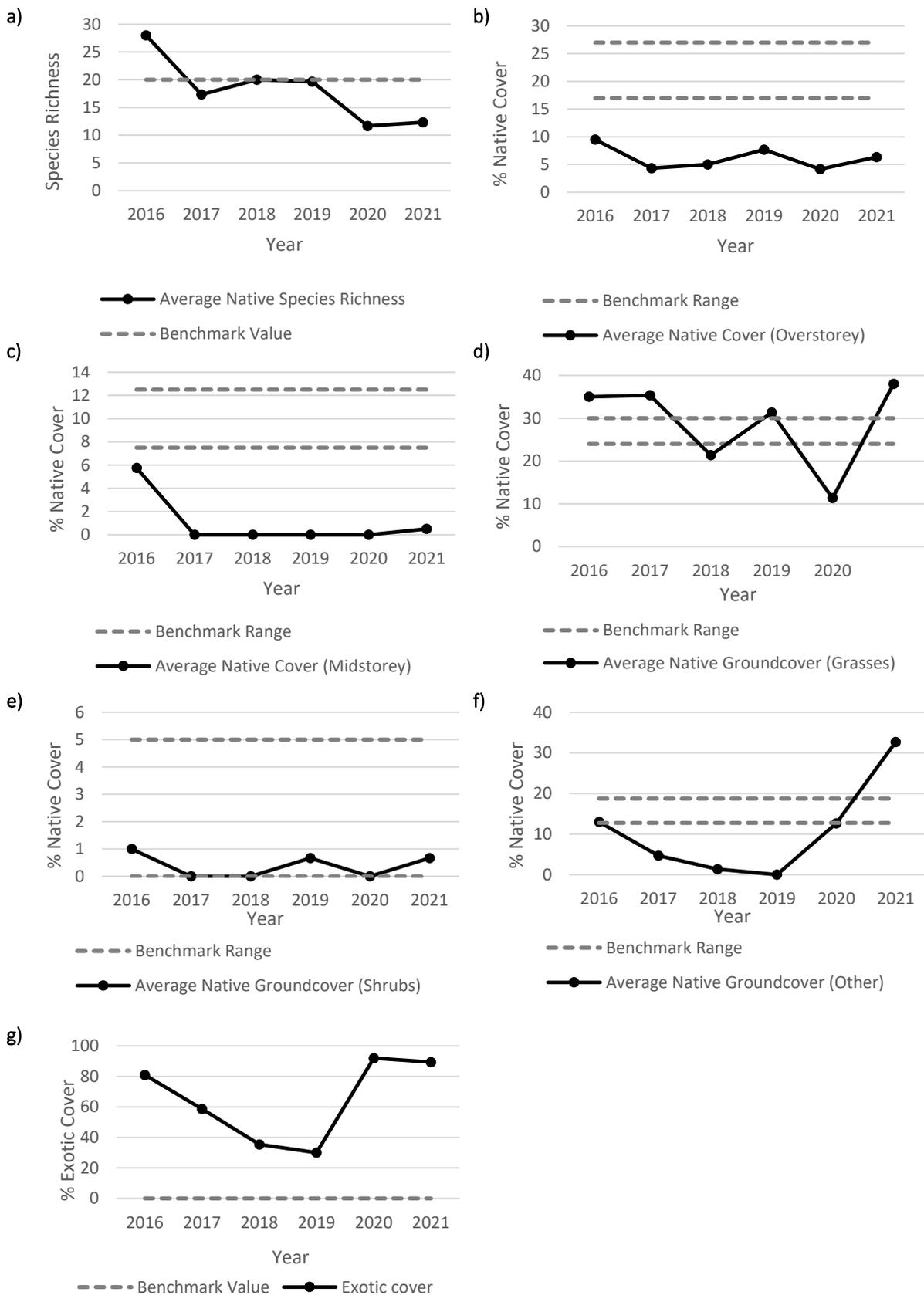


Figure 4. Comparison of yearly plot data to benchmark data within Management Zone 1 for a) Native species richness, b) Native cover (overstorey), c) Native cover (midstorey), d) Native groundcover (grasses), e) Native groundcover (shrubs), f) Native groundcover (other), and g) Exotic cover.

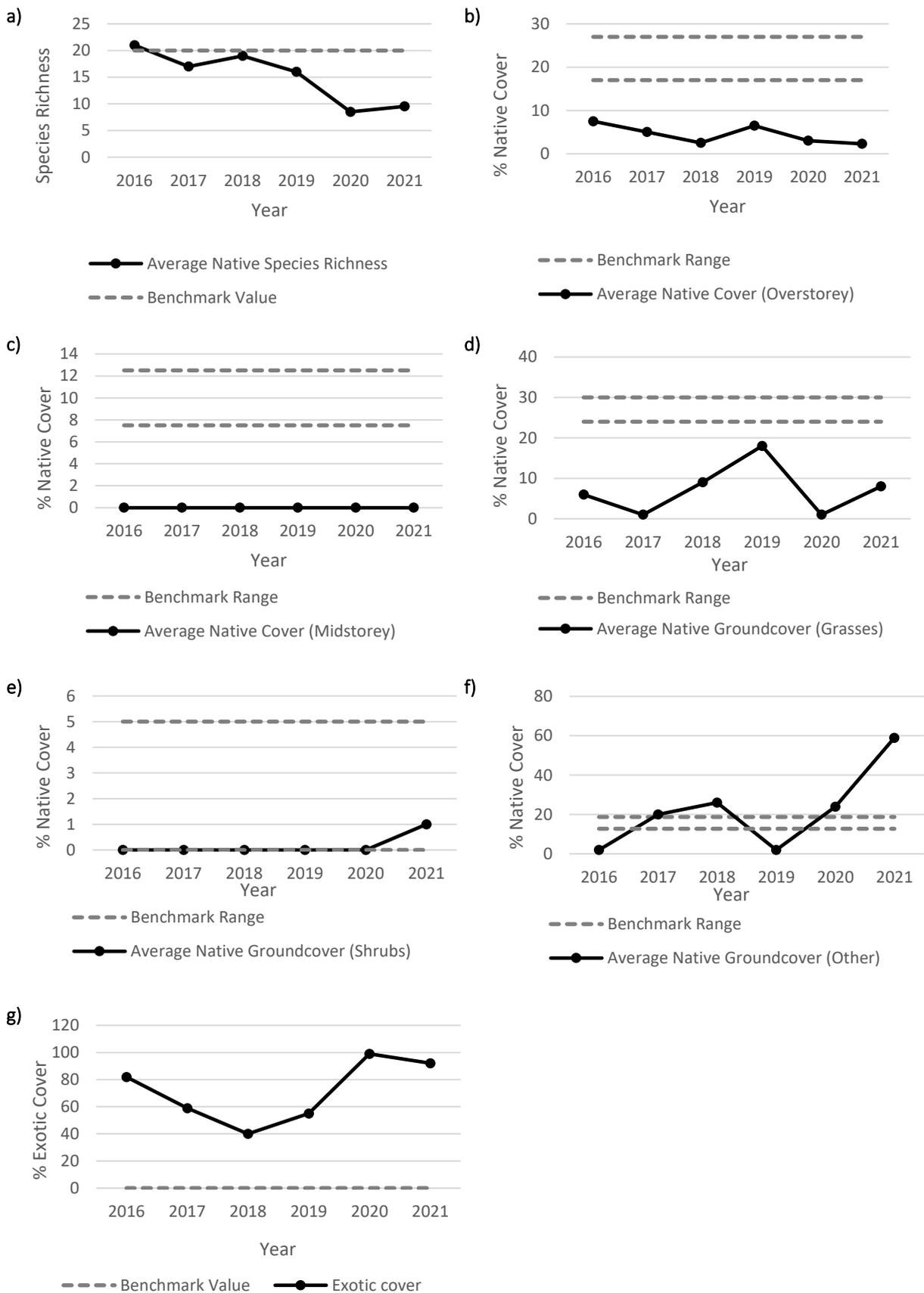


Figure 5. Comparison of yearly plot data to benchmark data within Management Zone 2 for a) Native species richness, b) Native cover (overstorey), c) Native cover (midstorey), d) Native groundcover (grasses), e) Native groundcover (shrubs), f) Native groundcover (other), and g) Exotic cover.

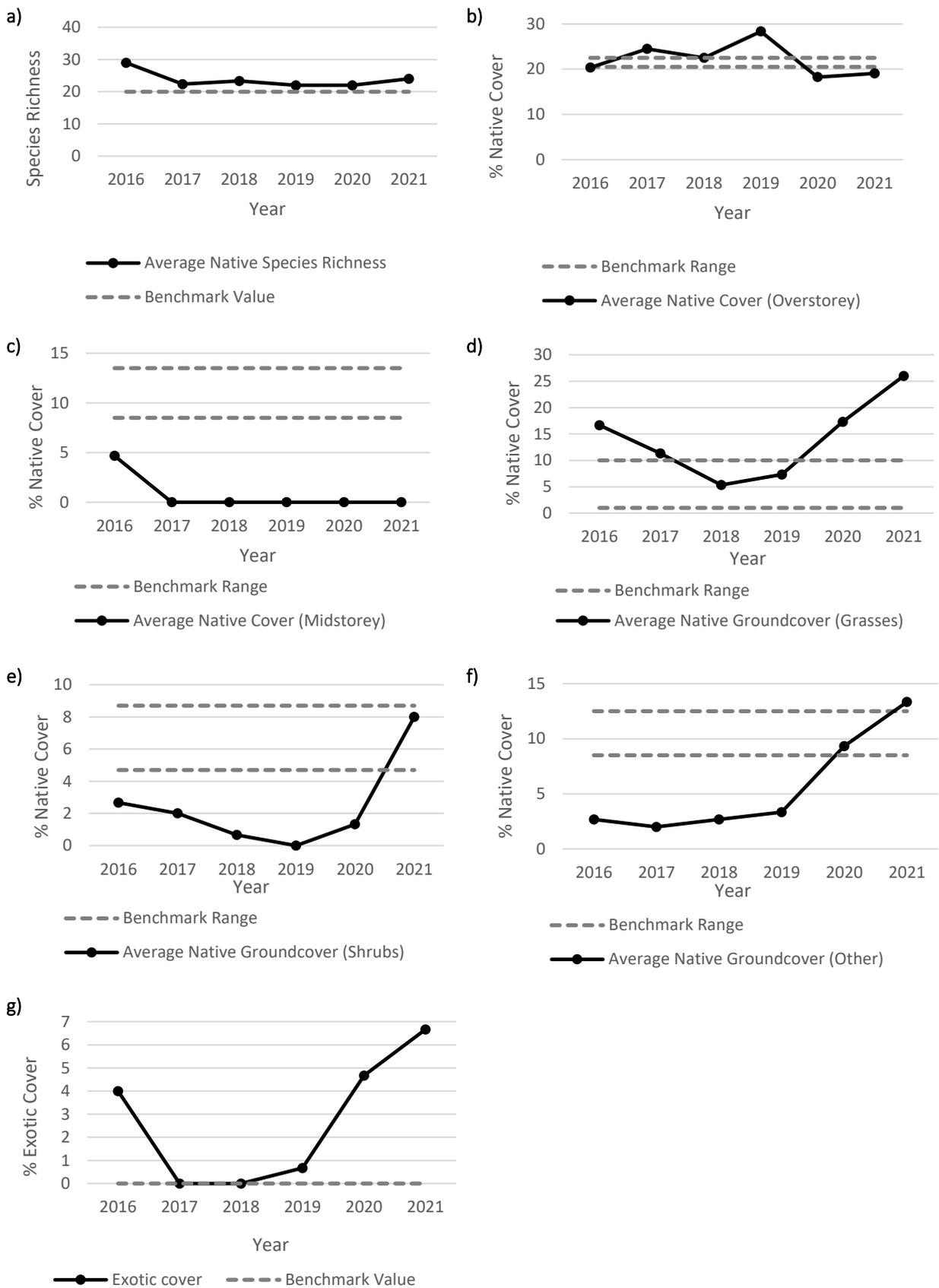


Figure 6. Comparison of yearly plot data to benchmark data within Management Zone 3 for a) Native species richness, b) Native cover (overstorey), c) Native cover (midstorey), d) Native groundcover (grasses), e) Native groundcover (shrubs), f) Native groundcover (other), and g) Exotic cover.

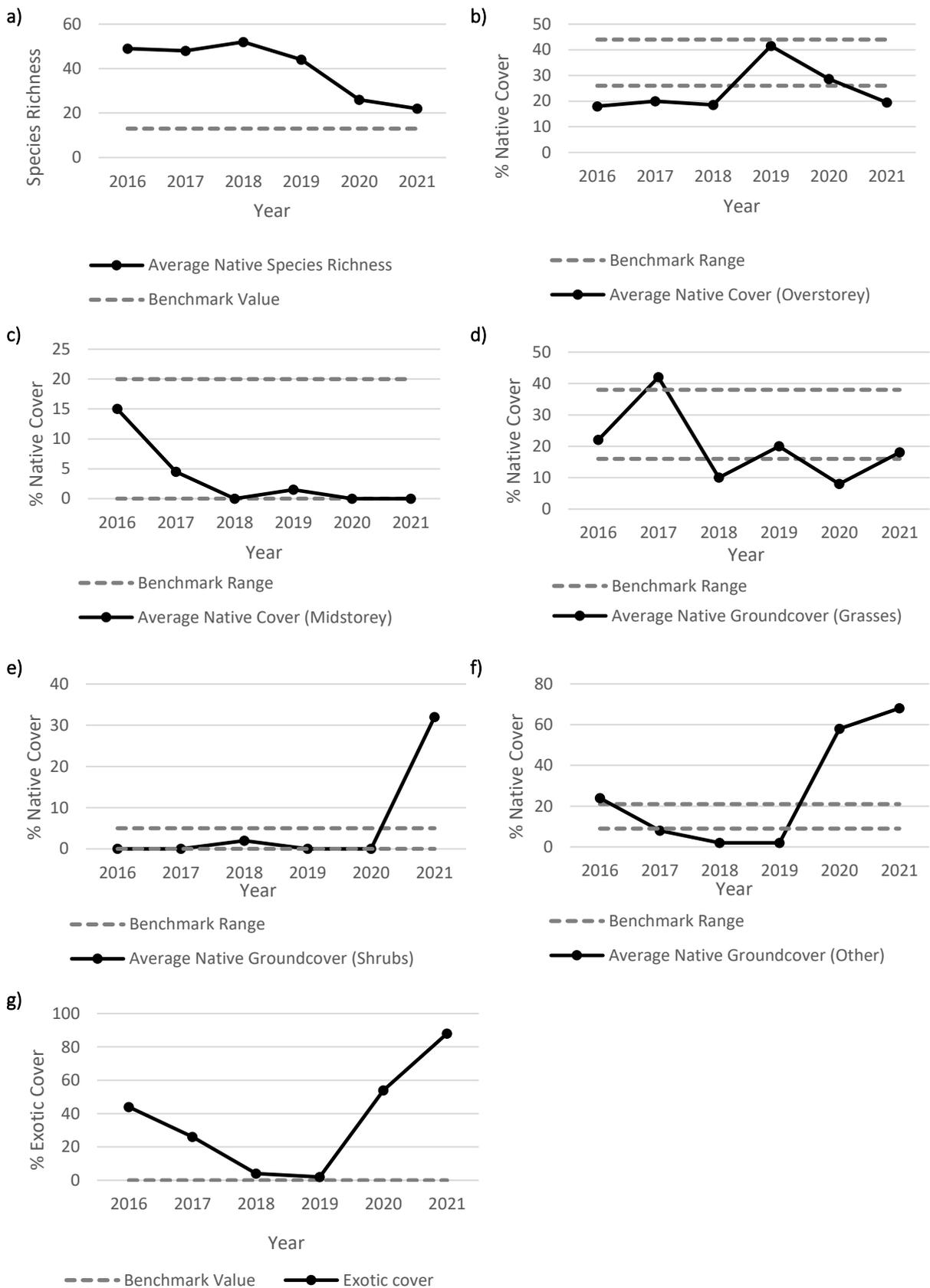


Figure 7. Comparison of yearly plot data to benchmark data within Management Zone 4 for a) Native species richness, b) Native cover (overstorey), c) Native cover (midstorey), d) Native groundcover (grasses), e) Native groundcover (shrubs), f) Native groundcover (other), and g) Exotic cover.

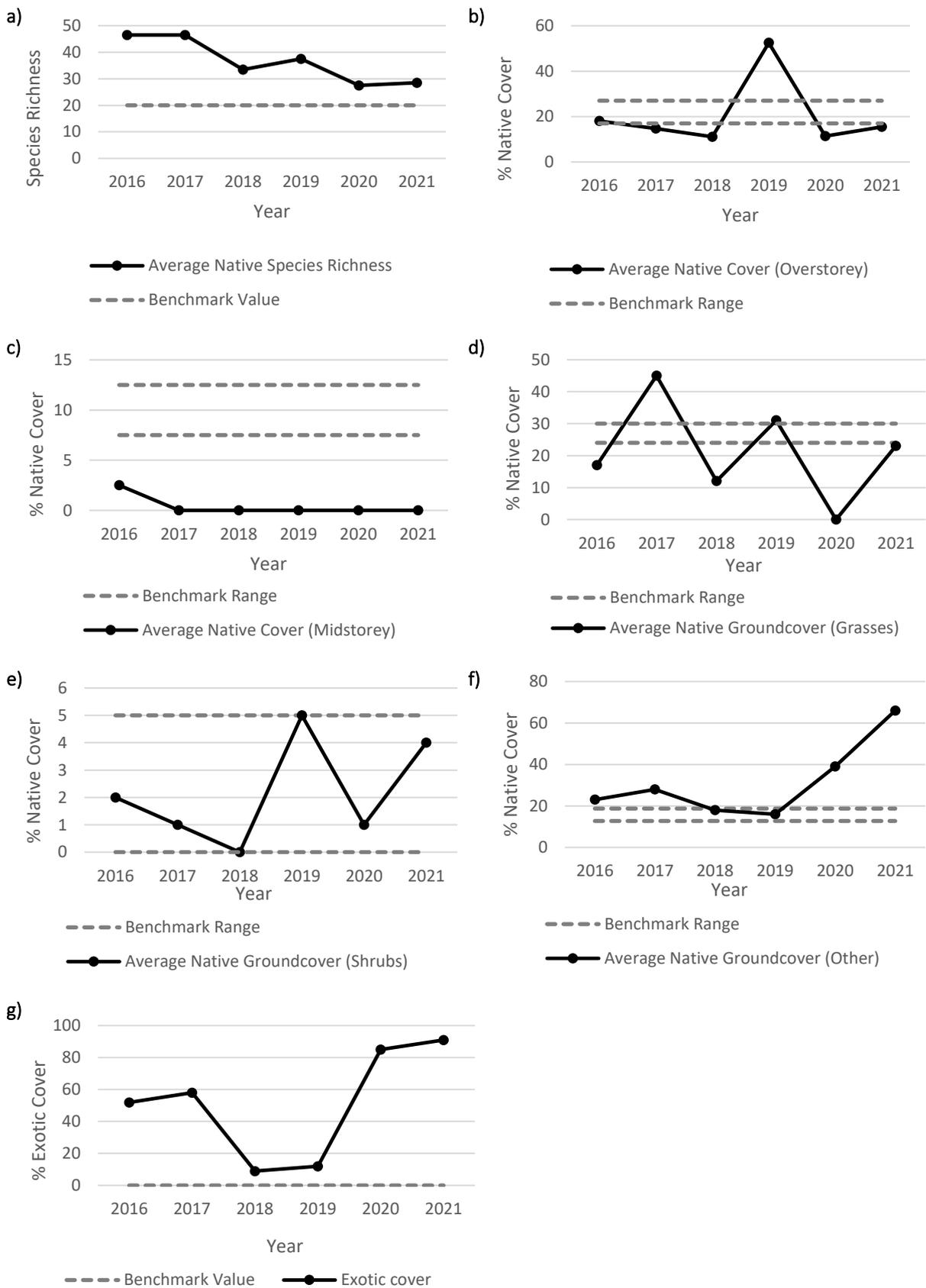


Figure 8. Comparison of yearly plot data to benchmark data within Management Zone 5 (and including Zone 3) for a) Native species richness, b) Native cover (overstorey), c) Native cover (midstorey), d) Native groundcover (grasses), e) Native groundcover (shrubs), f) Native groundcover (other), and g) Exotic cover.

## 3.2 Weed Monitoring

Weed monitoring was conducted with a focus on the following weed infestations that have been previously recorded within the Offset Area:

- Blackberry (*Rubus fruticosus* species aggregate)
- Hawthorn (*Crataegus monogyna*)
- Paterson's Curse (*Echium plantagineum*)
- Serrated Tussock (*Nassella trichotoma*)
- Sifton Bush (*Cassinia sifton*)
- Sweet Briar (*Rosa rubiginosa*)

The weed density of each weed polygon within the Offset Area is displayed in **Figure 9**. As with the previous years, the occurrence of the target weeds appears to be concentrated along the edges of the Offset Area. Similar to the 2020 monitoring, the majority of weed polygons appear to have low to very low weed densities, although an increase in weed density was noted in some weed polygons. The majority of moderate and high infestations are a result of Blackberry and Serrated Tussock, which have both increased in cover since the 2020 monitoring. In addition, an increase in Sifton Bush cover was also noted within the Offset Area.

A number of weed locations were also recorded during the 2021 monitoring period (**Figure 9**), many of which were recorded within the 2020 monitoring period. Of particular notice is the prevalence of Blackberry along the creeklines, which appears to be spreading and infiltrating into the centre of the Offset Area.

Targeted weed control was not undertaken in 2021 due to the NSW Covid-19 restrictions, contractor availability issues and wet weather conditions. The higher-than-average rainfall in 2021 provided ideal growing conditions for exotic species, which would be expected to markedly increase without any management actions (i.e. spraying). Weed control activities will recommence in early 2022 and continue throughout 2022. This will remain an ongoing requirement within the Offset Area, particularly due to the invasive nature of such weeds. In addition, large infestations of Serrated Tussock directly outside of the Offset Area allows for the blow in of seed, making control much more difficult. **Section 4.3** details specific management actions that should continue to be implemented to control the target weeds within the Offset Area.

### 3.2.1 Photo Monitoring

Photo monitoring points are presented in **Appendix C**. These photos used alongside photos from previous monitoring events provide a visual detail of changes in weed cover within the Offset Area over successive years.

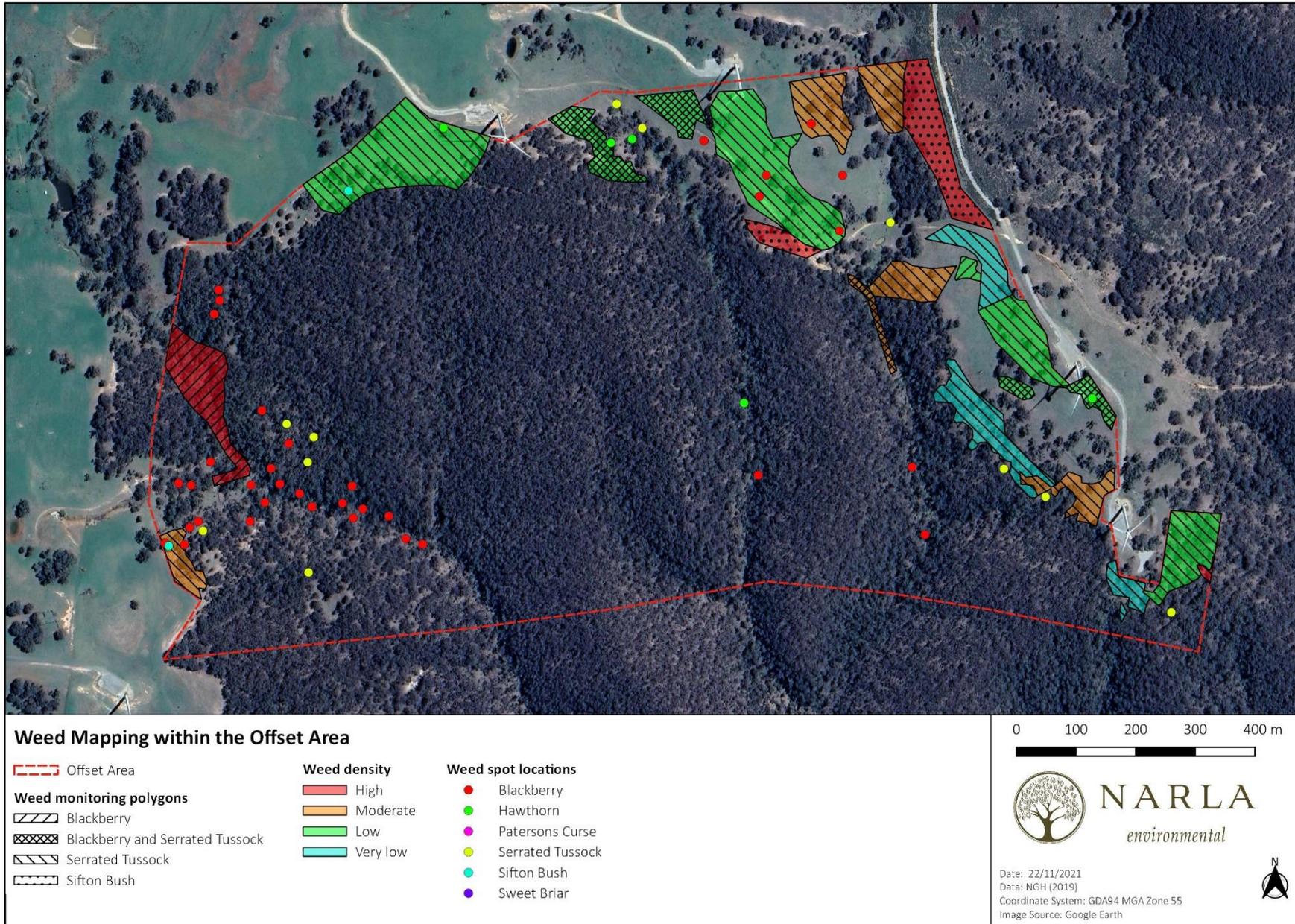


Figure 9. Weed mapping within the Offset Area during November 2021.

### 3.3 Pest Species Monitoring

The following six (6) pest species were recorded within the Subject Site during the monitoring period:

- *Dama dama* (Fallow Deer; **Plate 1**)
- *Lepus capensis* (Cape Hare; **Plate 2**)
- *Oryctolagus cuniculus* (European Rabbit);
- *Sus scrofa* (Feral Pig; **Plate 3**)
- *Vulpes vulpes* (Red Fox; **Plate 4**)

Pest species recorded within the Offset Area are presented in **Table 6**. The most commonly detected pest species was Fallow Deer, which was recorded on 71 trap nights; Cape Hare, recorded on 54 trap nights; and Feral Pig, recorded on 37 trap nights. These pest species detected were relatively widespread within the Offset Area (**Table 6**), with Fallow Deer being the most widespread (recorded on 10 cameras). A number of native species were also detected including *Macropus giganteus* (Eastern Grey Kangaroo), *Macropus rufogriseus* (Red-necked Wallaby), Common Wallaroo (*Macropus robustus*), Swamp Wallaby (*Wallabia bicolor*), Common Wombat (*Vombatus ursinus*), Common Brushtail Possum (*Trichosurus vulpecula*), Common Ringtail Possum (*Pseudocheirus peregrinus*), Australian Magpie (*Gymnorhina tibicen*), and Short-beaked Echidna (*Tachyglossus aculeatus*).

Overall, the 2021 pest monitoring saw a large decrease in pest species from the previous year. Significant decreases in occurrences were observed in Fallow Deer, Cape Hare and Red Fox. Feral Goats remained absent from the Offset Area, and no Feral Cats were observed in this monitoring period. Occurrences of only two (2) feral pest species increased from the previous year: European Rabbit and Feral Pig. An increase in the Feral Pig population was also physically evident within the Offset Area, with areas of Feral Pig diggings observed during monitoring efforts. One camera trap photo (**Plate 3**) revealed there are at least six (6) Feral Pigs within the Offset Area. Ongoing control efforts should be maintained to minimise (and potentially eradicate) feral pests from the area, particularly as they are impacting on the regeneration and growth of native vegetation.

**Table 6. Pest species recorded within the Offset Area and the number of records per trap night (Spring 2021).**

Species	Number of cameras pest species recorded on	Frequency of occurrence (number of trap days/nights presences / total number of trap days/nights)	
		2020	2021 (and change from previous year)
<i>Capra hircus</i> (Feral Goat)	0	0%	0% (0%)
<i>Dama dama</i> (Fallow Deer)	10	16.1%	8.6% (-7.5%)
<i>Felis catus</i> (Feral Cat)	0	0.1%	0% (-0.1%)
<i>Lepus capensis</i> (Cape Hare)	7	12.6%	6.5% (-6.1%)
<i>Oryctolagus cuniculus</i> (European Rabbit)	2	0%	0.4% (+0.4%)
<i>Sus scrofa</i> (Feral Pig)	7	3.9%	4.5% (+0.6%)
<i>Vulpes vulpes</i> (Red Fox)	3	4.5%	0.8% (-3.7%)

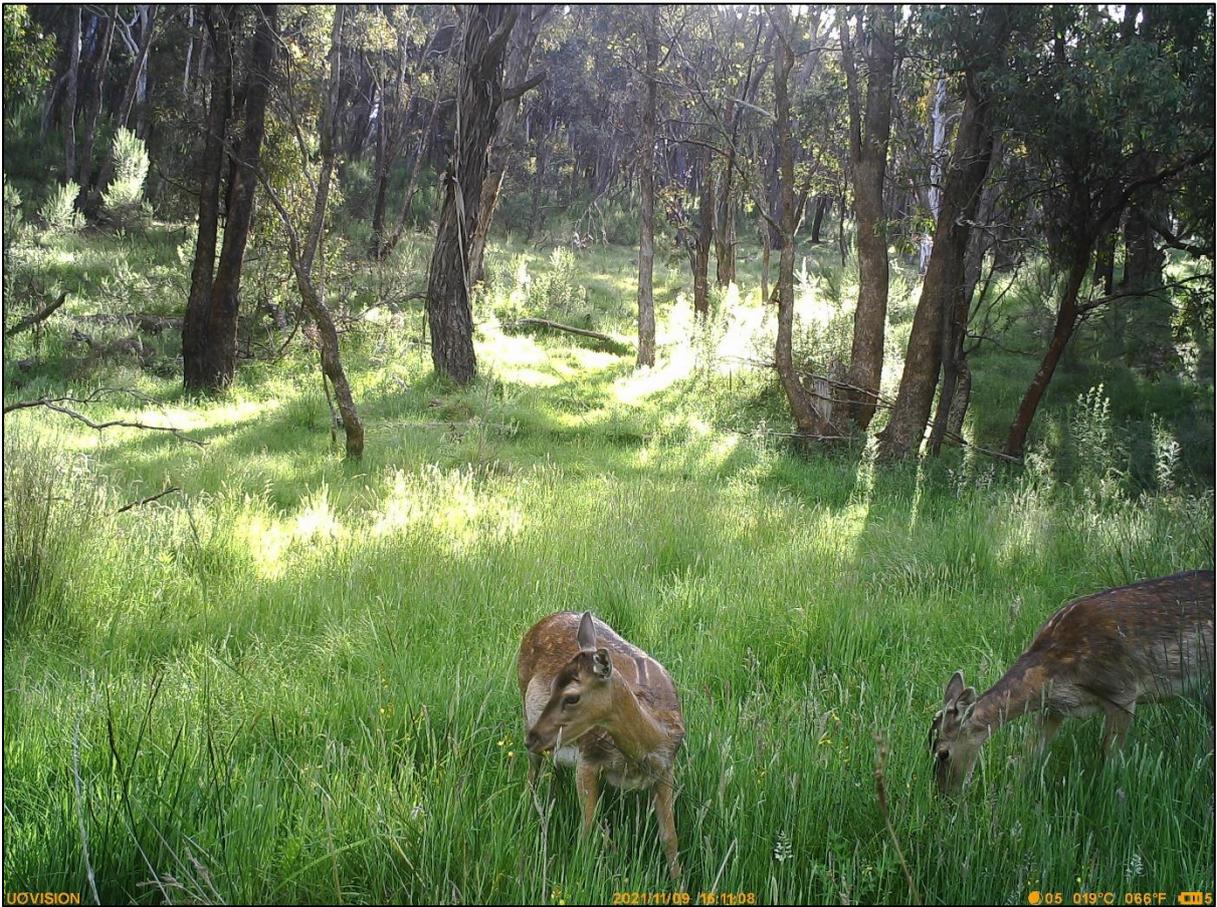


Plate 1. Fallow Deer (*Dama dama*) observed on a camera trap within the Offset Area.



Plate 2. Cape Hare (*Lepus capensis*) observed on a camera trap within the Offset Area.



Plate 3. Feral Pigs (*Sus scrofa*) observed on a camera trap within the Offset Area.



Plate 4. Red Fox (*Vulpes vulpes*) observed on a camera trap within the Offset Area.

## 4. Performance Review and Recommendations

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### 4.1 Management Actions Undertaken in 2021

The following management actions were conducted within the Offset Area during 2021 and are discussed below:

- Pest Animal Control
- Targeted Weed Control
- Nestbox monitoring
- Revegetation
- Monitoring (Quarterly & Annual).

#### 4.1.1 Pest Animal Control

Pest animal control (i.e. shooting) was undertaken within the Offset Area during June, September and November, 2021 (**Appendix D**). Ten (10) Feral Pigs and two (2) Fallow Deer were removed during this period. In addition, regular checks for pest species were undertaken throughout 2021 by the local farmer.

#### 4.1.2 Targeted Weed Control

Weed control activities were not undertaken in 2021 due to the NSW Covid-19 restrictions, contractor availability issues and wet weather conditions. Weed control activities will recommence in early 2022 and continue throughout 2022.

#### 4.1.3 Nestbox Monitoring

The annual nestbox condition monitoring was undertaken by Spatial Footprints on the 8<sup>th</sup> March 2021. An accompanying monitoring report (**Appendix E**) was also prepared. The monitoring report revealed a total of thirty (30) nestboxes were inspected, with twenty-nine (29) appearing in good condition (following in-field maintenance and repairs). A European honeybee (*Apis mellifera*) hive was found to have occupied one (1) nest box. This nest box will need to be removed and/or modified in the future to prevent occupation by such pest species. Further results and recommendations of the nestbox monitoring are outlined in the report (**Appendix E**).

#### 4.1.4 Revegetation

Native seeds (6kg of *Themeda triandra* and 4kg of *Poa labillardierei*) were broadcast in Zones 1, 2, 3 and 5 of the Offset Area as per the recommendations of the 2020 Annual Report and Management Actions 34 and 35 of the approved Property Vegetation Plan (PVP; **Appendix F**).

#### 4.1.5 Monitoring (Quarterly and Annual)

Quarterly inspections were conducted in 2021 on the 8<sup>th</sup> March, 2<sup>nd</sup> August, 8<sup>th</sup> September and 16<sup>th</sup> November by Leo Pearce (**Appendix G**). All inspections noted damage to plantings, likely from deer or pigs. The removal of pest animals from the Offset Area was recorded in the August, September and November inspections.

The annual monitoring review for 2021 was conducted on the 16<sup>th</sup> November by Leo Pearce (**Appendix H**). An increase in weed species was evident due to wet weather conditions and weed control activities not being carried out within 2021. The wet weather has however contributed to an increase in the growth and health of plantings. It was also noted that current management actions may be adapted following the recommendations outlined in this report.

## 4.2 Compliance with the CHP and CPVP

**Table 7** and **Table 8** detail the management actions recommended in the CHP and required by the CPVP. Narla have undertaken an assessment to determine whether the recommendations and requirements have been met for the Offset Area during 2021.

**Table 7. Compliance with recommended management measures from the CHP.**

Aim	Rationale	Applicable management zones	Auditable measure	Compliant as of Dec 2021	Evidence of compliance / reason for non-compliance
<b>Ongoing General Management Measures</b>					
Target identified threats to biodiversity: <ul style="list-style-type: none"> <li>Invasion by exotic perennial grass</li> </ul>	The aim is to reduce weed abundance on the offset site and protect it from invasion from adjacent sites. Actions to be done in accordance with the Integrated Weed Management Plan (NGH 2016b).	Zone 1, 2, 3, 4 and 5	Weed monitoring completed seasonally. Quantity of chemical and location of action to be recorded. Annual report to provide map of extent of current and past weed infestation, details of control undertaken and an assessment of the success of current management.	Yes	<ul style="list-style-type: none"> <li>Quarterly inspections for weed control undertaken.</li> <li>No weed treatment occurred in 2021 (See <b>Section 4.1.2</b>).</li> <li>Annual report (this report) completed.</li> </ul>
<ul style="list-style-type: none"> <li>Pest animal control</li> </ul>	Feral animals are detrimental to biodiversity values. Management actions to be done as prescribed in the Integrated Pest Management Plan (NGH Environmental 2016c).	Zone 1, 2, 3, 4 and 5	Feral Animal Control Plan implemented. Correspondence with adjacent landowners documented. Control measures and their location recorded.	Yes	<ul style="list-style-type: none"> <li>Regular pest animal checks undertaken by local farmer.</li> <li>Evidence of feral animal controls recorded.</li> </ul>
<ul style="list-style-type: none"> <li>Removal of fallen timber</li> </ul>	Fallen timber would be left in place within the offset site.	Zone 1, 2, 3, 4 and 5	Annual audit of performance.	Yes	<ul style="list-style-type: none"> <li>Quarterly checklists completed.</li> </ul>
<ul style="list-style-type: none"> <li>Installations to offset removed hollow-bearing trees</li> </ul>	Nest boxes may provide suitable habitat in lieu of hollow-bearing trees.	Zone 1, 2, 3, 4 and 5	Annual audit to confirm still in place.	Yes	<ul style="list-style-type: none"> <li>Annual inspection conducted in March 2021.</li> </ul>

Aim	Rationale	Applicable management zones	Auditable measure	Compliant as of Dec 2021	Evidence of compliance / reason for non-compliance
Rapid control of Serrated Tussock	Serrated Tussock threatens the integrity of the native dominated groundcover. Actions to be done in accordance with the Integrated Weed Management Plan (NGH Environmental 2016b).	Zone 1, 2 and 5. Follow up works in Zone 2 and 5.	Weed management plan implemented. Reduced extent of Serrated Tussock.	No	<ul style="list-style-type: none"> <li>No weed treatment occurred in 2021 (See <b>Section 4.1.2</b>).</li> <li>Slight increase in Serrated Tussock noted from previous year.</li> </ul>
Rapid control of Blackberry	Blackberry is an invasive weed. Actions to be done in accordance with the Integrated Weed Management Plan (NGH Environmental 2016b).	Zone 4	Weed management plan implemented. Reduced extent of Blackberry.	No	<ul style="list-style-type: none"> <li>No weed treatment occurred in 2021 (See <b>Section 4.1.2</b>).</li> <li>Slight increase in Blackberry in known locations. Additional locations of Blackberry infestations noted in this report.</li> </ul>
Assisted regeneration of overstorey and midstorey vegetation	Native vegetation is below benchmark figures, and where natural seed sources are not present, require assisted regeneration. Aims are to: <ul style="list-style-type: none"> <li>improve overstorey and midstorey vegetation cover to benchmark levels for Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands in the Hawkesbury Nepean CMA within 5 years after CPVP is registered and active</li> </ul>	Zone 2	Plantings established and maintained. Planting density at least 25 plants per hectare (or at other predetermined benchmark). Proportion of planted vegetation >2m high. Overstorey and midstorey vegetation cover within or approaching benchmark within 5 years after CPVP is registered and active management has commenced.	Yes	<ul style="list-style-type: none"> <li>Since 2017, Greening Australia have installed a total of 380 overstorey and midstorey species within this zone (152 trees/ha). With continued maintenance of these plantings (including replacement of dead plantings), overstorey and midstorey cover will continue to increase (as the plants mature), gradually approaching benchmark values.</li> </ul>

Aim	Rationale	Applicable management zones	Auditable measure	Compliant as of Dec 2021	Evidence of compliance / reason for non-compliance
	<p>management has commenced.</p> <ul style="list-style-type: none"> <li>▪ monitor, maintain and replace plants if necessary for the first 3 years after planting or until plants are at least 2 metres in height.</li> </ul>				<ul style="list-style-type: none"> <li>▪ Quarterly checklists conducted to monitor the success of revegetation efforts.</li> </ul>
<p>Enrichment of native ground cover and species diversity</p>	<p>Increasing the percent cover and diversity of native groundcovers would assist in restoring ecosystem function within these zones.</p> <p>The seeding program would aim to have the native ground cover vegetation cover within benchmark for Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands in the Hawkesbury Nepean CMA within 5 years after the CPVP is registered and active management has commenced.</p>	<p>Zone 1, 2 &amp; 5</p>	<p>Groundcover vegetation within or approaching benchmark within 5 years after the CPVP is registered and active management has commenced.</p>	<p>Partial</p>	<ul style="list-style-type: none"> <li>▪ Groundcover vegetation in Zone 1 and Zone 5 is either approaching, within or exceeding benchmark range (<b>Table 5</b>).</li> <li>▪ Groundcover vegetation (shrubs and other) in Zone 2 is within or exceeding benchmark range (<b>Table 5</b>).</li> <li>▪ Increases in native groundcover (grasses) is required to achieve benchmark in Zone 2 (<b>Table 5</b>).</li> <li>▪ Increases in species diversity are required to achieve benchmark in Zone 1 and Zone 2 (<b>Table 5</b>).</li> <li>▪ Since 2017, the following revegetation efforts have been conducted: <ul style="list-style-type: none"> <li>- Zone 1 – 22kg of seed broadcast and</li> </ul> </li> </ul>

Aim	Rationale	Applicable management zones	Auditable measure	Compliant as of Dec 2021	Evidence of compliance / reason for non-compliance
					<ul style="list-style-type: none"> <li>80 hiko grasses planted.</li> <li>- Zone 2 – 4kg of seed broadcast and 80 hiko grasses planted.</li> <li>- Zone 1, 2, 3 &amp; 5 – 10kg of native seeds broadcast (6kg of <i>Themeda triandra</i> and 4kg of <i>Poa labillardierei</i>) in 2021.</li> <li>▪ Continued efforts will be required over a number of years to gradually increase the groundcover and diversity within these zones.</li> </ul>
Exclusion of grazing	Stock provide a vector for the spread of weeds such as Serrated Tussock.	Zone 1, 2, 3, 4 and 5	No evidence of grazing within the offset area.	Yes	<ul style="list-style-type: none"> <li>▪ Stock exclusion fencing has been completed.</li> <li>▪ Pest species monitoring detected no stock within the Offset Area in 2021.</li> </ul>
<b>Monitoring and Reporting</b>					
To undertake surveys to assess performance against baseline data and management objectives.	Monitoring plot data is required annually (up to a maximum of 20 years) as management actions are implemented. Comparing the data to the baseline, to other years, and to	Zone 1, 2, 3, 4 and 5	Ongoing monitoring completed annually (up to a maximum of 20 years).	Yes	<ul style="list-style-type: none"> <li>▪ Annual vegetation monitoring conducted in November 2021.</li> </ul>

Aim	Rationale	Applicable management zones	Auditable measure	Compliant as of Dec 2021	Evidence of compliance / reason for non-compliance
	<p>the bench mark data allows improvements in condition to be demonstrated. The data would also be utilised to inform the adaptive management of the site.</p> <p>In addition to the monitoring plot data, quarterly site inspections and an annual review of management performance would be undertaken as outlined in Appendix B of the CHP.</p>		<p>Quarterly site inspections and annual management performance review completed.</p>		<ul style="list-style-type: none"> <li>Quarterly site inspections and annual review undertaken.</li> </ul>
<b>Review and Adaptive Management</b>					
<p>Be adaptive to the results obtained during monitoring.</p>	<p>Changes in site conditions may require changes to the management strategies.</p>	<p>Zone 1, 2, 3, 4 and 5</p>	<p>Annual report, provided to Dept. Planning and Wind Farm Developer.</p> <p>Management adapted as recommended in the annual report.</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>Annual vegetation monitoring conducted in November 2021.</li> <li>Management will be adapted to conform with recommendations as outlined in this report.</li> </ul>

**Table 8. Compliance with measures specified in the CPVP.**

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
Zone 1, 2, 3, 4 and 5	Measures to confirm that the objective of “maintain or improve” has been achieved	In Perpetuity	1. The Landholder shall implement the measures set out in this Schedule 2 to enable the objective of "maintain or improve" to be measured, quantified and verified.	Yes	<ul style="list-style-type: none"> <li>This table.</li> </ul>
Zone 1, 2, 3, 4 and 5	Protect and enhance remnant vegetation for biodiversity conservation	In Perpetuity	2. The Landholder must maintain an area of 122.93 ha represented in Map 1 as Map units, Zone 1, 2, 3, 4 and 5 to protect and enhance remnant and regrowth native vegetation for biodiversity conservation purposes.	Yes	<ul style="list-style-type: none"> <li>The Offset Area is managed as outlined in this report.</li> </ul>
Zone 1, 2, 3, 4 and 5	Routine Agricultural Management Activities (RAMAS)	In Perpetuity	<p>5. The Landholder is permitted to undertake the following Routine Agricultural Management Activities (RAMAs) under Section 11 and 22 of the Native Vegetation Act 2003:</p> <ul style="list-style-type: none"> <li>the maintenance of existing rural infrastructure marked on Map 3 (for example fence lines and tracks);</li> <li>the removal of noxious weeds under the Noxious Weeds Act 1993;</li> <li>the control of pest animals under the Local Land Services Act 2013, including the immediate removal of animal carcasses to discourage scavenging raptors;</li> <li>the maintenance of public utilities (such as those associated with the transmission of electricity, the supply of water, the supply of gas and electronic communication); and</li> <li>any activity reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.</li> </ul>	Yes	<ul style="list-style-type: none"> <li>No evidence of any activity that would contravene this management action was observed during monitoring.</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
			All other RAMA's are not permitted within the offset area represented in Map 1.		
Zone 1, 2, 3, 4 and 5	Retain native vegetation regrowth	In Perpetuity	6. The Landholder must not clear native vegetation, whether remnant or regrowth, other than in accordance with the RAMAs specified in Management Action 5.	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No clearing of native vegetation observed.</li> </ul>
Zone 1, 2, 3, 4 and 5	Retention of standing and fallen dead timber (excluding within 100 metres of turbines)	In Perpetuity	<p>7. The Landholder must not remove any standing or fallen, live or dead timber other than in accordance with the RAMAs specified in Management Action 5.</p> <p>8. The Landholder is permitted to remove standing or fallen dead timber within 100 metres of an installed wind turbine.</p>	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No removal of timber observed.</li> </ul>
Zone 1, 2, 3, 4 and 5	Retention of rocks	In Perpetuity	<p>9. The Landholder must not remove rocks except for in accordance with the following sections of the Native Vegetation Act:</p> <ul style="list-style-type: none"> <li>11(1)(a) – the maintenance of rural infrastructure.</li> <li>11(1)(b) – any activity reasonably considered necessary to remove or reduce and imminent risk of serious personal injury or damage to property.</li> </ul>	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No removal of rocks observed.</li> </ul>
Zone 1, 2, 3, 4 and 5	No exotic plantings	In Perpetuity	10. The Landholder must not plant any non-local (exotic or non-indigenous) trees, shrubs, grass, or groundcover species in Zones 1, 2, 3, 4 and 5 of Map 1.	Yes	<ul style="list-style-type: none"> <li>Revegetation activities undertaken by Greening Australia involved installation of native species.</li> <li>No evidence of exotic plantings observed during monitoring.</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
Zone 1, 2, 3, 4 and 5	Exclusion of recreational use and access	In Perpetuity	11. The Landholder shall exclude all recreational movement of vehicles, motor bikes, bicycles and horses in Zones 1, 2, 3, 4 and 5 of Map 1.	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No recreational vehicles, motorbikes, bicycles and/or horses observed.</li> </ul>
Zone 1, 2, 3, 4 and 5	Exclusion of honey bee apiaries	In Perpetuity	12. The Landholder must exclude all commercial and non-commercial Honey Bee ( <i>Apis mellifera</i> ) apiaries in Zones 1, 2, 3, 4 and 5 of Map 1.	Yes	<ul style="list-style-type: none"> <li>No commercial or non-commercial Honey Bee apiaries observed during monitoring.</li> </ul>
Zone 1, 2, 3, 4 and 5	Fire exclusion	In Perpetuity	13. The Landholder is not to set fire to Zones 1, 2, 3, 4 and 5 of Map 1 at any time unless specified otherwise in accordance with the Rural Fires Act 1997 or for the purpose of ecological burning with the intention of achieving a "maintain or improve outcome" for biodiversity conservation purposes. The Landholder must seek consultation with the OEH and LLS prior to undertaking ecological burning. The Landholder must seek any necessary fire permits required by the local fire authority prior to undertaking burning.	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No evidence of fire reported.</li> </ul>
Zone 1, 2, 3, 4 and 5	Exclude fertilisers	In Perpetuity	14. The landholder must not apply any fertilisers to Zones 1, 2, 3, 4 and 5 of Map 1 at any time.	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No evidence of fertiliser application recorded.</li> </ul>
Zone 1, 2, 3, 4 and 5	Exclusion of grazing	In Perpetuity	15. Grazing is to be excluded from Zones 1, 2, 3, 4 and 5 of Map 1 unless agreed upon in consultation with OEH.	Yes	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken. No evidence of grazing recorded.</li> <li>Stock exclusion fencing has been completed.</li> <li>Pest species monitoring detected no stock within the Offset Area in 2021.</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
Zone 1, 2, 3, 4 and 5	Removal of rubbish and dead domestic animals. No rubbish disposal.	In Perpetuity	16. The Landholder must remove all rubbish from Zones 1, 2, 3, 4 and 5 in Map 1. The landholder must not dispose of further rubbish or domestic animal remains in Zones 1, 2, 3, 4 and 5 of Map 1 for the duration of this agreement.	Partial	<ul style="list-style-type: none"> <li>Quarterly site inspections undertaken.</li> <li>One (1) rubbish pile was observed within Zone 1 (<b>Plate 5</b>).</li> <li>Animal remains (kangaroo) found entangled on an old barbed wire fence within Zone 1 (<b>Plate 6</b>).</li> <li>No evidence of disposal of domestic animal remains.</li> </ul>
Zone 1, 2, 3, 4 and 5	Control of pest animals	In Perpetuity	<p>17. The Landholder must implement an Integrated Pest Management Plan to control pest animals.</p> <p>18. When undertaking activities to control pest animals the Landholder must:</p> <ul style="list-style-type: none"> <li>Contact Local Land Services (LLS) Goulburn on 02 4824 1900 for advice regarding best management practices;</li> <li>Act in accordance with any advice received from LLS; and</li> <li>Obtain all relevant permits and approvals from State and local government agencies.</li> </ul> <p>19. The Landholder must not undertake baiting for rabbits. Alternatives for rabbit control must be sought.</p> <p>20. Dead animal carcasses must be removed to discourage scavenging raptors.</p>	Yes	<ul style="list-style-type: none"> <li>Regular pest animal checks undertaken by local farmer.</li> <li>Evidence of feral animal controls recorded.</li> </ul>
Zone 1, 2, 3, 4 and 5	Weed control – Noxious Weed Management	In Perpetuity	<p>21. The Landholder must not apply herbicide by boom spraying or aerial spraying.</p> <p>22. Spraying for noxious weeds must only be undertaken using a hand-held spray device on target species only. Woody weeds must be removed by hand.</p>	Yes	<ul style="list-style-type: none"> <li>No weed treatment occurred in 2021 (See <b>Section 4.1.2</b>).</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
			<p>23. When undertaking activities to control noxious weeds the Landholder must:</p> <ul style="list-style-type: none"> <li>Contact the noxious plants authority (Upper Lachlan Shire Council) for advice regarding best management practices and;</li> <li>Act in accordance with any advice received from Upper Lachlan Shire Council.</li> </ul>		
Zone 1, 2, 3, 4 and 5	Provide artificial hollows at locations that are at least 200m from installed turbine locations.	Within 12 months from the commencement of this agreement	<p>24. The Landholder must install 30 artificial hollows within Zones 1, 2, 3 and 4 of Map 1 to preserve the overall abundance of hollows in the area.</p> <p>25. Hollows must not be installed within 200m of a turbine.</p> <p>26. Artificial hollows must be kept in working condition and free of pests including rats and bees.</p> <p>27. A one-off audit is to be completed once fitted (in accordance with Appendix B of the CHP). Annual inspections are to be undertaken to ensure the nesting boxes are still in place and in a good state of repair.</p> <p>28. Construction and placement of the artificial hollows must reflect the Local Land Services guidelines "Build your own wildlife nest box" in Attachment 2, Annexure 1.</p> <p>29. Artificial hollows must be constructed of hardwood and represent suitable hollows for a variety of bats, birds and other arboreal mammals.</p>	Yes	<ul style="list-style-type: none"> <li>Nestbox monitoring undertaken as outlined in <b>Appendix E</b>.</li> </ul>
Zone 2	Assisted regeneration of overstorey and midstorey vegetation.	Within 12 months from the commencement of this agreement	<p>30. Planting of trees and shrubs must be undertaken to increase the tree density to at least 25 (or an on-site determined benchmark tree/shrub density) trees and shrubs per hectare and consist of the species present within the surrounding vegetation. Plants must be obtained from locally collected provenances where available.</p> <p>31. Plantings must be monitored, maintained and replaced if necessary, for the first 3 years after planting or until trees are at least 2 metres in height.</p> <p>32. The planting program must aim to have the overstorey and midstorey vegetation cover within benchmark for Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands, within 20 years following approval of this PVP.</p>	Yes	<ul style="list-style-type: none"> <li>Since 2017, Greening Australia have installed a total of 380 overstorey and midstorey species within this zone (152 trees/ha). With continued maintenance of these plantings (including replacement of dead plantings), overstorey and</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
			33. Planting of overstorey trees must not be undertaken within 100m of turbines to discourage roosting/nesting of bird and bat species in close proximity to turbines.		<p>midstorey cover will continue to increase (as the plants mature), gradually approaching benchmark values.</p> <ul style="list-style-type: none"> <li>Quarterly checklists conducted to monitor the success of revegetation efforts.</li> </ul>
Zone 1, 2 and 5	Enrichment of native ground cover and species diversity	Within 12 months from the commencement of this agreement	<p>34. Native seed containing local province grass, forb and shrub species must be broadcast in late winter/early spring for the first three years or until monitoring indicates that native groundcover and diversity has sufficiently increased.</p> <p>35. Seed must be broadcast at a rate of between 2 - 6kg/ha depending on the weed load (higher in weedier areas) or as determined in consultation with an expert in revegetation.</p> <p>36. The seeding program would aim to have the native ground cover vegetation cover within benchmark for Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands, within 20yrs following approval of the PVP. See Management Action 32 for benchmark data.</p>	Yes	<ul style="list-style-type: none"> <li>Groundcover vegetation in Zone 1 and Zone 5 is either approaching, within or exceeding benchmark range (<b>Table 5</b>).</li> <li>Groundcover vegetation (shrubs and other) in Zone 2 is within or exceeding benchmark range (<b>Table 5</b>).</li> <li>Increases in native groundcover (grasses) is required to achieve benchmark in Zone 2 (<b>Table 5</b>).</li> <li>Increases in species diversity are required to achieve benchmark in Zone 1 and Zone 2 (<b>Table 5</b>).</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
					<ul style="list-style-type: none"> <li>▪ Since 2017, the following revegetation efforts have been conducted: <ul style="list-style-type: none"> <li>- Zone 1 – 22kg of seed broadcast and 80 hiko grasses planted.</li> <li>- Zone 2 – 4kg of seed broadcast and 80 hiko grasses planted.</li> <li>- Zone 1, 2, 3 &amp; 5 – 10kg of native seeds broadcast (6kg of <i>Themeda triandra</i> and 4kg of <i>Poa labillardierei</i>) in 2021.</li> </ul> </li> <li>▪ Continued efforts will be required over a number of years to gradually increase the groundcover and diversity within these zones.</li> </ul>
Zone 1, 2, 3, 4 and 5	Quarterly monitoring	5 years from the commencement	37. The Landholder must undertake quarterly (or as otherwise agreed with OEH/LLS) site inspections using Appendix B: checklist form from the 'Compensatory Habitat Package'.	Yes	<ul style="list-style-type: none"> <li>▪ Quarterly site inspections undertaken.</li> </ul>

Map Unit(s)	Management Action	Duration of Management Action	Management Action Details	Compliance	Evidence of compliance / reason for non-compliance
		of this agreement			
Zone 1, 2, 3, 4 and 5	Annual reporting	20 years or for the life of the windfarm (whichever comes first)	<p>38. The Landholder must conduct annual monitoring at the monitoring points shown on Map 1. Monitoring involves collecting plot data in accordance with the BioBanking methodology and taking photographs from fixed photographic points at these monitoring sites.</p> <p>39. The Landholder must also complete an annual review of checklists in the CHP.</p>	Yes	<ul style="list-style-type: none"> <li>Annual vegetation monitoring conducted in November 2021.</li> <li>Annual review undertaken.</li> </ul>
Zone 1, 2, 3, 4 and 5	On-going reporting	20 years or for the life of the windfarm (whichever comes first)	<p>40. The Landholder must provide details of the quarterly inspections and annual review and monitoring in an annual report which will be made available to officers of South East Local Land Services, Office of Environment and Heritage and the Department of Planning and Environment.</p> <p>41. Reporting is to be provided by the landholder within 60 days of the anniversary of PVP approval.</p>	Yes	<ul style="list-style-type: none"> <li>This report.</li> </ul>

### 4.3 Recommendations

The following recommendations are based on the results of the 2021 monitoring, as well as the quarterly monitoring inspections.

Management zone	Management Action Required	Management Action Details
<b>Vegetation Management</b>		
Zone 1, 2, 3 & 5	Monitor previously installed plantings	<ul style="list-style-type: none"> <li>Continued maintenance of current plantings (including replacing dead plantings).</li> </ul>
Zone 1 & 2	<p>Increase the percent cover of native grasses in Zone 2.</p> <p>Increase species richness.</p> <p>Reduce exotic cover.</p>	<ul style="list-style-type: none"> <li>High exotic cover (perennial and annual grasses) was present in both of these zones, which suppresses the regeneration of native species, including regeneration of native seed that has been broadcast.</li> <li>Continued revegetation and weed control efforts are to be undertaken within these zones (see <b>Figure 10</b>), with a focus on reducing perennial and annual grasses in Zone 1 and 2; increasing native grass cover in Zone 2; and increasing native species richness in Zone 1 and 2. Ideally, the zone should be treated over a number of years, with a focus on expanding areas containing good native resilience. Consultation with Greening Australia may be necessary.</li> </ul>
Zone 5	Reduce exotic cover.	<ul style="list-style-type: none"> <li>High exotic cover was present within this zone, which should be gradually reduced to ensure it does not suppress the regeneration of native groundcover species.</li> <li>Spot spraying of exotic species should be conducted within this zone (see <b>Figure 10</b>), with a focus on increasing areas showing the most native resilience. Spot spraying is to be conducted once every 3 months to allow for native regeneration to occur post-spraying.</li> </ul>
<b>Weed management</b>		
All zones	Reduce cover of Blackberry	<ul style="list-style-type: none"> <li>Small infestations of Blackberry (low and moderate density) and spot locations should be sprayed once during the appropriate time of year to prevent seeding and eliminate from the polygon.</li> <li>Any large infestations observed on site (including high density polygons) should be sprayed on the peripheries only (during the appropriate time of year) to prevent mass habitat loss and slowly decrease the extent.</li> <li>Yearly follow up treatments will be required (to be reviewed in next monitoring report).</li> </ul>
All zones	Reduce cover of Serrated Tussock	<ul style="list-style-type: none"> <li>All areas of Serrated Tussock (polygons and weed spot locations) are to be visited and sprayed twice per year.</li> <li>If possible, a spray regime should be conducted for Serrated Tussock within a 10-50m perimeter outside of the Offset Area. The blow in of seed from large areas of</li> </ul>

Management zone	Management Action Required	Management Action Details
		Serrated Tussock makes the management of this weed within the Offset Area difficult.
All zones	Reduce cover of Sifton Bush and Hawthorn.	<ul style="list-style-type: none"> <li>Minor infestations of Sifton Bush and Hawthorn still occur across the site and can be readily managed.</li> <li>All polygons and weed spot locations are to be attended twice per year to treat any remaining infestations.</li> </ul>
<b>Pest Management</b>		
All zones	Conduct pest species control	<ul style="list-style-type: none"> <li>Pest animal control (i.e. shooting) is to be undertaken 4 times per year (once every season) during 2022.</li> </ul>
<b>Monitoring</b>		
All zones	Annual review	<ul style="list-style-type: none"> <li>Annual review to continue to ensure compliance with the CPVP.</li> </ul>
All zones	Vegetation monitoring	<ul style="list-style-type: none"> <li>Annual vegetation monitoring to continue to ensure compliance with the CPVP. Monitoring involves collecting plot data in accordance with the BioBanking methodology and taking photographs from fixed photographic points at these monitoring sites</li> </ul>
All zones	Weed monitoring	<ul style="list-style-type: none"> <li>Weed monitoring to continue on an annual basis to guide the management of priority weeds within the Offset Area.</li> </ul>
All zones	Pest monitoring	<ul style="list-style-type: none"> <li>Annual pest monitoring to be conducted within 2022 over a 3-week period.</li> <li>Frequency of pest monitoring to be revised each year in annual monitoring report, pending yearly pest activity results.</li> </ul>
All zones	Nestbox monitoring	<ul style="list-style-type: none"> <li>Nestbox monitoring to continue to be conducted annually to ensure they are kept in working condition and free of pests.</li> </ul>
<b>Other</b>		
All zones	Rubbish and fence removal	<ul style="list-style-type: none"> <li>Removal of rubbish pile of old fencing and barbed wire within Zone 1 (<b>Figure 10; Plate 5</b>).</li> <li>Kangaroo remains were observed entangled in barbed wire within the Offset Area (<b>Plate 6</b>). Although not a requirement of the CHP or CPVP, it is recommended that any redundant barbed wire fencing within the Offset Area is removed to avoid native fauna entanglement.</li> </ul>

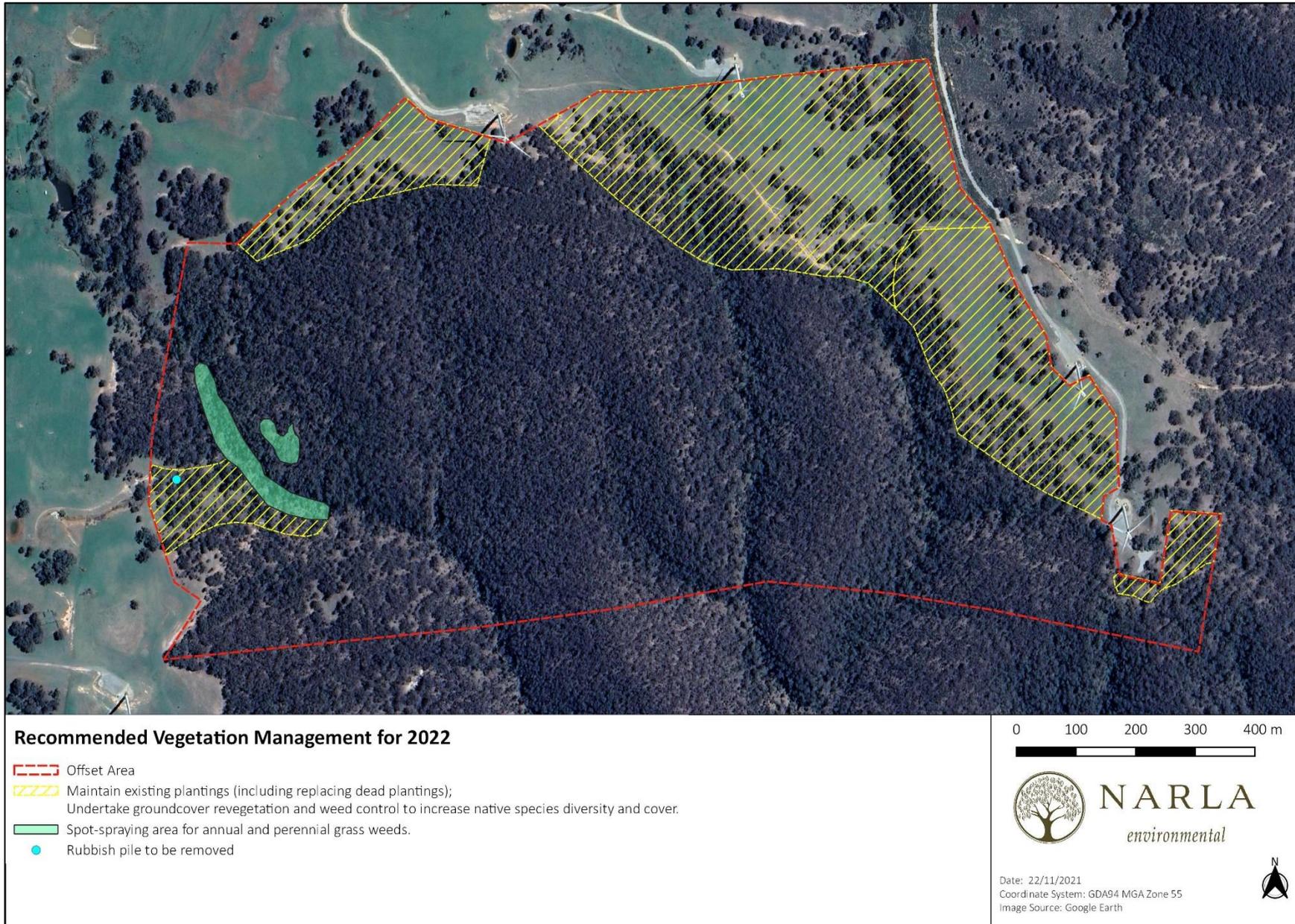


Figure 10. Recommended vegetation management to be conducted within the Offset Area during 2022.



Plate 5. Rubbish pile to be removed within Zone 1.



Plate 6. Kangaroo remains entangled in barbed wire within the Offset Area.

## 5. References

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Australian Government Bureau of Meteorology (BOM) (2021a) Daily Weather Observations: Goulburn TAFE, New South Wales, January-November 2021 <http://www.bom.gov.au>

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NGH Environmental (2016a) Compensatory Habitat Package (GR-PM-PLN-0014) – Gullen Range Wind Farm. Report prepared for Goldwind, July 2016.

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## 6. Appendices

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Appendix A. Vegetation Photo Monitoring Points.

Appendix B. Vegetation Monitoring Plot Data.

Appendix C Weed Photo Monitoring Points.

Appendix D. Pest Control Records for 2021

Appendix E. Annual Nestbox Condition Monitoring Report for 2021.

Appendix F. Revegetation Records for 2021

Appendix G. Quarterly Monitoring Checklists

Appendix H. Annual Monitoring Review for 2021.

Appendix A. Vegetation Photo Monitoring Points.

Monitoring Point: GRMP1

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP1

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP1

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP1

West



2017



2018



2019



2020



2021

Monitoring Point: GRMP2

North-west



2017



2018



2019



2020



2021

Monitoring Point: GRMP2

North-east



2017



2018



2019



2020



2021

Monitoring Point: GRMP2

South-east



2017



2018



2019



2020



2021

Monitoring Point: GRMP2

South-west



2017



2018



2019



2020



2021

Monitoring Point: GRMP3

North-west



2017



2018



2019



2020



2021

Monitoring Point: GRMP3

North-east



2017



2018



2019



2020



2021

Monitoring Point: GRMP3

South-east



2017



2018



2019



2020



2021

Monitoring Point: GRMP3

South-west



2017



2018



2019



2020



2021

Monitoring Point: GRMP4

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP4

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP4

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP4

West



2017



2018



2019



2020



2021

Monitoring Point: GRMP5

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP5

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP5

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP5

West



2017



2018



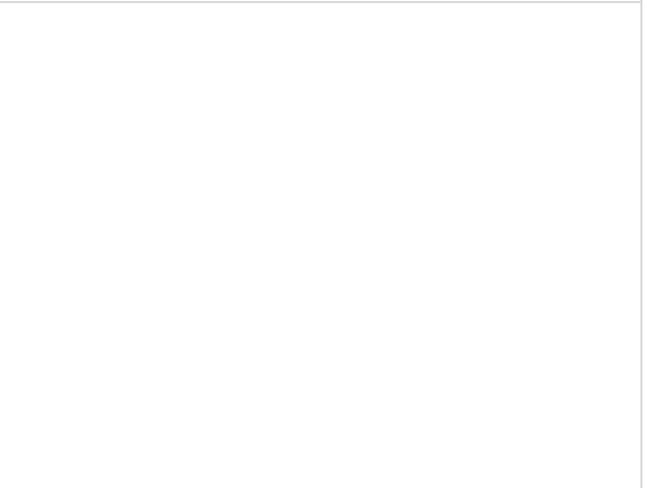
2019



2020



2021



Monitoring Point: GRMP6

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP6

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP6

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP6

West



2017



2018



2019



2020



2021

Monitoring Point: GRMP7

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP7

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP7

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP7

West



2017



2018



2019



2020



2021

Monitoring Point: GRMP8

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP8

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP8

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP8

West



2017



2018



2019



2020



2021

Monitoring Point: GRMP9

North



2017



2018



2019



2020



2021

Monitoring Point: GRMP9

East



2017



2018



2019



2020



2021

Monitoring Point: GRMP9

South



2017



2018



2019



2020



2021

Monitoring Point: GRMP9

West



2017



2018



2019



2020



2021

Monitoring Point: GRMP10

North-east



2017



2018



2019



2020



2021

Monitoring Point: GRMP10

North-west



2017



2018



2019



2020



2021



Monitoring Point: GRMP10

South-east



2017



2018



2019



2020



2021

Monitoring Point: GRMP10

South-west



2017



2018



2019



2020



2021

Appendix B. Vegetation Monitoring Plot Data.

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>	<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	16/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area			
<b>Plot Name</b>	GRMP1			
<b>Start Easting</b>	726922.2	<b>End Easting</b>	726936.4	
<b>Start Northing</b>	6165757.2	<b>End Northing</b>	6165819	
<b>Zone</b>	Management Zone 1			
<b>Vegetation type/condition</b>	Apple Box – Yellow Box Woodland with a predominately exotic understorey			

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m																
Native overstorey cover (%)	0	0	5	15	10	0	0	0	1	15																
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
<b>Point Intersect (m)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
Native Shrub																										
Native Grass																										
Native Other		1	1	1	1	1		1		1				1			1	1	1	1	1	1	1	1	1	1
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1		1			1	
<b>Point Intersect (m)</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>	
Native Shrubs																				1						
Native Grasses																										
Native Other	1	1	1	1			1		1			1	1		1	1		1							1	
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>20m x 50m Quadrat</b>	<b>Number of individual trees with hollows (only hollow ≥5cm diameter): 1</b>														<b>Total length fallen logs in metres (only logs &gt;10cm width): 22m</b>											

Species Native	CA	Species Exotic	CA
<i>Acaena echinata</i>	+	<i>Bromus diandrus</i>	1
<i>Acaena novae-zelandiae</i>	1	<i>Aira elegantissima</i>	R
<i>Eucalyptus bridgesiana</i>	2	<i>Anthoxanthum odoratum</i>	+
<i>Eucalyptus</i> sp.	R	<i>Bromus hordeaceus</i>	2
<i>Geranium gardneri</i>	3	<i>Carduus tenuiflorus</i>	+
<i>Hydrocotyle laxiflora</i>	R	<i>Holcus lanatus</i>	R
<i>Juncus</i> sp.	R	<i>Hypochaeris radicata</i>	1
<i>Oxalis perennans</i>	R	<i>Lolium perenne</i>	+
<i>Rumex brownii</i>	R	<i>Nassella trichotoma</i>	1
<i>Senecio hispidulus</i>	+	<i>Petrarhagia nanteuilii</i>	R
<i>Senecio quadridentatus</i>	+	<i>Plantago lanceolata</i>	R
<i>Stellaria pungens</i>	R	<i>Rubus fruticosus species aggregate</i>	R
<i>Wahlenbergia luteola</i>	R	<i>Rumex acetosella</i>	2
		<i>Sherardia arvensis</i>	R
		<i>Sonchus asper</i>	R

Species Native	CA	Species Exotic	CA
		<i>Sonchus oleraceus</i>	R
		<i>Stellaria media</i>	R
		<i>Trifolium dubium</i>	+
		<i>Trifolium subterraneum</i>	1
		<i>Vulpia</i> sp.	2
CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover			

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	16/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP2				
<b>Start Easting</b>	726630.4	<b>End Easting</b>	726605.3		
<b>Start Northing</b>	6165990.9	<b>End Northing</b>	6165949.5		
<b>Zone</b>	Management Zone 3				
<b>Vegetation type/condition</b>	Broad-leaved Peppermint – Brittle Gum Dry Forest with a diverse native understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m																
Native overstorey cover (%)	20	20	20	20	15	30	15	30	35	35																
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
<b>Point Intersect (m)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
Native Shrub			1	1			1						1													
Native Grass						1	1			1										1						
Native Other	1								1		1	1		1												
Exotic	1	1	1	1	1			1			1	1													1	
<b>Point Intersect (m)</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>	
Native Shrubs																										
Native Grasses		1	1					1			1															
Native Other																										
Exotic																										
<b>20m x 50m Quadrat</b>	<b>Number of individual trees with hollows (only hollow ≥5cm diameter):</b> 1												<b>Total length fallen logs in metres (only logs &gt;10cm width):</b> 160													

Species Native	CA	Species Exotic	CA
<i>Acacia falciformis</i>	+	<i>Aira elegantissima</i>	1
<i>Acaena novae-zelandiae</i>	R	<i>Anthoxanthum odoratum</i>	1
<i>Billardiera scandens</i>	R	<i>Cirsium vulgare</i>	R
<i>Cassinia aculeata</i>	2	<i>Hypochaeris radicata</i>	+
<i>Cymbonotus lawsonianus</i>	R	<i>Rubus fruticosus</i> species aggregate	+
<i>Daucus glochidiatus</i>	+	<i>Rumex acetosella</i>	1
<i>Dichelachne crinita</i>	R	<i>Vulpia</i> sp.	2
<i>Echinopogon</i> sp.	R		
<i>Eucalyptus mannifera</i>	1		
<i>Eucalyptus melliodora</i>	3		
<i>Eucalyptus rossii</i>	2		
<i>Euchiton involucratus</i>	R		
<i>Geranium gardneri</i>	1		
<i>Gonocarpus tetragynus</i>	1		
<i>Goodenia hederacea</i>	+		

Species Native	CA	Species Exotic	CA
<i>Hibbertia obtusifolia</i>	+		
<i>Hydrocotyle laxiflora</i>	1		
<i>Lachnagrostis</i> sp.	R		
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	+		
<i>Luzula</i> sp.	+		
<i>Melichrus urceolatus</i>	R		
<i>Microlaena stipoides</i>	R		
<i>Opercularia hispida</i>	+		
<i>Oxalis perennans</i>	1		
<i>Poranthera microphylla</i>	R		
<i>Senecio minimus</i>	1		
<i>Senecio quadridentatus</i>	1		
<i>Wahlenbergia luteola</i>	+		

CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	16/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP3				
<b>Start Easting</b>	726545.7	<b>End Easting</b>	726573		
<b>Start Northing</b>	6166159.3	<b>End Northing</b>	6166197		
<b>Zone</b>	Management Zone 1				
<b>Vegetation type/condition</b>	Apple Box – Yellow Box Woodland with a predominately low diversity native understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m															
Native overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
<b>Point Intersect (m)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
Native Shrub																					1				
Native Grass						1			1	1	1	1			1	1	1	1	1		1	1		1	
Native Other				1	1		1	1		1						1									
Exotic	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Point Intersect (m)</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>
Native Shrubs																									
Native Grasses	1								1																
Native Other						1		1		1											1				
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>20m x 50m Quadrat</b>	<b>Number of individual trees with hollows (only hollow ≥5cm diameter):</b> 0										<b>Total length fallen logs in metres (only logs &gt;10cm width):</b> 0														

Species Native	CA	Species Exotic	CA
<i>Bulbine bulbosa</i>	+	<i>Aira elegantissima</i>	1
<i>Cassinia aculeata</i>	+	<i>Anthoxanthum odoratum</i>	1
<i>Cassinia sifton</i>	+	<i>Briza minor</i>	R
<i>Cymbonotus lawsonianus</i>	1	<i>Bromus hordeaceus</i>	3
<i>Eucalyptus melliodora</i>	2	<i>Cirsium vulgare</i>	R
<i>Euchiton involucratus</i>	1	<i>Conyza bonariensis</i>	R
<i>Geranium gardneri</i>	+	<i>Holcus lanatus</i>	1
<i>Luzula sp.</i>	+	<i>Hypochaeris radicata</i>	1
<i>Microlaena stipoides</i>	+	<i>Nassella trichotoma</i>	2
<i>Oxalis perennans</i>	R	<i>Petrorhagia nanteuillii</i>	R
<i>Poa labillardierei</i>	2	<i>Plantago lanceolata</i>	R
<i>Schoenus apogon</i>	1	<i>Rubus fruticosus</i> species aggregate	R
<i>Themeda triandra</i>	1	<i>Rumex acetosella</i>	1
		<i>Trifolium dubium</i>	1
		<i>Trifolium subterraneum</i>	+
		<i>Vulpia sp.</i>	2

Species Native	CA	Species Exotic	CA
CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover			

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	17/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP4				
<b>Start Easting</b>	726138.9	<b>End Easting</b>	726127.3		
<b>Start Northing</b>	6166164.7	<b>End Northing</b>	6166208		
<b>Zone</b>	Management Zone 3				
<b>Vegetation type/condition</b>	Broad-leaved Peppermint – Brittle Gum Dry Forest with a diverse native understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m																
Native overstorey cover (%)	0	20	30	35	20	35	25	35	0	0																
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Point Intersect (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Native Shrub				1										1												
Native Grass			1		1				1			1		1	1	1	1								1	
Native Other						1		1											1							
Exotic																										
Point Intersect (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
Native Shrubs														1												
Native Grasses			1		1	1	1						1					1		1	1					
Native Other								1	1	1									1						1	
Exotic																										
20m x 50m Quadrat	Number of individual trees with hollows (only hollow ≥5cm diameter): 0													Total length fallen logs in metres (only logs >10cm width): 1												

Species Native	CA	Species Exotic	CA
<i>Acacia dealbata</i>	R	<i>Aira elegantissima</i>	+
<i>Acacia gunnii</i>	R	<i>Holcus lanatus</i>	R
<i>Billardiera scandens</i>	R	<i>Hypochaeris radicata</i>	+
<i>Brachyloma daphnoides</i>	R	<i>Nassella trichotoma</i>	R
<i>Cassinia aculeata</i>	1	<i>Rubus fruticosus</i> species aggregate	R
<i>Cymbonotus lawsonianus</i>	1	<i>Rumex acetosella</i>	1
<i>Eucalyptus dives</i>	3		
<i>Eucalyptus mannifera</i>	2		
<i>Gonocarpus tetragynus</i>	1		
<i>Goodenia hederacea</i>	1		
<i>Hibbertia obtusifolia</i>	1		
<i>Hovea heterophylla</i>	R		
<i>Hydrocotyle laxiflora</i>	1		
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1		
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1		
<i>Melichrus urceolatus</i>	1		

Species Native	CA	Species Exotic	CA
<i>Microlaena stipoides</i>	+		
<i>Pimelea linifolia</i>	R		
<i>Poa sieberiana</i>	3		
<i>Poranthera microphylla</i>	+		
<i>Rytidosperma</i> sp.	1		
<i>Senecio quadridentatus</i>	+		
<i>Stylidium graminifolium</i>	+		
CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover			

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	17/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP5				
<b>Start Easting</b>	725866.5	<b>End Easting</b>	725810		
<b>Start Northing</b>	6166183.9	<b>End Northing</b>	6166177.8		
<b>Zone</b>	Management Zone 1				
<b>Vegetation type/condition</b>	Apple Box – Yellow Box Woodland with a predominately low diversity native understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m															
Native overstorey cover (%)	0	0	0	0	50	50	5	0	50	35															
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	15															
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Point Intersect (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Native Shrub																									
Native Grass	1	1	1	1	1			1	1				1		1	1			1	1	1				
Native Other		1	1	1		1	1	1	1	1	1	1	1	1	1	1									
Exotic		1			1							1	1	1	1	1	1	1	1	1	1	1	1	1	1
Point Intersect (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Native Shrubs																									
Native Grasses							1	1		1	1		1		1			1	1		1			1	1
Native Other																1									
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20m x 50m Quadrat	Number of individual trees with hollows (only hollow ≥5cm diameter): 0												Total length fallen logs in metres (only logs >10cm width): 2												

Species Native	CA	Species Exotic	CA
<i>Acacia implexa</i>	R	<i>Aira elegantissima</i>	1
<i>Cassinia aculeata</i>	R	<i>Anthoxanthum odoratum</i>	3
<i>Drosera auriculata</i>	1	<i>Briza maxima</i>	2
<i>Eucalyptus dives</i>	R	<i>Briza minor</i>	1
<i>Eucalyptus mannifera</i>	2	<i>Centaurium sp.</i>	+
<i>Euchiton involucratus</i>	+	<i>Holcus lanatus</i>	1
<i>Gonocarpus tetragynus</i>	1	<i>Hypochaeris radicata</i>	+
<i>Hypericum gramineum</i>	+	<i>Nassella trichotoma</i>	R
<i>Juncus subsecundus</i>	+	<i>Petrorhagia nanteuillii</i>	R
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1	<i>Trifolium dubium</i>	1
<i>Luzula sp.</i>	R	<i>Vulpia sp.</i>	1
<i>Melichrus urceolatus</i>	+		
<i>Microlaena stipoides</i>	2		
<i>Poa labillardierei</i>	1		
<i>Poa sieberiana</i>	1		
<i>Rytidosperma sp.</i>	1		

Species Native	CA	Species Exotic	CA
<i>Schoenus apogon</i>	3		
CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover			

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	17/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP6				
<b>Start Easting</b>	725671.1	<b>End Easting</b>	725654.5		
<b>Start Northing</b>	6165777.9	<b>End Northing</b>	6165828.8		
<b>Zone</b>	Management Zone 3				
<b>Vegetation type/condition</b>	Mountain Gum – Broad-leaved Peppermint Forest/Apple Box – Broad-leaved Peppermint Forest with a diverse native understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m																
Native overstorey cover (%)	20	40	40	5	10	15	30	5	30	5																
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Point Intersect (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Native Shrub																										
Native Grass	1	1														1					1					
Native Other	1		1	1	1	1	1		1	1	1	1				1	1	1	1				1	1	1	1
Exotic	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Point Intersect (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
Native Shrubs																										1
Native Grasses							1	1	1				1													
Native Other		1	1	1	1	1			1	1				1	1	1	1	1		1	1					
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20m x 50m Quadrat	Number of individual trees with hollows (only hollow ≥5cm diameter): 1												Total length fallen logs in metres (only logs >10cm width): 64													

Species Native	CA	Species Exotic	CA
<i>Acaena echinata</i>	1	<i>Aira elegantissima</i>	1
<i>Ajuga australis</i>	1	<i>Anthoxanthum odoratum</i>	1
<i>Asperula conferta</i>	+	<i>Briza maxima</i>	1
<i>Calotis scabiosifolia</i>	R	<i>Briza minor</i>	+
<i>Cassinia aculeata</i>	1	<i>Bromus hordeaceus</i>	1
<i>Cymbonotus lawsonianus</i>	1	<i>Centaurium</i> sp.	1
<i>Daucus glochidiatus</i>	R	<i>Holcus lanatus</i>	1
<i>Dichondra repens</i>	1	<i>Hypochaeris radicata</i>	1
<i>Echinopogon ovatus</i>	+	<i>Sherardia arvensis</i>	R
<i>Eucalyptus bridgesiana</i>	2	<i>Sonchus asper</i>	R
<i>Eucalyptus dives</i>	3	<i>Trifolium dubium</i>	1
<i>Euchiton involucratus</i>	+	<i>Trifolium repens</i>	R
<i>Geranium gardneri</i>	3	<i>Vulpia</i> sp.	5
<i>Gonocarpus tetragynus</i>	1		
<i>Hydrocotyle laxiflora</i>	1		
<i>Hypericum gramineum</i>	R		

Species Native	CA	Species Exotic	CA
<i>Luzula sp.</i>	R		
<i>Melichrus urceolatus</i>	1		
<i>Microlaena stipoides</i>	1		
<i>Plantago varia</i>	2		
<i>Poa sieberiana</i>	1		
<i>Poranthera microphylla</i>	R		
<i>Pteridium esculentum</i>	+		
<i>Ranunculus lappaceus</i>	1		
<i>Schoenus apogon</i>	R		
<i>Senecio quadridentatus</i>	1		
<i>Stackhousia monogyna</i>	1		
CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover			

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	17/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP6a				
<b>Start Easting</b>	725671.1	<b>End Easting</b>	725697.6		
<b>Start Northing</b>	6165777.9	<b>End Northing</b>	6165370.9		
<b>Zone</b>	Management Zone 5				
<b>Vegetation type/condition</b>	Localised Apple Box dominated area where a more open canopy has facilitated the invasion of Serrated Tussock				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m															
Native overstorey cover (%)	60	10	0	5	0	15	0	0	0	20															
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Point Intersect (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Native Shrub																									1
Native Grass		1		1			1	1			1	1			1	1					1		1	1	
Native Other	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1			1	1	1
Exotic	1		1		1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1		1	
Point Intersect (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Native Shrubs								1							1										
Native Grasses			1	1				1				1													
Native Other	1	1		1	1		1	1		1							1			1		1	1	1	
Exotic	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
20m x 50m Quadrat	Number of individual trees with hollows (only hollow ≥5cm diameter): 0												Total length fallen logs in metres (only logs >10cm width): 13												

Species Native	CA	Species Exotic	CA
<i>Acacia mearnsii</i>	R	<i>Aira elegantissima</i>	1
<i>Acaena echinata</i>	1	<i>Anthoxanthum odoratum</i>	1
<i>Ajuga australis</i>	1	<i>Briza maxima</i>	1
<i>Asperula conferta</i>	+	<i>Centaureum</i> sp.	2
<i>Cassinia aculeata</i>	1	<i>Holcus lanatus</i>	+
<i>Cymbonotus lawsonianus</i>	1	<i>Hypochaeris radicata</i>	+
<i>Daucus glochidiatus</i>	R	<i>Lysimachia arvensis</i>	+
<i>Drosera auriculata</i>	+	<i>Nassella trichotoma</i>	+
<i>Echinopogon ovatus</i>	R	<i>Rubus fruticosus</i> species aggregate	R
<i>Eucalyptus bridgesiana</i>	2	<i>Sherardia arvensis</i>	R
<i>Eucalyptus dives</i>	R	<i>Trifolium dubium</i>	R
<i>Euchiton involucratus</i>	1	<i>Vulpia</i> sp.	5
<i>Geranium gardneri</i>	1		
<i>Gonocarpus tetragynus</i>	+		
<i>Hydrocotyle laxiflora</i>	1		
<i>Hypericum gramineum</i>	1		

Species Native	CA	Species Exotic	CA
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	R		
<i>Luzula</i> sp.	R		
<i>Melichrus urceolatus</i>	1		
<i>Microlaena stipoides</i>	1		
<i>Plantago varia</i>	1		
<i>Poa sieberiana</i>	1		
<i>Poranthera microphylla</i>	1		
<i>Pteridium esculentum</i>	+		
<i>Ranunculus lappaceus</i>	1		
<i>Schoenus apogon</i>	1		
<i>Scutellaria humilis</i>	R		
<i>Senecio quadridentatus</i>	1		
<i>Veronica calycina</i>	R		
<i>Viola betonicifolia</i>	R		

CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	17/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP7				
<b>Start Easting</b>	725620.6	<b>End Easting</b>	725612.4		
<b>Start Northing</b>	6165753.6	<b>End Northing</b>	6165798.7		
<b>Zone</b>	Management Zone 4				
<b>Vegetation type/condition</b>	Ribbon Gum Forest with a mixed native and exotic understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m																
Native overstorey cover (%)	15	10	5	20	30	15	20	20	40	20																
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0																
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0																
<b>Point Intersect (m)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
Native Shrub																1	1	1		1				1		
Native Grass		1		1		1		1																		1
Native Other	1	1	1	1		1	1	1	1	1		1	1	1	1		1	1	1	1	1	1	1		1	
Exotic	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Point Intersect (m)</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>	
Native Shrubs				1	1	1		1		1		1	1								1	1		1	1	
Native Grasses		1	1	1																					1	
Native Other				1	1		1	1		1		1		1		1	1	1	1	1	1				1	
Exotic	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>20m x 50m Quadrat</b>	<b>Number of individual trees with hollows (only hollow ≥5cm diameter):</b> 1										<b>Total length fallen logs in metres (only logs &gt;10cm width):</b> 81															

Species Native	CA	Species Exotic	CA
<i>Acacia dealbata</i>	R	<i>Anthoxanthum odoratum</i>	1
<i>Acaena novae-zelandiae</i>	1	<i>Briza minor</i>	1
<i>Amyema</i> sp.	R	<i>Bromus diandrus</i>	1
<i>Asperula conferta</i>	1	<i>Bromus hordeaceus</i>	2
<i>Cassinia aculeata</i>	1	<i>Centaurium</i> sp.	+
<i>Cymbonotus lawsonianus</i>	1	<i>Cirsium vulgare</i>	1
<i>Eucalyptus bridgesiana</i>	R	<i>Holcus lanatus</i>	3
<i>Eucalyptus dalrympleana</i>	3	<i>Hypochaeris radicata</i>	1
<i>Eucalyptus dives</i>	R	<i>Rubus fruticosus</i> species aggregate	+
<i>Euchiton involucratus</i>	1	<i>Rumex acetosella</i>	+
<i>Geranium gardneri</i>	2	<i>Stellaria media</i>	+
<i>Hydrocotyle laxiflora</i>	2	<i>Vulpia</i> sp.	3
<i>Indigofera australis</i>	R		
<i>Microlaena stipoides</i>	1		
<i>Plantago varia</i>	1		
<i>Poa labillardierei</i>	R		

Species Native	CA	Species Exotic	CA
<i>Pteridium esculentum</i>	+		
<i>Ranunculus lappaceus</i>	1		
<i>Schoenus apogon</i>	1		
<i>Senecio hispidulus</i>	1		
<i>Senecio quadridentatus</i>	2		
<i>Stellaria pungens</i>	+		

CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	17/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP8				
<b>Start Easting</b>	725623.2	<b>End Easting</b>	725624.8		
<b>Start Northing</b>	6165528.1	<b>End Northing</b>	6165569.8		
<b>Zone</b>	Management Zone 3				
<b>Vegetation type/condition</b>	Broad-leaved Peppermint – Brittle Gum Dry Forest with a diverse native understorey				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m															
Native overstorey cover (%)	35	20	10	5	10	15	5	15	15	1															
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Point Intersect (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Native Shrub						1							1	1			1								1
Native Grass	1	1	1	1	1	1		1						1	1					1	1	1			1
Native Other	1						1		1										1	1					
Exotic																									
Point Intersect (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Native Shrubs																									
Native Grasses																									
Native Other												1													1
Exotic																	1								
20m x 50m Quadrat	Number of individual trees with hollows (only hollow ≥5cm diameter): 0												Total length fallen logs in metres (only logs >10cm width): 31												

Species Native	CA	Species Exotic	CA
<i>Acacia falciformis</i>	1	<i>Hypochaeris radicata</i>	1
<i>Acacia gunnii</i>	R	<i>Lolium perenne</i>	R
<i>Acacia mearnsii</i>	1	<i>Rubus fruticosus</i> species aggregate	R
<i>Amyema</i> sp.	R	<i>Vulpia</i> sp.	1
<i>Billardiera scandens</i>	R		
<i>Cassinia aculeata</i>	1		
<i>Cheilanthes sieberi</i>	R		
<i>Dichelachne</i> sp.	+		
<i>Eucalyptus dives</i>	3		
<i>Eucalyptus mannifera</i>	3		
<i>Galium</i> sp.	R		
<i>Gonocarpus tetragynus</i>	1		
<i>Goodenia hederacea</i>	1		
<i>Hibbertia obtusifolia</i>	1		
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1		

Species Native	CA	Species Exotic	CA
<i>Melichrus urceolatus</i>	+		
<i>Microlaena stipoides</i>	1		
<i>Oxalis perennans</i>	R		
<i>Poranthera microphylla</i>	1		
<i>Rytidosperma</i> sp.	2		
<i>Stypandra glauca</i>	1		
CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover			

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>		<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	16/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area				
<b>Plot Name</b>	GRMP9				
<b>Start Easting</b>	726861	<b>End Easting</b>	726863		
<b>Start Northing</b>	6165991	<b>End Northing</b>	6165941		
<b>Zone</b>	Management Zone 2				
<b>Vegetation type/condition</b>	Apple Box – Yellow Box Woodland with a predominately exotic understorey (no overstorey)				

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m															
Native overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Point Intersect (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Native Shrub																									
Native Grass																									
Native Other	1		1	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1					
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Point Intersect (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Native Shrubs																									
Native Grasses																	1	1	1		1	1	1	1	1
Native Other			1	1	1	1		1	1								1	1	1	1	1	1			
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1			1	
20m x 50m Quadrat	Number of individual trees with hollows (only hollow ≥5cm diameter): 0												Total length fallen logs in metres (only logs >10cm width): 0												

Species Native	CA	Species Exotic	CA
<i>Acaena echinata</i>	1	<i>Aira elegantissima</i>	R
<i>Geranium gardneri</i>	2	<i>Anthoxanthum odoratum</i>	3
<i>Microlaena stipoides</i>	1	<i>Bromus hordeaceus</i>	3
<i>Poa labillardierei</i>	+	<i>Cirsium vulgare</i>	R
<i>Rumex brownii</i>	R	<i>Holcus lanatus</i>	1
<i>Wahlenbergia luteola</i>	R	<i>Hypochaeris glabra</i>	R
		<i>Hypochaeris radicata</i>	1
		<i>Nassella trichotoma</i>	1
		<i>Petrorhagia nanteuilii</i>	+
		<i>Rumex acetosella</i>	1
		<i>Sonchus asper</i>	R
		<i>Taraxacum officinale</i>	R
		<i>Trifolium dubium</i>	1
		<i>Vulpia sp.</i>	4

CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover

**Monitoring Plot Data Sheet (Biometric)**

<b>Plot Information</b>	<b>Recorders</b>	Sarah Cardenzana	<b>Date</b>	16/11/2021
<b>Site Name/Code</b>	Gullen Range Wind Farm Offset Area			
<b>Plot Name</b>	GRMP10			
<b>Start Easting</b>	726533	<b>End Easting</b>	726567	
<b>Start Northing</b>	6166243	<b>End Northing</b>	6166282	
<b>Zone</b>	Management Zone 1			
<b>Vegetation type/condition</b>	Apple Box – Yellow Box Woodland with a predominately low diversity native understorey (derived grassland)			

Average Canopy Cover (Specht)	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m															
Native overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Native mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0															
Exotic mid-cover (%)	0	0	0	0	0	0	0	0	0	0															
<b>Point Intersect (m)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
Native Shrub																									
Native Grass							1						1											1	1
Native Other			1	1	1		1	1	1		1	1	1	1		1		1		1	1	1	1	1	1
Exotic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Point Intersect (m)</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>
Native Shrubs																									
Native Grasses	1			1	1				1			1	1	1	1	1				1	1			1	
Native Other	1		1	1		1	1		1									1							
Exotic		1	1			1	1	1	1	1	1		1	1		1	1	1	1	1	1	1	1	1	1
<b>20m x 50m Quadrat</b>	<b>Number of individual trees with hollows (only hollow ≥5cm diameter):</b> 0												<b>Total length fallen logs in metres (only logs &gt;10cm width):</b> 0												

Species Native	CA	Species Exotic	CA
<i>Acacia mearnsii</i>	R	<i>Anthoxanthum odoratum</i>	1
<i>Acaena echinata</i>	R	<i>Bromus diandrus</i>	1
<i>Eucalyptus bridgesiana</i>	R	<i>Bromus hordeaceus</i>	3
<i>Geranium gardneri</i>	3	<i>Carduus tenuiflorus</i>	R
<i>Microlaena stipoides</i>	+	<i>Holcus lanatus</i>	3
<i>Poa labillardierei</i>	2	<i>Hypericum perforatum</i>	R
<i>Rumex brownii</i>	R	<i>Hypochaeris radicata</i>	2
		<i>Oxalis corniculata</i>	1
		<i>Rumex acetosella</i>	1
		<i>Trifolium subterraneum</i>	2
		<i>Vulpia sp.</i>	3

CA (Cover Abundance modified Braun-Blanquet scale): R = Rare (<4) individuals present; + = Few (4-15) individuals present; 1 = A number of individuals present, less than 5% cover; 2 = 5 - <20% cover; 3 = 20 - <50% cover; 4 = 50 - <75% cover; 5 = 75-100% cover

Appendix C Weed Photo Monitoring Points.

Monitoring Point: GRWPP1

North



2017



2018



2019



2020



2021

Monitoring Point: GRWPP1

East



2017



2018



2019



2020



2021

Monitoring Point: GRWPP1

South



2017



2018



2019



2020



2021

Monitoring Point: GRWPP1

West



2017



2018



2019



2020



2021

Monitoring Point: GRWPP2

North-west



2017



2018



2019



2020

No data

2021

Monitoring Point: GRWPP2

North-east



2017



2018



2019



2020



2021



Monitoring Point: GRWPP2

South-east



2017



2018



2019



2020



2021

Monitoring Point: GRWPP2

South-west



2017



2018



2019



2020



2021

Monitoring Point: GRWPP3

North-west



2017



2018



2019



2020



2021

Monitoring Point: GRWPP3

North-east



2017



2018



2019



2020



2021

Monitoring Point: GRWPP3

South-east



2017



2018



2019



2020



2021



Monitoring Point: GRWPP3

South-west



2017



2018



2019



2020



2021

Monitoring Point: GRWPP4

North



2017



2018



2019



2020



2021

Monitoring Point: GRWPP4

East



2017



2018



2019



2020

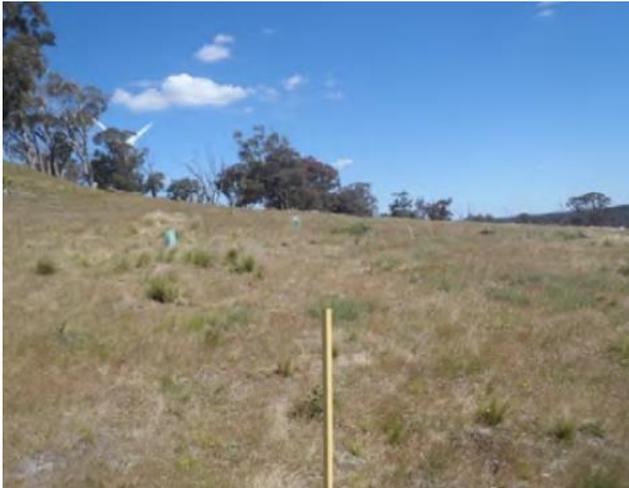


2021



Monitoring Point: GRWPP4

South



2017



2018



2019



2020



2021



Monitoring Point: GRWPP4

West



2017



2018



2019



2020



2021

Monitoring Point: GRWPP5

North



2017



2018



2019



2020



2021



Monitoring Point: GRWPP5

East



2017



2018



2019



2020



2021



Monitoring Point: GRWPP5

South



2017



2018



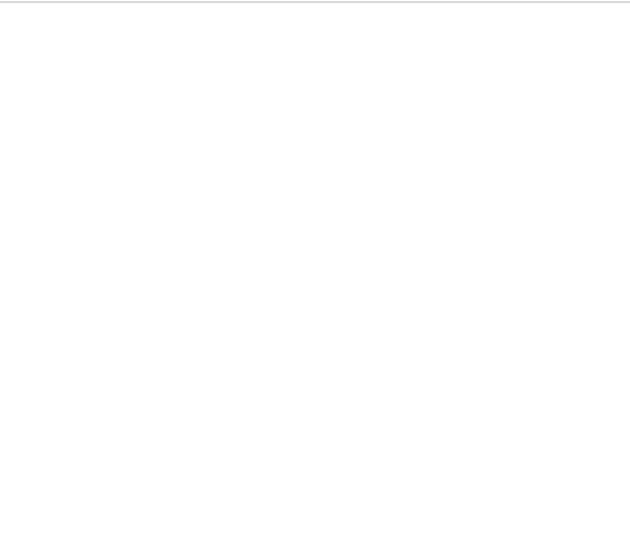
2019



2020



2021



Monitoring Point: GRWPP5

West



2017



2018



2019



2020



2021



Monitoring Point: GRWPP6

North



2017



2018



2019



2020



2021



Monitoring Point: GRWPP6

East



2017



2018



2019



2020



2021



Monitoring Point: GRWPP6

South



2017



2018



2019



2020



2021



Monitoring Point: GRWPP6

West



2017



2018



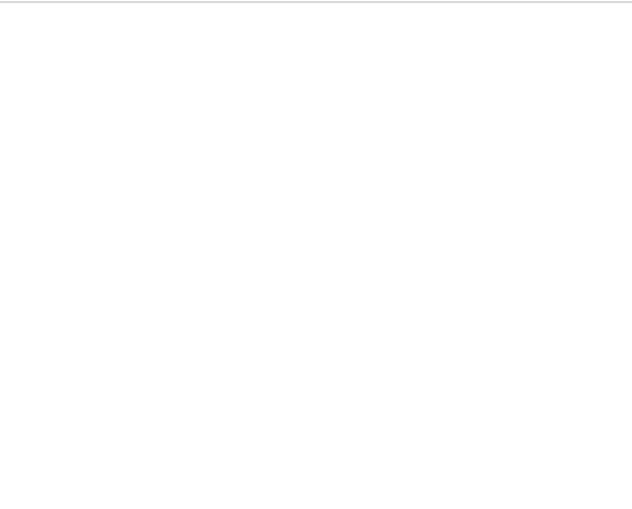
2019



2020



2021



Monitoring Point: GRWPP7

North



2017



2018



2019



2020



2021



Monitoring Point: GRWPP7

East



2017



2018



2019



2020



2021

Monitoring Point: GRWPP7

South



2017



2018



2019



2020



2021

Monitoring Point: GRWPP7

West



2017



2018



2019



2020



2021

Monitoring Point: GRWPP8

North



2017



2018



2019



2020



2021

Monitoring Point: GRWPP8

East



2017



2018



2019



2020



2021



Monitoring Point: GRWPP8

South



2017



2018



2019



2020



2021

Monitoring Point: GRWPP8

West



2017



2018



2019



2020



2021

Monitoring Point: GRWPP9

North



2017



2018



2019



2020



2021



Monitoring Point: GRWPP9

East



2017



2018



2019



2020



2021

Monitoring Point: GRWPP9

South



2017



2018



2019



2020



2021

Monitoring Point: GRWPP9

West



2017



2018



2019



2020



2021

Monitoring Point: GRWPP10

North



2017



2018



2019



2020



2021

Monitoring Point: GRWPP10

East



2017



2018



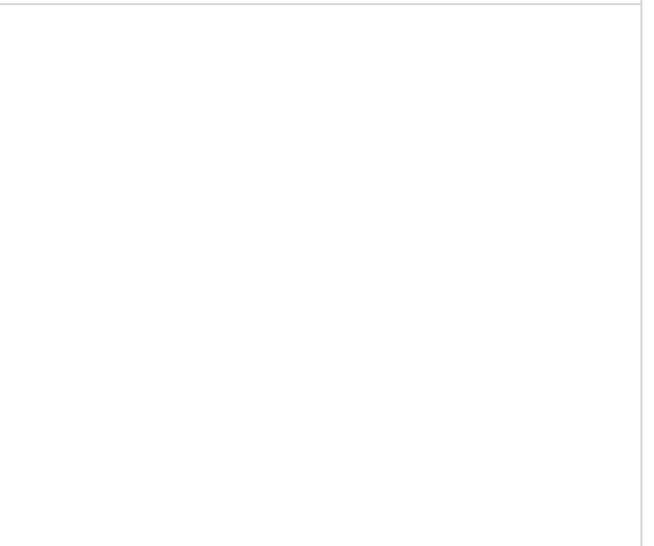
2019



2020



2021



Monitoring Point: GRWPP10

South



2017



2018



2019



2020



2021



Monitoring Point: GRWPP10

West



2017



2018



2019



2020



2021

Monitoring Point: GRWPP11

North



2017



2018



2019



2020



2021

Monitoring Point: GRWPP11

East



2017



2018



2019



2020



2021



Monitoring Point: GRWPP11

South



2017



2018



2019



2020



2021

Monitoring Point: GRWPP11

West



2017



2018



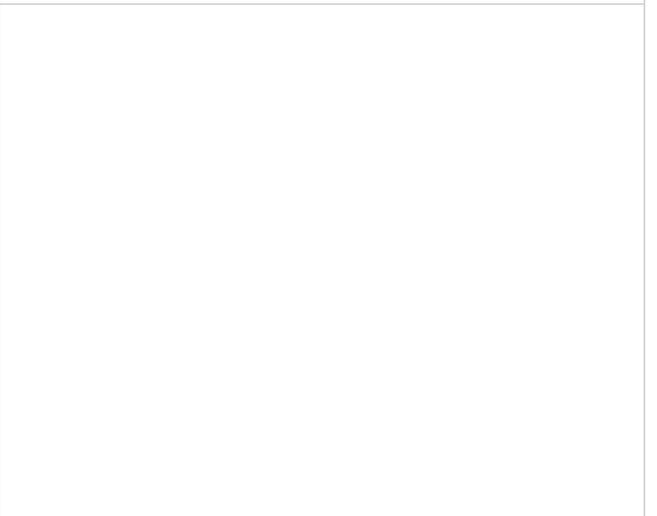
2019



2020



2021





Appendix E. Annual Nestbox Condition Monitoring Report for 2021.

# Annual Nest Box Condition Monitoring Report: Gullen Range Wind Farm - PVP Offset Area

Prepared by Spatial Footprints

ABN: 56 805 462 327

Report produced by Alexandra Ullrich, 29<sup>th</sup> April 2021.

Document Reference: SF\_R003\_20210429



All photographs in this report were taken during the inspection on 8<sup>th</sup> March 2021.

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## 1.0 Introduction

This report outlines the 2021 findings of the annual nest box inspection program at the Gullen Range Wind Farm (GRWF). Thirty nest boxes within Zones 1, 2, 3, 4, and 5 of the GRWF PVP Offset Area were inspected on the 8<sup>TH</sup> March 2021. Nest boxes were inspected to ensure they remain in good working condition; remain securely in place and are free of unwanted pest species as specified by Management Action 26 of the PVP.

## 2.0 Monitoring and Maintenance Methods

The nest box condition monitoring was carried out by Alexandra Ullrich (Spatial Footprints) who has been trained in ecological surveying techniques and is accredited to Work at Heights. Alexandra was accompanied by a NGRWF staff member for safety and guidance around the Site. Condition monitoring involved carrying out a visual inspection focusing on the following areas:

- a) The overall condition of the boxes including damaged, rotting or splitting timber and clear openings;
- b) The securing mechanisms of the box to the host tree (i.e., the *Habisure* system); the position of the nest box on the tree and checking that the box is securely fastened whilst allowing for tree growth; and,
- c) Checking for pest species or evidence of pest species such as rats, bees or Indian Mynas.

To minimise nest box disturbance, nest boxes and their contents were carefully inspected using a ground-based technique. Using a camera mounted on a telescopic pole, nest boxes located up to 7m above ground were able to be inspected from the ground. An iPad was used to remotely view the condition of the boxes from the ground and wirelessly control the capture of video and images.

During the field inspection, observations were recorded using a pro-forma field data sheet noting the condition of each individual nest box and its contents. Boxes were recorded as being in good condition if they were fit for use and did not need any repairs. Photographs and videos were taken of nest boxes found in fair condition, (i.e., damaged or deteriorated) and of any evidence of box use, i.e., scats, nest materials or live fauna. Findings are presented in Tables 1 & 2 and representative images of the box's contents are included at Appendix A.

Once the nest boxes were checked to be clear of nesting fauna (as described above), maintenance and repairs were carried out using an extendable ladder and appropriate safety equipment. Using a cordless drill to predrill the screw holes, additional screws were installed to secure external plywood layers that were separating due to weathering. To protect the external surfaces of weathered nest boxes, Lanotec Timber Seal was applied to the external surfaces of the boxes using an 8L pump spray bottle with nozzle.

## 3.0 Results

### 3.1 Nest Box Condition

Most of the nest boxes inspected, i.e., 26 out of the 30 (or approximately 87%) were in found to be in good overall condition with most only showing minor signs of weathering such as discolouration of the untreated plywood. Three of the four remaining nest boxes had delaminating plywood layers (C2-7, C4-1, & C4-3). The delamination of the plywood layers on the lid of nest box C2-7 was previously reported in the 2020 inspection report. The fourth nest box (C2-2) was not able to be inspected as it was infested with a feral beehive. Refer to Table 1 for more details.

**Table 1.** Inspection results of 30 Nest Boxes within GRWF Offset Area on 8<sup>th</sup> March 2021. Maintenance & Repair Key: **TO** = Timber Oil Applied; **LAB** = Relabelled; **AS** = Additional Screws Installed, and **LID** = Lid Replaced.

Box No.	Nest Box Type	Nest Box Secure	Pest Species	Initial Condition & Maintenance/Repairs	Condition Post-Maintenance
C1-1	Small Parrot	Yes	No	Good (TO & LAB)	Good
C1-2	Medium Parrot	Yes	No	Good (TO & LAB)	Good
C1-3	Small Parrot	Yes	No	Good (TO & LAB)	Good
C1-4	Rear-Entry Squirrel Glider	Yes	No	Good (TO & LAB)	Good
C1-5	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C1-6	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C2-1	Medium Parrot	Yes	No	Good (TO & LAB)	Good
C2-2	Rear-Entry Squirrel Glider	Yes	Yes - feral bees	Not inspected (due to feral beehive)	Needs replacing
C2-3	Owlet-nightjar	Yes	No	Good (TO & LAB)	Good
C2-4	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C2-5	Medium Parrot	Yes	No	Good (TO & LAB)	Good
C2-6	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C2-7	Kookaburra	Yes	No	Fair – mod. delamination (TO, LID, AS & LAB)	Good
C2-8	Medium Parrot	Yes	No	Good (TO & LAB)	Good
C3-1	Owlet-nightjar	Yes	No	Good (TO & LAB)	Good
C3-2	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C3-3	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C3-4	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C3-5	Kookaburra	Yes	No	Good (TO & LAB)	Good
C3-6	Rear-Entry Micro-Bat	Yes	No	Good (TO & LAB)	Good
C3-7	Owlet-nightjar	Yes	No	Good (TO & LAB)	Good
C3-8	Feather tail glider	Yes	No	Good (TO & LAB)	Good
C3-9	Small Parrot	Yes	No	Good – nil maintenance (Faunal occupation)	Good
C3-10	Medium Parrot	Yes	No	Good – nil maintenance (Faunal occupation)	Good
C4-1	Small Parrot	Yes	No	Fair – minor delamination (TO, AS & LAB)	Good
C4-2	Medium Parrot	Yes	No	Good (TO & LAB)	Good
C4-3	Medium Parrot	Yes	No	Fair – minor delamination (TO, AS & LAB)	Good
C4-4	Feathertail glider	Yes	No	Good (TO & LAB)	Good
C5-1	Kookaburra	Yes	No	Good (TO)	Good
C5-2	Kookaburra	Yes	No	Good (TO)	Good

**Table 2.** Contents and occupants of 30 nest boxes recorded during condition monitoring inspection on 8th March 2021. The previous monitoring results from 7<sup>th</sup> May 2020 are included for comparison.

Box No.	Box Type	Contents (Mar. 2021)	Contents (May 2020)
C1-1	Small Parrot	bark and twigs	bark and twigs
C1-2	Medium Parrot	bark strips	<b>1 Ringtail Possum</b>
C1-3	Small Parrot	brown leaves, bark and twigs	green and brown leaves
C1-4	Rear-Entry Squirrel Glider	green leaf nest	<b>1 Sugar Glider</b>
C1-5	Rear-Entry Micro-Bat	-	-
C1-6	Rear-Entry Micro-Bat	-	-
C2-1	Medium Parrot	green leaf nest	glider leaf nest
C2-2	Rear-Entry Squirrel Glider	<b>Beehive (European honey bee)</b>	<b>1 Sugar Glider</b>
C2-3	Owlet nightjar	green leaves and twigs	<b>1 Ringtail Possum</b>
C2-4	Rear-Entry Micro-Bat	-	-
C2-5	Medium Parrot	brown leaves and bark strips	brown leaves and bark strips
C2-6	Rear-Entry Micro-Bat	-	-
C2-7	Kookaburra	bark strips and twigs	brown leaves and bark strips
C2-8	Medium Parrot	green leaves and twigs	green leaves
C3-1	Owlet-nightjar	-	-
C3-2	Rear-Entry Micro-Bat	-	-
C3-3	Rear-Entry Micro-Bat	-	-
C3-4	Rear-Entry Micro-Bat	-	-
C3-5	Kookaburra	brown leaves, bark and twigs	green leaves, bark and twigs
C3-6	Rear-Entry Micro-Bat	-	-
C3-7	Owlet-nightjar	green leaves	brown leaves
C3-8	Feathertail Glider	-	green leaves
C3-9	Small Parrot	<b>1 Ringtail Possum</b>	green and brown leaves
C3-10	Medium Parrot	<b>4 Sugar Gliders</b>	glider leaf nest
C4-1	Small Parrot	green leaf nest	green leaves
C4-2	Medium Parrot	-	-
C4-3	Medium Parrot	-	-
C4-4	Feathertail Glider	green leaf nest	glider leaf nest with fur
C5-1	Kookaburra	green leaves and twigs	-
C5-2	Kookaburra	-	-

### 3.2 Maintenance and Repairs

In-field maintenance and repair work was carried out on three nest boxes that had delaminating plywood layers returning them to a functional, good overall condition (refer to Table 1). Maintenance and repair work included resecuring outer delaminating plywood layers with additional screws and replacing the lid on large kookaburra nest box C2-7 with a new custom-made lid made from 18mm A grade marine plywood (see photographs at Figure 1). Nest boxes with faded labels were relabelled with a permanent black marker prior to the application of Lanotec Timber Seal. See Table 1 and the Maintenance Key for work carried out.



**Figure 1.** Delaminating plywood lid of kookaburra nest box C2-7 (a) was replaced with a custom-made lid (b) prior to the application of Lanotec Timber Seal (c).

Following in-field maintenance and repairs, 29 of the 30 nest boxes were recorded to be in good overall condition. No inspection or maintenance could be carried out on one nest box (i.e., C2-2) as it was occupied by a feral beehive.

### 3.3 Nest Box Security

The *Habisure* system, (a kinked wire design to allow for future growth of the host tree) was inspected on each nest box to ensure the hose around the wire remained intact and the wire, whilst securely supporting the nest box, was not damaging the host tree and still had room for future growth. All nest boxes attachment wires were found to be in good repair and were securely fastened to their host trees.

### 3.4 Pest Status

During this inspection one nest box, rear-entry squirrel glider nest box C2-2 was found to be occupied by a hive of European honey bees (*Apis mellifera*). The colony of feral bees appeared well-established as honeycombs were clearly visible and active bees were observed in and around the entrance of the nest box, (see highlighted area in Figure 3). This nest box will need to be removed and/or modified in the future to prevent occupation by such pest species.



**Figure 3.** A feral beehive (European honey bees) was recorded occupying squirrel glider nest box C2-2.

No other pest species such as rats, wasps or common (Indian) Mynas were observed in or around any of the other nest boxes during this inspection.

### 3.5 Nest Box Contents

Similar to the previous (2020) inspection period, 17 of the 30 nest boxes (i.e., approximately 57%) were found to contain either an animal or had signs of use, i.e., fresh or old nesting material (see Table 2, and Appendix A for representative photographs). This includes one nest box that was occupied by a feral beehive. Obvious evidence of recent use (i.e., green leaves and green leaf nests) was recorded in 8 nest boxes (refer to Table 2). Thirteen nest boxes showed no sign of occupation at the time of inspection, with the majority of these (i.e., 8 boxes) being microbat nest boxes. Evidence such as scats and/or hair left by microbats or other fauna is not well retained by bat boxes, as they have no floor and have an opening on the underside of the box. As such the total usage rate may be underestimated due to limited evidence of use being retained by these bat boxes.

The total number of native animals observed occupying the nest boxes has remained relatively stable between the 2020 and 2021 monitoring periods with a total of 4 animals (2 ringtail possums and 2 sugar gliders) recorded in 2020 and a total of 5 animals (4 sugar gliders and 1 ringtail possum) recorded during this current monitoring event (refer Table 2). It should be noted however, that most arboreal mammal and glider species such as sugar gliders and ringtail possums use multiple hollows within their home-range (natural and artificial) and change nesting sites on a regular basis so may not be observed using the nest boxes during a single inspection such as this.

Similar to the previous 2020 inspection, two species of arboreal mammals: ringtail possum and sugar glider were recorded using the nest boxes during this inspection. Four sugar gliders (likely a family group) were recorded in one nest box, C3-10, whilst a solitary ringtail possum was observed occupying nest box C3-9. Medium parrot nest box C3-10 appears to be a consistent glider's denning resource as a typical bowl-shaped leaf nest was recorded in this nest box during the previous monitoring event in 2020 (refer Table 2). Typical glider's bowl-shaped green leaf nests were also observed this year in rear-entry squirrel glider nest box (C1-4); medium parrot nest box (C2-1); small parrot nest box (C4-1) and feathertail glider nest box (C4-4).

No bird or reptile species were recorded occupying the nest boxes. For the first time since the installation of the nest boxes, a pest species (an active hive of European honey bees) was observed occupying nest box C2-2. During the previous annual inspection in 2020 a solitary sugar glider was recorded occupying this same nest box (refer Table 2).

### 4.0 Summary and Recommendations

The 2021 nest box monitoring inspection at the Gullen Range Wind Farm PVP Offset Area found that the nest boxes are continuing to offer hollow dependent fauna with a den resource. Following in-field maintenance and repairs, 29 out of the 30 nest boxes were recorded to be in good overall condition. A feral beehive was found to have occupied one nest box and this will require replacement as feral bees are excluding target species from this box. Whilst bird species were not recorded utilising the nest boxes this year, it is apparent that the majority of nest boxes are in good overall condition and are available when environmental conditions are favourable and the requirement for these nesting resources arise.

Ongoing annual inspections and maintenance will ensure the nest boxes remain weatherproof and continue to be a functional resource for the target wildlife species. Such timely nest box maintenance will also minimize any impact to the host tree and enable suitable action to be taken to identify and remove any pest species. This will ensure target species are not deterred or being excluded from the nest boxes.

Ongoing inspections and maintenance will also maximise the useful life of the nest boxes.

The following recommendations are provided in response to the findings of this inspection:

- As the feral beehive in rear-entry squirrel glider nest box C2-2 appears to be well-established, this nest box should be removed (i.e., by a licensed pest control operator or professional Apiarist) and replaced with a nest box of similar design and construction. The removal and replacement of nest box C2-2 should ideally be undertaken prior to spring of 2021, when the bee colony is likely to swarm;
  - Nest box modifications that deter beehive establishment, such as the attachment of shag-pile carpet to the underside ceiling of the replacement nest box lid <sup>(2)</sup> should be considered prior to the fitment of replacement nest boxes;
  - Replacement nest boxes should be fitted with a hinged lid to enable ease of inspection. It is also recommended that replacement boxes have sealed side joints and holes in the base panel to ensure adequate drainage, <sup>(1)</sup> and
  - Annual reapplication of a non-toxic, organic timber sealant such as Lanotec's Timber Seal or Tung Oil <sup>(1)</sup> should be considered to help protect and waterproof the plywood nest boxes.
- ❖ Minimising animal disturbance should always be taken into consideration before undertaking any maintenance or repair of the nest boxes.

#### References:

1. Local Land Services Greater Sydney, Build your own Wildlife Nest Box (Revised edition: October 2017). Retrieved from [https://greatersydney.lls.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0006/656610/GS-LLS-Wildlife-Nest-Box-10-2017-Accessible.pdf](https://greatersydney.lls.nsw.gov.au/__data/assets/pdf_file/0006/656610/GS-LLS-Wildlife-Nest-Box-10-2017-Accessible.pdf) (date accessed: 20 April 2021).
2. Tweed-Byron Bush Futures Project, Nest Box Manual - Bush Futures, Sustainable management of Significant Urban and Peri-Urban Bushland Areas. Retrieved from [https://www.tweed.nsw.gov.au/Documents/Environment/Bush Futures/TSC01135\\_Nest\\_Box\\_Manual.pdf](https://www.tweed.nsw.gov.au/Documents/Environment/Bush_Futures/TSC01135_Nest_Box_Manual.pdf) (date accessed: 20 April 2021).

## APPENDIX A. 2021 Field Photographs



**Figure 1.** A solitary ringtail possum was observed denning in small parrot nest box C3-9.



**Figure 2.** Four sugar gliders (likely a family group) were recorded occupying medium parrot nest box C3-10. (Note: one individual exited the box when the lid was opened, prior to this photograph being taken).



**Figure 3.** Bark strips, twigs and brown leaves (possible ringtail possum drey material) in nest box C1-3.



**Figure 4.** A loosely packed green leaf nest was observed in nest box C2-1.

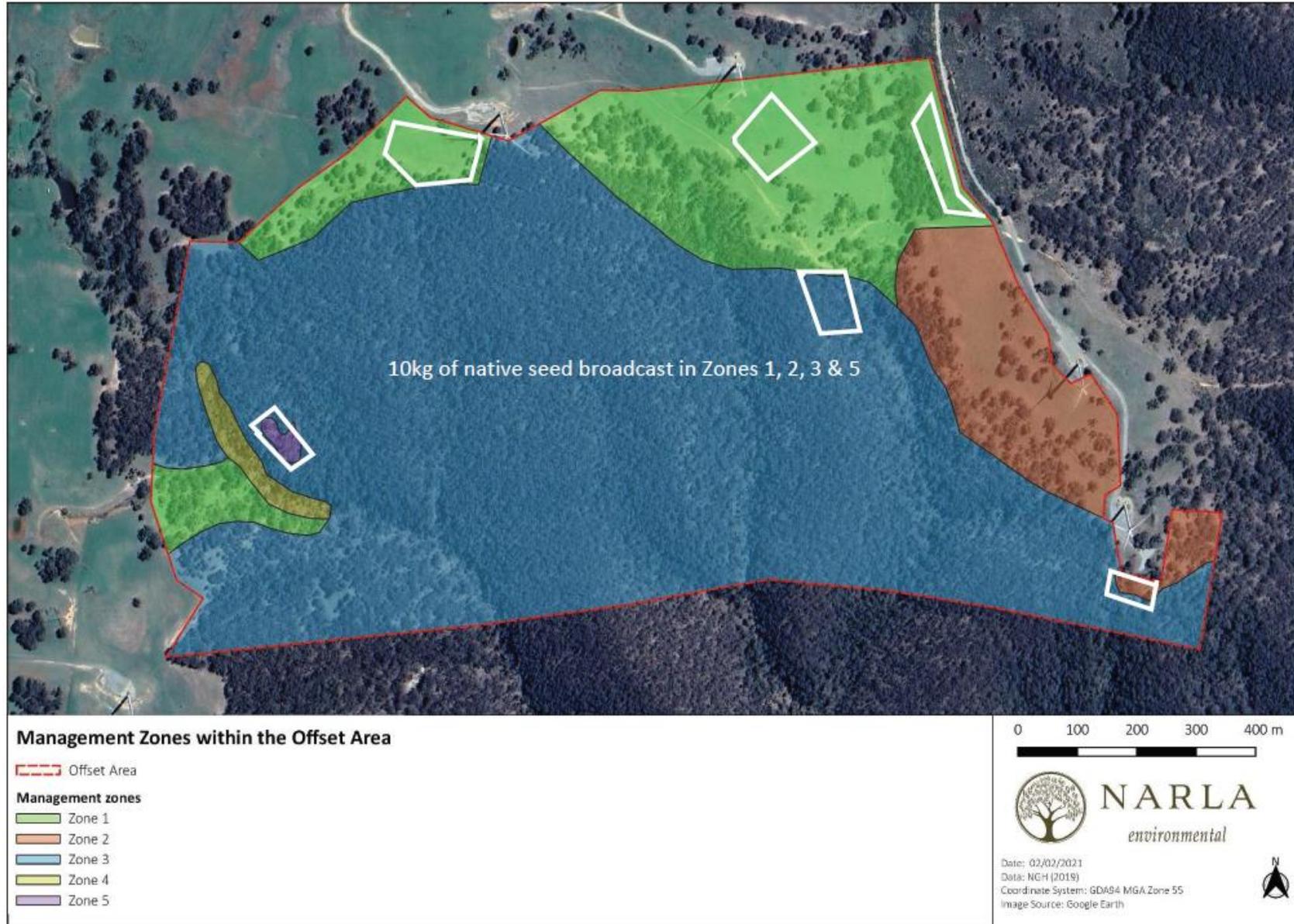


**Figure 5.** Green leaves and twigs in nest box C2-8.



**Figure 6.** Evidence of recent use: a typical glider's green leaf nest was observed in nest box C4-1.

Appendix F. Revegetation Records for 2021.



## APPENDIX B REVISED CHP CHECKLISTS

## Quarterly management checklist

Date of site inspection 8-03-2021 Person undertaking inspection: Leo Pearce

Issue	Action	Comments
Routine agricultural management activities (RAMAs)	Aside from weed and pest animal control, list any maintenance or addition of infrastructure that has occurred in the offset area	Nil
Habitat values	Is native vegetation being retained?	Yes
	Is timber being left where it falls?	Yes
	Are rocks being retained?	Yes
	Are the nest boxes still intact	Yes
Exclusions	Are stock being excluded from the offset site?	Yes
	Are recreational vehicles being excluded?	Yes
	Is fire being excluded?	Yes
	Are fertilisers being excluded	Yes
	Is rubbish disposal being excluded?	Yes
Weed control	List weed control actions taken: List any related documentation	Nil this quarter
Pest animal control	List any pest animal control activities List any related documentation	Nil this quarter
Maintenance of plantings	Have plants had sufficient water?	Yes
	Is there any evidence of death, damage or disease?	There is damage from animals, likely deer or pigs
	Are tree guards or other methods of protection intact and adequate?	Yes
	List areas where follow-up maintenance of plantings is required below	Monitor for watering
Additional information	Do any actions need to be undertaken in the next quarter?	No
	Do any changes need to be made to this checklist or to management actions?	No

## APPENDIX B REVISED CHP CHECKLISTS

### Quarterly management checklist

Date of site inspection 2-08-2021 Person undertaking inspection: Leo Pearce

Issue	Action	Comments
Routine agricultural management activities (RAMAs)	Aside from weed and pest animal control, list any maintenance or addition of infrastructure that has occurred in the offset area	Nil
Habitat values	Is native vegetation being retained?	Yes
	Is timber being left where it falls?	Yes
	Are rocks being retained?	Yes
	Are the nest boxes still intact	Yes
Exclusions	Are stock being excluded from the offset site?	Yes
	Are recreational vehicles being excluded?	Yes
	Is fire being excluded?	Yes
	Are fertilisers being excluded	Yes
	Is rubbish disposal being excluded?	Yes
Weed control	List weed control actions taken: List any related documentation	Nil this quarter
Pest animal control	List any pest animal control activities List any related documentation	8 feral pigs were removed from the Offset Area in July
Maintenance of plantings	Have plants had sufficient water?	Yes
	Is there any evidence of death, damage or disease?	There is damage from animals, likely deer or pigs
	Are tree guards or other methods of protection intact and adequate?	Yes
	List areas where follow-up maintenance of plantings is required below	Monitor for watering
Additional information	Do any actions need to be undertaken in the next quarter?	No
	Do any changes need to be made to this checklist or to management actions?	No

## APPENDIX B REVISED CHP CHECKLISTS

### Quarterly management checklist

Date of site inspection 8-09-2021 Person undertaking inspection: Leo Pearce

Issue	Action	Comments
Routine agricultural management activities (RAMAs)	Aside from weed and pest animal control, list any maintenance or addition of infrastructure that has occurred in the offset area	Nil
Habitat values	Is native vegetation being retained?	Yes
	Is timber being left where it falls?	Yes
	Are rocks being retained?	Yes
	Are the nest boxes still intact	Yes
Exclusions	Are stock being excluded from the offset site?	Yes
	Are recreational vehicles being excluded?	Yes
	Is fire being excluded?	Yes
	Are fertilisers being excluded	Yes
	Is rubbish disposal being excluded?	Yes
Weed control	List weed control actions taken: List any related documentation	Nil this quarter
Pest animal control	List any pest animal control activities List any related documentation	2 x deer removed in September
Maintenance of plantings	Have plants had sufficient water?	Yes
	Is there any evidence of death, damage or disease?	There is damage from from animals, likely deer or pigs
	Are tree guards or other methods of protection intact and adequate?	Yes
	List areas where follow-up maintenance of plantings is required below	Monitor for watering
Additional information	Do any actions need to be undertaken in the next quarter?	Weed spraying
	Do any changes need to be made to this checklist or to management actions?	No

## APPENDIX B REVISED CHP CHECKLISTS

### Quarterly management checklist

Date of site inspection 16-11-2021 Person undertaking inspection: Leo Pearce

Issue	Action	Comments
Routine agricultural management activities (RAMAs)	Aside from weed and pest animal control, list any maintenance or addition of infrastructure that has occurred in the offset area	Nil
Habitat values	Is native vegetation being retained?	Yes
	Is timber being left where it falls?	Yes
	Are rocks being retained?	Yes
	Are the nest boxes still intact	Yes
Exclusions	Are stock being excluded from the offset site?	Yes
	Are recreational vehicles being excluded?	Yes
	IS fire being excluded?	Yes
	Are fertilisers being excluded	Yes
	Is rubbish disposal being excluded?	Yes
Weed control	List weed control actions taken: List any related documentation	Nil this quarter
Pest animal control	List any pest animal control activities List any related documentation	2 x pigs removed in November
Maintenance of plantings	Have plants had sufficient water?	Yes
	Is there any evidence of death, damage or disease?	There is damage from animals, likely deer and pigs.
	Are tree guards or other methods of protection intact and adequate?	Yes
	List areas where follow-up maintenance of plantings is required below	Monitor for watering.
Additional information	Do any actions need to be undertaken in the next quarter?	Weed spraying
	Do any changes need to be made to this checklist or to management actions?	No

**Annual review**Date of inspection: 16/11/2021 Person undertaking inspection: Leo Pearce

Review question	Comment
Were all quarterly inspections undertaken?	Yes
Should the frequency be altered?	No
Has annual monitoring at established BioMetric plots been completed?	Yes
Have all nest boxes been installed. Are they in need of repair?	Yes No
Is there any evidence of bushfire?	No
What positive trends are evident? <i>For example, is habitat complexity increasing (timber on ground, good understorey cover, good regeneration, hollows and canopy vegetation retained)</i>	Wet weather this year has increased ground cover and the health/growth of plantings.
What negative trends are evident? <i>For example, are weeds and pest animal activity increasing? Is there any evidence of erosion or sedimentation requiring action?</i>	increased weeds due to wet weather and not being able to carry out weed control activities due to contractor availability issues arising from NSW Covid-19 restrictions and wet weather conditions.
What changes will be made to the management actions to improve biodiversity outcomes?	Incorporate any recommendations from the CHP Annual Report provided by NARLA.



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