

## Sapphire Wind Farm Swift Parrot and Regent Honeyeater Project ANU Fenner School of Environment and Society

### Background – ANU involvement in Swift Parrot and Regent Honeyeater Research

The Fenner School of Environment and Society has been working on research and contributing to the development of national actions plans for both the Swift Parrot and Regent Honeyeater over the last 13 years.

Specific activities have included:

- Habitat modelling
- Field surveys
- Addressing landscape conservation issues
- Community engagement
- Development of specific management actions and plans

The ANU Fenner School team contributing to this effort include the key personnel below.

Prof Rob Heinsohn is the Swift Parrot and Regent Honeyeater research team leader. He has over 25 years' experience conducting field based research on endangered bird species. He currently leads a team of three post-doctoral researchers, a research officer and a PhD student (see below) with projects aimed at addressing landscape scale conservation issues affecting both species. Funding for these projects comes from two ARC grants, two mining offset grants, an SOS (NSW Govt) grant, and multiple small grants.

Dr Debbie Saunders is a post-doctoral researcher with 15 years' experience managing, developing and implementing threatened species recovery plan projects, with particular expertise on the critically endangered Swift Parrot. This includes building strong partnerships; securing threatened species program funding; providing expert threatened species' advice; delivering community engagement programs; populating and managing databases; and conducting threatened species research incorporating novel technologies.

Mr. Ross Crates is a PhD student investigating improved methods for detection of Regent Honeyeaters and the ecology of their breeding and large scale movements. He has recently led development on a breakthrough survey technique for detecting elusive Regent Honeyeaters across SE Australia. He located over 30 Regent Honeyeater nesting attempts in 2015, and recently found a number of birds in non-breeding habitat in early 2016.

### Proposed Project approach

To ensure the project is implemented in a timely and professional manner, and explicitly addresses the Minister's approval requirements, we propose that the project be implemented and managed by Dr Saunders and Mr Crates. Prof. Heinsohn and other team members would provide significant in-kind contributions in relation to additional technical expertise on both the target species, in-depth statistical analysis and preparation of regular project reports and scientific publications.

### Swift Parrot research

The specific elements of Swift Parrots research, with the leadership of Dr Saunders, will focus on:

- Identification of winter habitat use across the landscape by examining eight years of data on Swift Parrot habitat use throughout the species' winter range, including the Glen Innes region. This information would be analysed and evaluated by experts in the context of the Sapphire Wind Farm (provided by CWP Asset management), habitat/vegetation mapping (where available) and bioclimatic modelling for the species' winter range.
- Identify behavioural characteristics of swift parrots and corresponding risk factors in relation to potential collision hazards from windfarm structures and sites. Relevant data on bird strikes of co-occurring species from the Bird and Bat Adaptive Monitoring Program would also be considered when evaluating potential strike risk behaviours.
- This project would directly contribute to implementing each of the following recovery actions from the **Swift Parrot National Recovery Plan** as summarised below.
  - ✓ Action 1 - Identify the extent and quality of habitat – evaluation of swift parrot winter habitat in relation to the Sapphire Wind Farm
  - ✓ Action 2 - Manage and protect Swift Parrot habitat at the landscape scale – provide land managers with unique insights on the potential collision risks posed by windfarm structures and sites throughout the species' winter range
  - ✓ Action 3 - Monitor and manage the impact of collisions – identification of areas where collision risk from windfarms may be greatest to enable strategic planning and targeted monitoring

### Regent Honeyeater research

Due to low levels of previous field survey effort, current ecological knowledge of the Regent Honeyeater in the northern tablelands is poor. Therefore, the Regent Honeyeater research, implemented by Mr Crates, will focus on:

- Expert analysis of the suitability of habitat for Regent Honeyeaters in proximity to the Sapphire Wind Farm. This will be achieved using a combination of bioclimatic habitat modelling, vegetation mapping (where available) and an initial detailed field

assessment of suitable habitat at the Sapphire Windfarm site and surrounding Glen Innes region.

- Based on the results of this initial habitat assessment, surveys for both Swift Parrots and Regent Honeyeaters will be planned according to the habitat present and its suitability for wintering and/or breeding.
- Identify behavioural characteristics of regent honeyeaters and corresponding risk factors in relation to potential collision hazards from windfarm structures and sites. Relevant data on bird strikes of co-occurring species from the Bird and Bat Adaptive Monitoring Program would also be considered when evaluating potential strike risk behaviours.
- This project would directly contribute to implementing the following recovery strategies identified in the ***Regent Honeyeater National Recovery Plan***:
  - ✓ Strategy 1: Improve the extent and quality of regent honeyeater habitat – identification of potentially suitable sites and surveys conducted over three years within the poorly surveyed region around the Sapphire Wind Farm.
  - ✓ Strategy 3: Increase understanding of the size, structure and population trends of the wild population of Regent Honeyeaters – targeted surveys provide complementary population data for informing and adapting range-wide monitoring programs.

## Addressing Recovery Plan Performance Criteria - Swift Parrot

### *Action 1.2a: Identify and map foraging habitat*

We will provide GIS mapping of foraging habitats, windfarm locations and bioclimatic modelling.

### *Action 2.1a: Encourage and support the protection, conservation management and restoration of Swift Parrot foraging habitat through conservation or management agreements.*

This project is part of a larger offset application that protects 766.09 ha of habitat, in addition to undertaking this research project.

### *Action 3.1a: Establish and maintain a database for all reported injuries and deaths.*

As part of the BBAMP a collision database will be established and maintained. From this database, the number and type of collisions can be reported to the Fenner School in the event of a collision, and reported to the National Recovery Team annually.

### *Action 3.1c: Develop and distribute guidelines on collision risk management to relevant planning authorities.*

The information gathered in the project will be used to develop a fact sheet including guidelines on collision risk management in relation to windfarms.

## Addressing Recovery Plan Performance Criteria - Regent Honeyeater

### *Strategy 1: Improve the extent and quality of regent honeyeater habitat*

We will identify suitable sites and conduct surveys at these sites over three years within the poorly surveyed region around the Sapphire Wind Farm.

### *Strategy 3: Increase understanding of the size, structure and population trends of the wild population of regent honeyeaters*

We will conduct targeted surveys providing complementary population data for informing and adapting range-wide monitoring programs.

#### **Bird and Bat Adaptive Monitoring Program integration**

The monitoring for the BBAMP implementation will be provided to the ANU / Fenner School, with a focus on any recording of the RH or SP. Any flight height data recorded from bird utilisation surveys for these species will inform the risk assessment outlined above. Additionally, if the species are recorded on or around the wind farm, the habitat will be recorded and provided to the Fenner School for inclusion in the habitat monitoring.

#### **Project dates**

**Commencement date:** July 2018

**Completion date:** July 2021

#### **Project milestones and deliverables**

The following milestones for this project will provide unique insights on the target species' behaviours and habitats, within the vicinity of the Sapphire Windfarm site, as well as more broadly. This will fill a significant knowledge gap in relation to how these species may interact with, or be impacted by, wind farms. The project will also provide a sound basis upon which future strategic windfarm management decisions can be made to improve the conservation of these species in regions impacted by wind farms.

That is, the project will provide a sound basis for future management of interaction between these two species and wind farms by undertaking habitat mapping to provide clear guidance on the potential for the overlap between habitats of these species and proposed wind farm developments in their range. This will assist in the planning process for wind farms to identify suitable measures to investigate the occurrence of these species and to develop suitable mitigation measures. It will also incorporate the first compilation of information on flight behaviour of both SP and RH to determine when, and if, these species are exhibiting "risk behaviour" that increase the possibility of potential interaction with wind turbines. This will seek to identify if these species are at risk during breeding, migrating, feeding or other activities. Minimising potential risks in from this risk behaviour can be incorporated into on-going mitigation measures of wind farms.

The project is proposed to be implemented over three years instead of five to ensure adequate resources are available to conduct the required field surveys and complex scientific analyses each year. That is, the funds allocated to this project over a 3 year timeframe provide sufficient resources for employing a postdoctoral researcher 2 days/week plus one month of targeted field work by a species expert. Should this funding be distributed over 5 years the full range of deliverables would not be possible given it would provide for only 1.5 days/wk employment (untenable) and would not allow for any field work to be undertaken.

Furthermore, the three-year timetable provides for linking with the initial field surveys and mortality monitoring for the Sapphire Wind Farm. A comprehensive review of the BBAMP will be undertaken and potentially updating the BBAMP will occur in year three, thus the lesson learnt from this field research can be incorporated into ongoing monitoring.

All milestones will be reported on within project update and annual reports, as detailed in the deliverables table below.

	<b>Milestone</b>	<b>Delivery date</b>
1	Initial field habitat assessment and survey site identification of the Sapphire Wind Farm and surrounds	Year 1
2	Surveys designed for target species based on above habitat assessment	Year 1
3	Compilation of available habitat mapping and modelling data for target species (winter habitat for swift parrots and winter/breeding habitat for regent honeyeaters)	Years 1-2
4	Surveys for target species implemented within the Glen Innes region	Years 1-3
5	Behavioural characteristics of target species identified and risk evaluation undertaken	Year 2
6	Analysis and evaluation of all project data in regards to the potential risk of windfarms to the target species	Year 3

<b>Deliverables</b>	<b>Delivery format</b>	<b>Delivered to</b>	<b>Reporting frequency</b>	<b>Responsibility</b>
Project update reports (1 page)	PDF via email	CWP Asset Management	Every 6 months, Years 1-3	ANU
Annual project reports, including financial reports	PDF via email	CWP Asset Management	Annually, Years 1-3	ANU
Annual project reports	PDF via email	Government agencies (NSW & C'wealth)	Annually, Years 1-3	CWP Asset Management
Annual project reports	Available on CWP web page	Public	Annually, Years 1-3	CWP Asset Management
Scientific publications in peer reviewed journals	PDF via email, Journal web page	CWP Asset Management, public	Year 3	ANU

### Project budget

Description	Yr 1	Yr 2	Yr 3	TOTAL \$ (excl. GST)
	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	
<b>INCOME</b>				
Offset funding	83,000	83,000	84,000	250,000
<b>Total Income</b>	<b>83,000</b>	<b>83,000</b>	<b>84,000</b>	<b>250,000</b>
<b>EXPENSES</b>				
<b>Personnel (including on-costs)</b>	69,729	71,821	73,976	215,526
<b>Travel field expenses</b>	11,491	11,491	11,491	34,474
<b>Other project expenses</b>	2,741	2,741	2,741	8,224
<b>Total Expenses \$ (excl. GST)</b>	<b>81,220</b>	<b>83,312</b>	<b>85,467</b>	<b>250,000</b>

### Payment schedule

Payment type	Payment amount (excl. GST)	Payment schedule
Initial project payment	\$83,000	Signing of project agreement July 2018
Progress payment	\$83,000	Upon provision of annual project report July 2019
Final payment	\$84,000	Upon provision of annual project report July 2020
<b>Total</b>	<b>\$250,000</b>	

### **Project governance**

A small working group would be established to oversee the delivery of the outputs to meet the requirement of the EPBC provisions. This would include:

- Fenner School, ANU
- Department of Environment, EPBC Unit
- CWP Asset Management
- Nominated expert for BBAMP implementation (as advised to DG).

This working group would meet on an annual basis, either in person or via phone, prior to delivery of each annual project report. The role of the working group would include:

- Agree on scope of project and detailed activities for each year
- Review and provide comments on annual project reports
- Ensure lessons learnt from the implementation of the BBAMP of the Sapphire Wind Farm are incorporated into risk assessment evaluations.

### **Project management**

Our ANU team has a wealth of experience successfully processing and delivering on environmental offset contracts and has well-established administrative processes for project management.

This project would utilise ANU's Research Office which manages and facilitates professional contract services, project reporting against milestones at agreed intervals (e.g. every 6-12 months) and delivery of project outcomes on time and to budget. The Research Office also has a dedicated Finance Team who provide professional and auditable financial services, including monthly account reports to actively keep track of expenditure and ensure all financial processing is done in an efficient and timely manner.





- This map is currently being ground tested to help establish a winter monitoring program for swift parrots.
- Construction of a similar habitat model for Victoria and southern Queensland is ongoing.
- Round 1 of swift parrot and regent honeyeater surveys were completed by mid October.
- Swift parrots were detected at sites in the Lower Hunter, Capertee and Widden Valleys and in northern Victoria. No swift parrots were detected in the NSW northern tablelands due to a widespread lack of blossom resulting from drought conditions.

#### *FUTURE RESEARCH PLANS*

- Continue to collaborate with BirdLife Australia to establish a range-wide winter monitoring program for the swift parrot.
- We are currently compiling a collision risk database of parrot species and other migratory bird species to help quantify collision risk as a surrogate for a lack of available empirical data for swift parrots.

## **REGENT HONEYEATER**

#### *HABITAT ASSESSMENT*

- We have completed a standardised habitat assessment of all national regent honeyeater monitoring sites. These data will be crucial for modelling the occurrence of regent honeyeaters, swift parrots and other taxa throughout their ranges, an in particular with respect to the Sapphire Wind Farm and other wind farms within the species' ranges.
- A 10 day habitat scoping project for other areas of potential regent honeyeater breeding habitat within the NSW northern Tablelands was conducted in May.

#### *MONITORING*

- 17 additional regent honeyeater and swift parrot monitoring sites have been established in the vicinity of Sapphire Wind farm, primarily along Kings Plains and Wellingrove Roads in high quality white box, mugga ironbark, stringybark and yellow box woodland patches.
- A key outcome of the habitat scoping was to search further for regent honeyeaters in the Moogem Valley, east of Glen Innes. Severe fires have prevented us from implementing these searches to date.
- The 2019 regent honeyeater field season is ongoing. A summary of the 2019 data to date is as follows:
- A pair of regent honeyeaters were detected during range-wide monitoring near Bundarra in mid October (approximately 80 Km south-west of Sapphire wind farm). No nesting activity was detected.
- This or a different pair were reported two weeks previously, approximately 10km north of Bundarra and 70 Km from Sapphire wind farm.
- A single male was reported to BirdLife near Bingara (approximately 90 Km WSW of Sapphire wind farm).
- These 3-5 birds represent the closest 2019 spring records to the Sapphire wind farm, with all other spring records >100 km from the site.

- Severe drought conditions have impacted the number of regent honeyeaters present in the Glen Innes- Inverell-Severn River area. In many areas there is widespread Eucalyptus and Casuarina mortality due to the drought.
- The remainder of regent honeyeater breeding activity has been within the greater Blue Mountains.
- Approximately 30 birds have been detected in the Capertee Valley, 12 birds in the Goulburn River area, 3 birds in the Wolgan Valley and at least 2 pairs nesting in western Sydney.
- As of 19/11/2019, 10 juveniles are known to have fledged. A further 9 nests are currently active.



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- Nest protection measures in the form of trunk guards to prevent possums accessing nest trees and localised culls of noisy miners are being implemented.
- We are working closely with northern tablelands Local Land Services to provide scientific advice on where best to direct funds for habitat restoration to maximise conservation benefit for regent honeyeaters. Much of these funds will be directed into habitat restoration around the Severn River, where we have detected regent honeyeaters nesting in 2016 and 2017.

#### *RESEARCH OUTPUT*

- Our study into the population genetics of regent honeyeaters has been published. The paper can be accessed here <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0223953> and is also attached.
- We show that the birds in the north of the range were, and still are, closely genetically related to the birds in the south of the range. This suggests that long distance movements of regent honeyeaters throughout their range are still occurring.
- Our second paper into the effectiveness of culling noisy miners at a regent honeyeater nesting site is currently in revision

#### *FUTURE RESEARCH PLANS*

- Continue to collaborate with BirdLife Australia to establish a range-wide winter monitoring program for the swift parrot.
- Conduct surveys for nest predators at known regent honeyeater nest locations to determine if spatial variation in nest predator abundance predicts spatial variation in regent honeyeater nest survival.
- Continue to expand/refine the national regent honeyeater monitoring program.
- Conduct a population viability analysis with the demographic data we have gathered on regent honeyeaters over the past 5 years. Evaluate the potential impact of successful nest protection on the regent honeyeater population growth rate.
- Establish a bird collision database from the BBAMP to model bird strike probability for swift parrot and regent honeyeater.
- Use the regent honeyeater national monitoring data in combination with data on noisy miner culling to identify priority areas for future noisy miner suppression under a structured decision-making framework.

Dr Ross Crates

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Prof. Rob Heinsohn

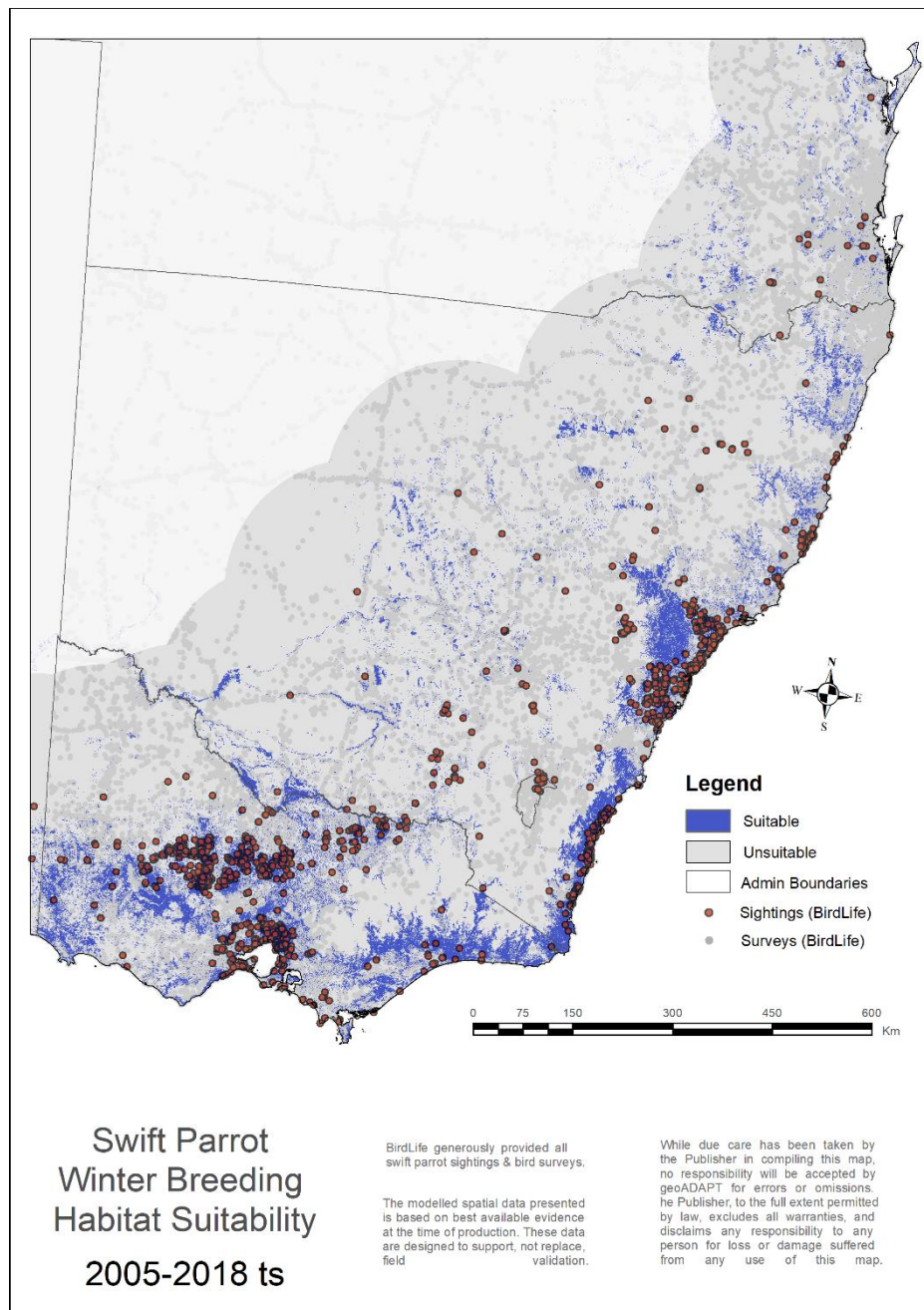
robert.heinsohn@anu.edu.au

# Sapphire wind farm- swift parrot and regent honeyeater report

Prof Robert Heinsohn & Dr Ross Crates, Australian National University

## Swift parrots:

Range-wide bioclimatic modelling of swift parrot winter habitat is now complete (Figure 1). We have field-validated the location of approximately 1200 swift parrot winter monitoring sites throughout Victoria and New South Wales. We expect to add another 800 sites over the coming 6 months, after which time a standardized, range-wide winter monitoring program will be ready to implement from autumn 2021. A manuscript describing the bioclimatic modelling process will be submitted for publication in due course.



**Figure 1:** Time-sliced swift parrot habitat suitability model.

## Regent honeyeaters:

**Range-wide monitoring:** The 2019 regent honeyeater field season was completed by December. The season was substantially disrupted by bushfires, however we located 20 nests, primarily within the Greater Blue Mountains. In Northern New South Wales in proximity of Sapphire Wind Farm, regent honeyeaters were sighted in Bingara, Bundarra and Barraba. Due to severe drought conditions, no nesting activity was detected on or near known breeding grounds near the Severn River. At the time of writing this report, however, a pair of regent honeyeaters are present at the Severn River. Preliminary surveys in July 2020 indicate conditions around the Severn River are good and we anticipate finding more birds and nests in the coming months.

**Bushfire impacts:** We are using the range-wide population monitoring datasets we have acquired over the past 5 years to estimate the impact of the 2019 bushfire season on regent honeyeaters. This work has helped inform the federal government response in terms of conservation investment.

**Nest predation:** An honours project has recently been completed looking at the abundance and distribution of nest predators in regent honeyeater breeding habitat. The study found that regent honeyeater nest predators are abundant and widespread throughout the species core breeding habitat and that nest survival is only 31%. The information gained from this study shows that efforts to protect regent honeyeater nests from predation need to account for threats posed by the entire predator community, rather than single species such as noisy miners and pied currawongs.

**Noisy miner management:** We continue to work closely with private landowners in the Blue Mountains to implement targeted noisy miner eradication programs in known regent honeyeater breeding habitat. To date we have removed noisy miners from properties on the Goulburn River and the Widden Valley. We plan to expand the program into Goulburn River National Park, however bushfires and heavy rain have delayed the commencement of work in this new area. We have also been working closely with northern Tablelands Local Land Services to help them inform where they can implement regent honeyeater funding through the National Landcare Program to most benefit regent honeyeaters in Northern New South Wales. Similarly, we are working closely with researchers at the University of New England to help them identify locations where experimental noisy miner suppression can be of most benefit to regent honeyeaters.

**Captive-breeding research:** We are starting a new PhD project in collaboration with Taronga Zoo that aims to increase the post-release fitness of captive-bred birds. Our research has found that songs of captive-bred male regent honeyeaters are substantially different from those of their wild counterparts. The project will aim to use playback experiments and wild tutors to teach juvenile captive-bred male regent honeyeaters to sing more like the wild birds. We hope this will increase the frequency of wild-captive pairings of reintroduced birds.

**Sapphire wind farm monitoring:** Fieldwork for swift parrot and regent honeyeater surveys on or near Sapphire wind farm has been disrupted by Covid-related travel restrictions. We will endeavour to increase survey effort on the property as soon as is safely and practically feasible.

### **Publications:**

Crates, R. *et al.* 2020. Sustained and delayed noisy miner suppression at an avian hotspot. *Austral Ecology* (attached).

Crates, R. *et al.* Under review. Loss of vocal culture has fitness costs in a critically endangered songbird.

Gautschi, D. *et al.* Under review. Landscape-scale distribution of nest predators and their impact on regent honeyeater nest success.



Our reference: 2011/5854

Mr Ed Mounsey  
Chief Operating Officer  
CWP Renewables  
PO Box 1708  
NEWCASTLE NSW 2300

Dear Mr Mounsey

**EPBC 2011/5854: Sapphire Wind Farm – Variation to Condition 2, Approval of Biodiversity Offset Package and Research Funding Proposal**

Thank you for your letters to the Department, requesting a variation to condition 2, and seeking approval for the Biodiversity Offset Package *version 4* (December 2016) and Research Funding Proposal required under the approval decision dated 5 December 2014.

Officers of this Department have reviewed the variation request, the Biodiversity Offset Package and the Research Funding Proposal. As delegate of the Minister, I have varied condition 2 d)(i) of EPBC Approval 2011/5854 under section 143(1)(c) of the *Environment Protection and Biodiversity Conservation Act 1999* to provide an additional 6 months to secure Offset Site A. Condition 2 d)( i ) must now be undertaken in accordance with the varied condition specified in the variation notification, which has been attached for your information.

I have also approved the Biodiversity Offset Package *version 4* (December 2016) and the Research Funding Proposal in accordance with approval conditions 2 and 4, respectively. These documents must now be implemented.

As you are aware, the Department has an active monitoring program which includes monitoring inspections, desk top document reviews and audits. Please ensure that you maintain accurate records of all activities associated with, or relevant to, the conditions of approval so that they can be made available to the Department on request.

Should you require any further information please contact Nathan O'Brien, Post Approvals Section, on 02 6275 9682 or by email: [post.approvals@environment.gov.au](mailto:post.approvals@environment.gov.au).

Yours sincerely

Greg Manning  
Assistant Secretary  
Assessments (WA, SA, NT) and Post Approvals Branch  
Environment Standards Division

4 March 2018