



Our Ref: 4015A/RV/JB/15022018

15 February 2018

Leo Pearce
Asset Manager
New Gullen Range Wind Farm Pty Ltd
Suite 3, Level 21, 1 York Street
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Dear Leo

Re: Outcomes of Nest Box Monitoring in PVP Offset Site – New Gullen Range Wind Farm – 2018

1.0 Introduction

Nest boxes were monitored by two Umwelt Ecologists on 5 and 6 February 2018. These boxes had been previously installed by Umwelt in April 2017, within Zones 1, 2, 3, 4 and 5 of the New Gullen Range Wind Farm (NGRWF) offset area.

In addition to monitoring works, those boxes comprising Cluster 2 (Zone 1) which had previously been installed within the 200m exclusion zone surrounding POM 4 wind turbine were relocated outside of this exclusion zone. This comprised a total of eight boxes.

2.0 Methods

Content and condition monitoring was carried out simultaneously by two ecologists. Condition monitoring comprised a visual inspection from the ground and focussed on the condition of the timber and fastenings as well as the box position and security within the tree. Any signs of use or deterioration were noted during this inspection.

Content monitoring was undertaken using a pole camera and wireless video screen that allows viewing of the content of the boxes as well as a view of the condition of the top of the boxes from the ground. This camera - screen combination captures photos and videos, as well as real-time footage of identifying characteristics of individuals encountered within the boxes.

Representative photographs of species present within boxes as well as internal signs of box use were taken and are provided as images with this letter.

The relocation of boxes was undertaken via ladder and climbing equipment to remove and subsequently re-position boxes. Boxes were re-installed in a cluster, and the recording of unique box identifiers, coordinates, height and aspect was undertaken.

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3.0 Results

3.1 Nest Box Content

Of the 30 boxes monitored, 6 (20 per cent) either contained an animal or showed signs of internal use at the time of survey. No pest animal species or insect species (such as bees or wasps) were recorded using the boxes. A summary of species recorded in the boxes in 2018 is provided in **Table 1**.

Table 1 – Species Recorded in Nest Boxes in February 2018

Date	Recorders	Cluster - Box Number	Box type	Contents	Condition
6/02/2018	JB/RP	C1 - 1	Small Parrot	ringtail possum (2 individuals)	good
6/02/2018	JB/RP	C1 - 2	Medium Parrot	-	good
6/02/2018	JB/RP	C1 - 3	Small Parrot	ringtail possum	slightly loose against tree but left as was occupied
6/02/2018	JB/RP	C1 - 4	Rear-Entry Squirrel Glider	spider egg case	good
6/02/2018	JB/RP	C1 - 5	Rear-Entry Micro-Bat	-	good
6/02/2018	JB/RP	C1 - 6	Rear-Entry Micro-Bat	-	good
5/02/2018	JB/RP	C2 - 1	Medium Parrot	glider leaf nest	good - relocated
5/02/2018	JB/RP	C2 - 2	Rear-Entry Squirrel Glider	-	good - relocated
5/02/2018	JB/RP	C2 - 3	Owlet nightjar	sugar glider (3 individuals)	good - relocated
5/02/2018	JB/RP	C2 - 4	Rear-Entry Micro-Bat	-	good - relocated
5/02/2018	JB/RP	C2 - 5	Medium Parrot	-	good - relocated
5/02/2018	JB/RP	C2 - 6	Rear-Entry Micro-Bat	-	good - relocated
5/02/2018	JB/RP	C2 - 7	Kookaburra	-	good - relocated
5/02/2018	JB/RP	C2 - 8	Medium Parrot	ringtail possum	good - relocated
6/02/2018	JB/RP	C3 - 1	Owlet nightjar	-	good
6/02/2018	JB/RP	C3 - 10	Medium Parrot	-	good
6/02/2018	JB/RP	C3 - 2	Rear-Entry Micro-Bat	-	good
6/02/2018	JB/RP	C3 - 3	Rear-Entry Micro-Bat	-	good

Date	Recorders	Cluster - Box Number	Box type	Contents	Condition
6/02/2018	JB/RP	C3 - 4	Rear-Entry Micro-Bat	-	good
6/02/2018	JB/RP	C3 - 5	Kookaburra	-	re-fastened as loose on tree
6/02/2018	JB/RP	C3 - 6	Rear-Entry Micro-Bat	-	good
6/02/2018	JB/RP	C3 - 7	Owlet nightjar	ringtail possum	good
6/02/2018	JB/RP	C3 - 8	Feather tail glider	-	good
6/02/2018	JB/RP	C3 - 9	Small Parrot	-	good
6/02/2018	JB/RP	C4 - 1	Small Parrot	-	good
6/02/2018	JB/RP	C4 - 2	Medium Parrot	-	good
6/02/2018	JB/RP	C4 - 3	Medium Parrot	-	good
6/02/2018	JB/RP	C4 - 4	Feathertail Glider	-	good
6/02/2018	JB/RP	C5 - 1	Kookaburra	huntzman spider	good
6/02/2018	JB/RP	C5 - 2	Kookaburra	huntzman spider	good

Two species of arboreal mammals were recorded during this monitoring event. No bird, reptile or amphibian species were recorded in nest boxes, or through signs of use. No pest species were recorded using nest boxes.

Of the eight boxes that were relocated, three (38 per cent) were recorded as occupied or showing internal signs of use. Where species were found in boxes, they were contained within the box during removal and relocation. Two of the three sugar gliders in box C2-3 exited of their own accord prior to relocation. Boxes were moved only a short distance (approximately 100 m) which is assumed to remain within the home ranges of recorded species.

3.2 Nest Box Condition

Generally, nest box condition was good. As this is the first annual monitoring event, condition was not expected to have deteriorated. One box (C3 – 5) was repositioned on its host tree as the wire had become loose. Box C1 – 3 also appeared slightly loose on the host tree; however as it was occupied at the time of survey this was not deemed to be limiting the effectiveness of the box as habitat, and it was left unaltered. No other maintenance was required.

3.3 Nest Box Relocation

The new locations of the eight Cluster 2 boxes are provided in **Table 2**.

Table 2 – Records of Re-installed Nest Boxes

General Location	Vegetation formation	Coordinates (MGA Zone 55)		Cluster-Nest Box Number	Nest Box Design	Nest Box Height	Nest Box Aspect	Host tree species
		Easting	Northing					
Zone 1	apple box/yellow box woodland	726446	6166104	C2-1	Medium Parrot	4	N	apple box
Zone 1	apple box/yellow box woodland	726446	6166104	C2-2	Rear-Entry Squirrel Glider	4	S	apple box
Zone 1	apple box/yellow box woodland	726456	6166088	C2-3	Owlet nightjar	5.5	W	red stringybark
Zone 1	apple box/yellow box woodland	726456	6166098	C2-4	Rear-Entry Micro-Bat	5	N	red stringybark
Zone 1	apple box/yellow box woodland	726456	6166098	C2-5	Medium Parrot	5	E	red stringybark
Zone 1	apple box/yellow box woodland	726456	6166098	C2-6	Rear-Entry Micro-Bat	5	W	red stringybark
Zone 1	apple box/yellow box woodland	726435	6166128	C2-7	Kookaburra	6	E	yellow box
Zone 1	apple box/yellow box woodland	726435	6166128	C2-8	Medium Parrot	6	N	yellow box

4.0 Conclusions and Recommendations

The results of the monitoring works undertaken in February 2018 show that the nest box strategy for New Gullen Range Wind Farm is currently acting as a successful habitat improvement measure for hollow-dependent and facultative hollow-using species. While bird species were not recorded utilising nest boxes during this monitoring event, it is apparent that the boxes do provide suitable habitat for hollow-utilising species and birds are likely to use nest boxes in the future. The prevailing dry conditions may have contributed to 2017 as a poor breeding year for birds; which would result in low nesting numbers.

Monitoring for nest box condition and content should continue annually to meet the requirements of Schedule 2 of the Property Vegetation Plan, and to demonstrate the continued effectiveness of nest boxes within the PVP Offset Site.

I trust that the above information covers all details you require relating to the February 2018 round of nest box content and condition monitoring.

If you require further information or discussion on this matter, please do not hesitate to contact me on (02) 4950 5322.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Rebecca Vere', written in a cursive style.

Rebecca Vere
Principal Ecologist