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Dear Nicole

Re: Wollar Solar Farm – NSW Biodiversity Offset Strategy (NGH ref. 20-070)

Regarding our meeting on 14 May 2020 in relation to Wollar Solar Farm's request for additional time to meet the offset obligation under State Significant Development SSD approval 9254 (Schedule 3 condition 13), NGH have prepared the attached NSW Biodiversity Offset Strategy. The attached strategy demonstrates how the Wollar Solar Development Pty Ltd (WSD) will meet the NSW BC Act credit obligations. In summary, WSFPL will :

1. Maximise the use of the residual areas within the Wollar Solar Farm property boundary to secure all **ecosystem credits** in a Stewardship Agreement, pursuant to the *Biodiversity Conservation Act 2016*. Limited species credits will also be secured in this agreement.
2. Negotiate a trade via the credit market or pay into the Biodiversity Conservation Fund for the remaining **species credits**.

In order to maximise the credits that can be retired via a physical Stewardship Agreement, Secretary's Discretion is sought regarding Schedule 3 condition 13 which stipulates the retirement of credits must be completed *prior to development*. An extended time frame is required to establish a Stewardship site. Also, as there is limited activity on the credit market, the extension will allow longer for the proponent to seek expressions of interest in relation to negotiating a trade of species credits, rather than paying the surcharge applied when credits are retired via the Biodiversity Conservation Fund (BCF).

It is noted that an Offset Strategy is also required to meet Commonwealth conditions of approval. It is intended to adapt the attached strategy to also satisfy Commonwealth matters, facilitating a streamlined implementation of the finalised approach. This will occur after the Commonwealth approval is received.

The attached Offset Strategy provides assurance that onsite physical offsets are achievable but that an extension to the consented time to retire the credits is required; an aggressive timeline to secure the credits is included in the strategy. Stage 1 (road upgrades) of this project is now shovel-ready and delays will:

- Delay the project, at a time when construction projects are highly important for boosting the economy during Covid restrictions.
- Delay the benefits the project will bring in the transition from fossil fuel generated electricity to renewable emission-free energy.
- Drive the proponent toward securing the credits via the BCF, a quicker but more expensive option and one this is not as preferable, under the BC Act.

- Disincentivise reductions that may be possible to the development footprint during construction of Stage 1 and further detailed design of successive stages, which may reduce biodiversity impacts and therefore offsets.

Please find attached the Offset Strategy to sastify the NSW offset obligation for the project. If you require any further information in support of the request for additional time (18 months extension is requested based on the time line presented), please contact me directly.

This project is now shovel-ready, with Stage 1 road works scheduled for early July 2020 and the current consent does not allow commencement of construction prior to credit retirement.

If you have any questions, please contact me, on 0410 349 284. I would be pleased to discuss this project with you further. Yours sincerely,

Beth Noël
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Wollar Solar Farm: NSW Biodiversity Offset Strategy

Background

The Wollar Solar Farm NSW Development Consent (SSD approval 9254) specifies offsets required to be retired using the Biodiversity Offset Scheme. It stipulates the retirement of credits must be completed *prior to development.* A Modification Application is currently being assessed by the NSW Department of Planning Infrastructure and Environment (DPIE) that seeks to modify that offset requirement. Additional offsets will also be required under the Commonwealth approval (pending).

Wollar Solar Development Pty Ltd (WSD) wish to maximise the use of the project site to generate and retire biodiversity offsets to meet their offset requirement. A Stewardship Agreement, submitted in accordance with the BC Act, is expected be sufficient to account for all ecosystem credits generated under the NSW Biodiversity Offset Scheme (BOS). Additionally, after a limited survey program to verify which species credits cannot be secured within the same site, residual species credits will be purchased either from the credit market or by paying into the BCF.

NGH has undertaken preliminary investigations to inform this Offset Strategy. Key source information is drawn from:

- Preparation of a BDAR (NGH 2019 v2), which includes:
    - The calculation of credits contained in the existing NSW Development Consent
    - The calculation of areas required to meet Commonwealth offset requirements using the Commonwealth offset tool
    - An estimation of the local extent of NSW and Commonwealth Threatened Ecological Communities on site and in the locality
- Preparation of a Modification Application and updated BDAR (NGH 2020a V3[1]). The application:
    - Generates additional credits for the relocation of a short section of access track
    - Corrects species credit errors, reducing the overall species credit requirement
    - Accurately separates the credit requirement into the four stages in which the project will be constructed.
- Provision of a Commonwealth Offset Strategy outline (NGH 2020b v2) provided to Dept. Agriculture, Water and Environment (DAWE) to show how offsets could be conditioned, using the NSW BAM methodology.
- Preparation of internal advice provided to WSF (NGH 2020c), to investigate the ability of the residual areas of the Wollar Solar Farm development site to generate credits to satisfy the project's offset obligation (consented for NSW and estimated for the Commonwealth).

Credit requirements

As of 25 June 2020, the applicable credit requirement is from Schedule 3 condition 13 of the NSW Development Consent, set out below. The NSW Modification Application and the Commonwealth approval are pending and are not considered in detail at this time.

[1] Not approved as of 25/06/20.

Table 1 Consented ecosystem credits obligation

PCT	Credits
PCT 1303 White Box - Grey Gum - Kurrajong grassy woodland on slopes of the northern Capertee Valley, Sydney Basin Bioregion	469
PCT 281 Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	242
PCT 1610 White Box - Black Cypress Pine shrubby woodland of the Western Slopes	2

Table 2 Consented species credit obligation

Species Credit Species	Credits Required
Austfeld's Wattle (*Acacia ausfeldii*)	34
Bush Stone-curlew (*Burhinus grallarius*)	34
Gang-gang Cockatoo (*Callocephalon fimbriatum*)	182
Large-eared Pied Bat (*Chalinolobus dwyeri*)	50
Commersonia procumbens	2
Large-leafed Monotaxis (*Monotaxis macrophylla*)	34
Barking Owl (*Ninox connivens*)	36
Powerful Owl (*Ninox strenua*)	36
Squirrel Glider (*Petaurus norfolcensis*)	34
Brush-tailed Phascogale (*Phascogale tapoatafa*)	32
Koala (*Phascolarctos cinereus*)	34
Masked Owl (*Tyto novaehollandiae*)	36

Aims

The aims of this Offset Strategy are to set out a method to provide:

1. Certainty to the DPIE that suitable physical offset site/s exist to secure the majority of the project's ecosystem offset obligation.
2. Set out a process and timeline to meet the NSW credit obligation in full.

Further updates are likely to be made to the strategy at a later date to reflect the NSW Modification Application and Commonwealth matters, pending these approvals.

Methodology

Overview

The full process anticipated to satisfy the NSW and Commonwealth offset obligations for the Wollar Solar Farm would include four steps:

1. NSW Offset Strategy - Initial desktop estimate of proposed stewardship site/s credit generation to meet NSW conditions of consent. Establish an expected timeframe for securing offset sites. Justify the need for Secretary's Discretion to alter the Development Consented time frame for retirement

This document meets Step 1.

2. Commonwealth Offset Strategy - Calculation of Commonwealth credit requirements using the BAM. This would include field work to delineate CEEC and set out the additional means to secure Commonwealth offsets.
3. NSW Stewardship Assessment - Preparation of a Biodiversity Stewardship Site Assessment Report and associated documentation including Total Fund Deposit and Management Plan, in accordance with the NSW Biodiversity Conservation Act but including the Commonwealth requirements where practical.
4. Purchase remaining credits - Assess the need for retirement of any remaining credits (expected to include only species credits). Assist the client to meet these obligations by purchasing from the credit market or by paying into the BCF.

Task Breakdown

The detailed breakdown of these steps is as follows:

1. NSW Offset Strategy - Desktop assessment using existing plot data to establish the ability for the proposed stewardship site/s to meet the credit requirements. Including:
    - Review of the following internal reports to establish the ability of the proposed stewardship areas to meet the NSW credit requirements:
        i. Commonwealth Biodiversity Offsets Strategy V2; and
        ii. Onsite Offsets Investigation.

    On confirmation that the offsets areas are suitable, confirm the timeframe for site assessment, calculations, securing offset sites and retiring credits.
2. Commonwealth Offset Strategy - Quantify Commonwealth credit requirements. This would involve further field work to delineate CEEC areas onsite with the aim of reducing the Commonwealth credit requirements. This could be done in conjunction with stewardship field surveys (Step 3).
3. NSW Stewardship Assessment - Prepare stewardship documentation to support stewardship (NSW) and conservation agreement (Commonwealth) to meet credits requirements for NSW consent and Commonwealth calculated credits (calculated in Step 2). Works include:
    - A search of the MinView database would be undertaken to determine if there are any known mineral occurrences, mining titles or exploration licences that may be relevant to the offset sites. If any relevant entries are identified, we would liaise with NSW Department of Planning and Environment – Resources and Energy to obtain additional details regarding the implications they may have for establishing the sites as offsets. The results would be communicated to WSF in an email. No consultation with relevant leaseholders is included.
    - Land Titles search will be conducted to establish the areas of crown land and other possible exclusions required for land within the chosen areas.
    - Field plots conducted in order to meet the required number of vegetation integrity plots (as per the BAM). It is estimated that around 30-35 plots would be required.

- In addition, habitat for selected species credit species would be assessed to determine the possibility of meeting any of the species credit species requirements including surveying for Large Bent-winged Bat (*Miniopterus orianae oceanensis)* which is likely to occur within the proposed offset site.
- Updated BAM calculations, based on the results of the field assessment, to estimate the credits able to be generated onsite to meet both NSW and Commonwealth offset requirements (using the BAM).Confirm the stewardship site boundaries and Commonwealth offset site with the client.
- Development of appropriate management plans and costing of these. Costs of management actions would be determined following finalisation of the Management Plan for the initial 20-year period to which management actions apply. This would then be translated into a Total Fund Deposit that would be payable by the proponent to the Biodiversity Conservation Trust (BCT) as a minimum to retire the credits generated by the project.. Complete BSSAR ready for lodgement with NSW Biodiversity Conservation Trust.

4. Purchase remaining credits - Identify deficits in credits (if applicable) and make recommendations.
    - Research the availability and price of deficit credits and liaise with the client regarding the potential options including provision of a brief letter report including costs of credits.
    - Further works for one or more of the following:
        i. Targeted surveys, where species were assumed in lieu of surveys
        ii. Establishing additional stewardship sites (highly unlikely)
        iii. Negotiated trades through the credit market
        iv. Paying into the fund.

Predicted Timeframe

The following 18 month expedited timeframe is proposed to meet the seasonal and project objectives. Time will also be required for agency input and administration.

Table 3 Timeline for credit retirement

Steps	Tasks	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
Preparation of Offset Strategy 1 - NSW offsets desktop	Review of internal reports																		
	Background searches																		
	Reporting																		
Update of Offset Strategy 2 - Commonwealth CEEC delineation	Field work																		
	Consultation with DAWE																		
	Update of report to include CW Matters																		
Stewardship Assessment - NSW and Commonwealth	Field work																		
	Data analysis and BAM calculations																		
	Consultation with BCT and DAWE																		
	BSSAR																		
	Management Plan																		
	Total Fund Deposit																		
	Appendix - Commonwealth credits explanation																		
Credit deficit retirement recommendations	Register searches, expression of interest																		

Steps	Tasks	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
	Negotiated trades through the market																		
	Pay residual obligations to the fund.																		

Preliminary Results of Step 1

NGH undertook preliminary desktop investigations for WSFPL in April this year (NGH 2020c), to investigate the ability of the residual areas of the Wollar Solar Farm development site to generate credits to satisfy the project's offset obligation (consented for NSW and estimated for the Commonwealth). This was done using existing plot data that was estimated to represent PCTs and vegetation zones within the proposed stewardship site.

The key results are presented below to demonstrate the suitability of the site to retire the majority of the Wollar Solar Farm's offset obligation. The assumption is that the proposed stewardship area would be assessed and formalised as a Stewardship Agreement through the NSW Biodiversity Conservation Trust (BCT).

Proposed Stewardship Area

The following Figure 1 shows the proposed stewardship site boundary, adjacent to the Wollar Solar Farm's development footprint. It excludes some peripheral areas we do not believe could be effectively managed for biodiversity improvements.

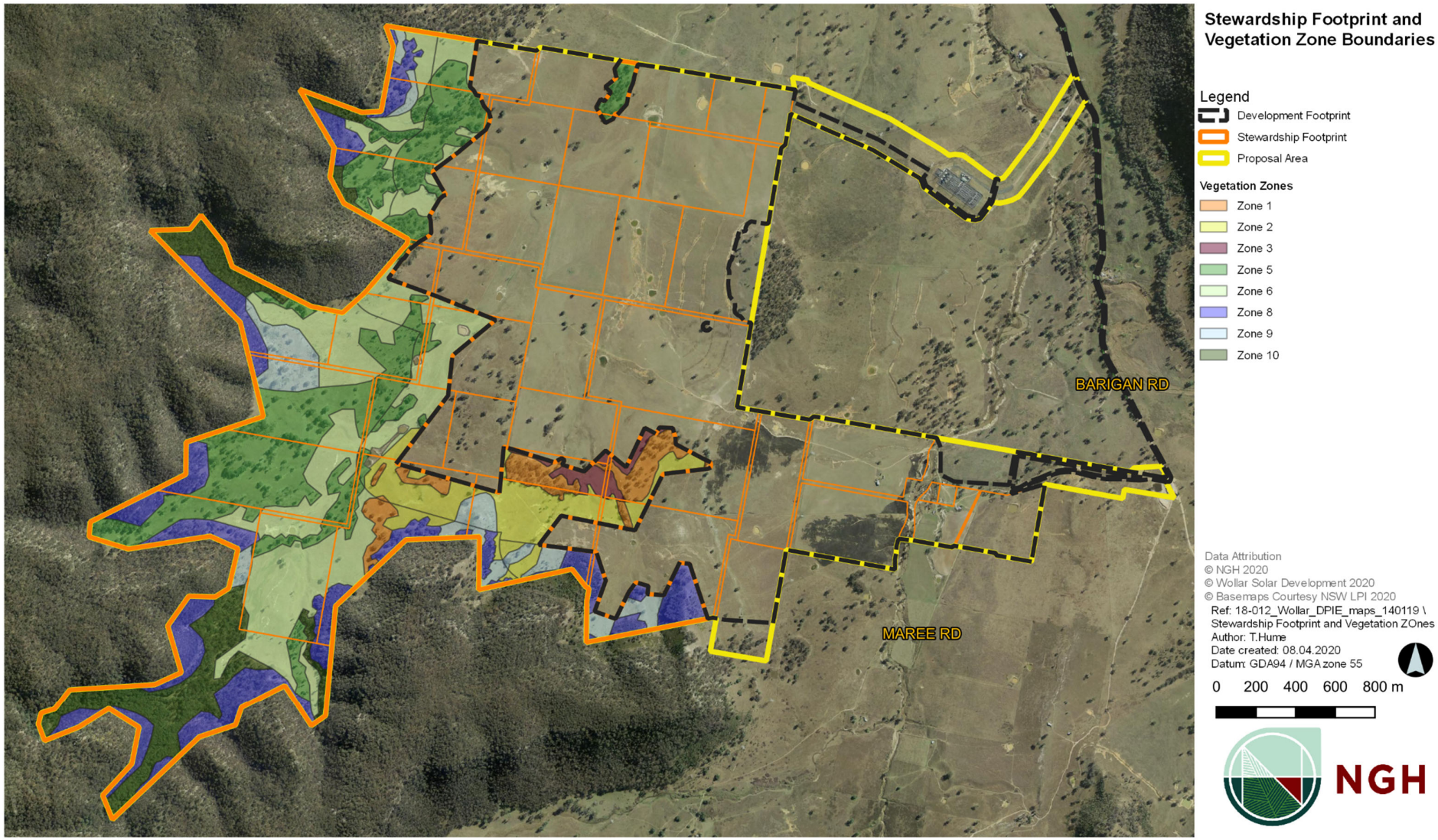

Figure 1 Areas investigated for stewardship site, outside the development footprint.

Desktop Assessment

The ability of the residual areas of the Wollar Solar Farm site to generate the credits above was investigated through a preliminary desktop study (Step 1) by:

1. Defining areas suitable for biodiversity management within the residual areas of the nominated lots. Smaller, fragmented areas were excluded. Refer to Figure 1.
2. 'Predictive' vegetation stratification was carried for suitable areas using best available knowledge including; aerial photo interpretation, topography and onsite experience. Note these areas were not subject to detailed assessment so the results are an 'extrapolation' at this stage from the onsite survey work undertaken within and adjacent to the development footprint using existing plot data. Refer to Appendix A for an illustration of the vegetation zones assumed to occur. One additional vegetation zone was created for PCT 281 (PCT 281_ForestZone10) because this PCT was observed to contain significantly more tree and shrub cover beyond what exists already inside the development footprint.
3. Plot data from the development site were manipulated for use in the Stewardship assessment. Specifically,
    a. Existing Vegetation Integrity plot data for vegetation zones 1, 2, 3, 5, 6, 8, 9 (collected and presented in the latest BDAR V2) were used as a surrogate for vegetation zones inside the Stewardship footprint.
    b. No vegetation zone plot data was available for vegetation zone 10 as this is a new vegetation zone inside the stewardship footprint (not found inside the development site). Zone 5 (PCT 281-WL) was used (in part) with PCT benchmark scores used to enter values for tree/shrub composition and structure as well as benchmark values for an increase in leaf litter and large woody debris expected inside this zone.
    c. Manipulation of vegetation zone VI scores (in accordance with 15.5.1.2 (a) and table 8 of the BAM) was undertaken to account for assumed invasion of high threat exotic weeds throughout the Offset footprint. This includes assumed presence of Saffron Thistle and St Johns Wort. This meant a higher loss in biodiversity value within the offset area which is expected when high threat exotic plant species are established already onsite in suppressing regeneration of these vegetation zones back to benchmark condition.
    d. Vegetation zone VI scores were also manipulated (in accordance with section 13.6.1.2 of the BAM) to account for gains in VI scores as a result of 'active restoration management'. Benchmark values were entered into the calculator to simulate management actions that will have a target to achieve maximum gain for generating ecosystem credits.
4. Consideration of habitat suitability inside the stewardship footprint for species credit species; only one of the candidate species, the Large-eared Pied Bat, is assumed likely to be found and generate credits. This species was found inside the development site during targeted surveys. To generate credits for any candidate species, confirmation of presence through targeted survey work or species experts would be required in order to generate any species credits for other candidates within suitable habitat.
5. Preliminary estimations of ecosystem credits for PCTs 281, 1303 & 1610 (as stipulated in Table 1-1 above), was conducted using the BAM online calculator.

It is noted that:

- Confirmation of Stewardship site vegetation zone boundaries and collection of field plot data and targeted surveys will be required to proceed with a stewardship site assessment.
- The BAM calculator is regularly updated and credits generated would not be considered final until the Biodiversity Stewardship Site Assessment Report is lodged and accepted by the BCT.

Credits may be overestimated due to our methodology as follows:

- To maximise the credits generated per hectare, we have assumed maximum management of the site to improve biodiversity values; assuming the objective of the management is to bring each zone to

benchmark values. All active restoration management actions (see table 7 BAM) to improve biodiversity values will need to be approved through the consent authority (BCD) and will require greater costs of establishment (the Total Fund Deposit paid at the time of establishment to account for in perpetuity management of the offset site).

- The credits generated by each zone reflect the zone's ability to improve. Hence if actual plot data shows zones are in better condition than assumed by this assessment, less credits may be generated.

Credits Predicted to be Generated

The proposed stewardship site (370 ha in total) is predicted to generate the following ecosystem credits;

- PCT 1303 is generating 378 credits
- PCT 281 is generating 1446 credits
- PCT 1610 is generating 495 credits
- The Large-bent wing Bat is predicted to generate 984 credits

A summary of the preliminary results from the BAM calculator are presented in Table 4below:

Table 4 Credits generated for Wollar Solar Farm residual areas

Entity	Offset Area (ha)	Credits
PCT 1303 White Box - Grey Gum - Kurrajong grassy woodland on slopes of the northern Capertee Valley, Sydney Basin Bioregion	**51.8**	**378**
PCT 281 Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	**226.5**	**1446**
PCT 1610 White Box - Black Cypress Pine shrubby woodland of the Western Slopes	**91.5**	**495**
Large Bent-wing Bat (assumed to occur in Vegetation Zones 1, 5, 9 & 10).	**175.6**	**984**

In comparison to the offset requirement, a surplus is expected for all PCTs and one species:

Table 5 Credit comparison showing a credit surplus (net credits)

Entity	Required credits	Estimated credits generated	Net credits
PCT 1303 or 281	711	1824	+ 1113
PCT 1610	2	495	+ 493
Large-eared Pied Bat	50	984	+ 934
Other Species credits (3 flora species, 8 fauna species)	494	0	- 494

Table 6 Predicted deficit for the following species credits

Species Credit Species	Deficit Credits; must be purchased
Austfeld's Wattle (*Acacia ausfeldii*)	34
Bush Stone-curlew (*Burhinus grallarius*)	34
Gang-gang Cockatoo (*Callocephalon fimbriatum*)	182
Commersonia procumbens	2
Large-leafed Monotaxis (*Monotaxis macrophylla*)	34
Barking Owl (*Ninox connivens*)	36
Powerful Owl (*Ninox strenua*)	36
Squirrel Glider (*Petaurus norfolcensis*)	34
Brush-tailed Phascogale (*Phascogale tapoatafa*)	32
Koala (*Phascolarctos cinereus*)	34
Masked Owl (*Tyto novaehollandiae*)	36

Discussion

Surplus ecosystem credits are predicted. If field validated data confirms the predicted surplus there is potential to either:

- Reduce the size of the offset site, to meet the credit requirement exactly.
- Offer surplus credits for sale on the credit register. This relies on demand for the credits to be a viable financial proposition.

The Stewardship site boundaries will be refined based on further surveys and in consultation with the landowner.

Intensive management of the stewardship site (to improve its vegetation integrity scores) has been assumed during the preliminary desktop assessment (Step 1) to increase the biodiversity gains for all vegetation zones onsite. If a stewardship site agreement was completed, then additional management actions beyond what is a 'required management action' (in accordance with table 6 of the BAM) would need to be described and justified to result in the generation of more credits supported by a suitable 'management plan' detailing active management actions . The proposed management actions would need to be endorsed by the BCT and funded within the Total Fund Deposit for the approval of the stewardship site.

Species credits were only considered for Large-eared Pied Bat (and not other species credits) because it was the only candidate species (outlined in BDAR Ver 2) confirmed to be present during past targeted surveys. There is some potential to detect large forest owls using targeted surveys (or expert reports). This would be investigated further in the BSSAR.

The estimation of credits (in Table 5) is based on entering existing data into the BAM calculator. Confirmation of Stewardship site vegetation zone boundaries and collection of field plot data and targeted surveys will be required for a stewardship site assessment and is proposed as part of Step 3. It is

acknowledged that the BAM calculator is regularly updated and credits generated would not be considered final until the Biodiversity Stewardship Site Assessment Report is lodged and accepted by with the BCT.

Regarding species credits, further work is required to investigate one or more of the following in order to meet deficits in species credits (shown in Table 6):

i. Establishing additional stewardship sites to meet deficit credit requirements (considered highly unlikely, given time-frames and significant number of species credits required)
ii. Negotiated trades through the credit market (preferred)
iii. Paying into the fund (fall back option as this is most expensive and does not support local biodiversity outcomes).

Conclusion

It is believed that the results from the Step 1 Desktop study confirm a very high likelihood that sufficient ecosystem credits could be generated by the proposed stewardship site to meet NSW and Commwonwealth offset obligations.

Further works would need to be conducted, including Steps 2, Step 3 and Step 4, in order to establish a stewardship agreement and retire of any deficit credits, either via a negotiated trade on the credit market or paying into the BCF.

This process relies on an estimated timeframe of 18 months.

References

NGH 2019 v2, Wollar Solar Farm BDAR, prepared for WSFPL, October 2019.

NGH 2020a v3, Wollar Solar Farm BDAR, prepared for WSFPL, May 2020.

NGH 2020b. Wollar Solar Farm Commonwealth Offset Strategy Outline, prepared for WSFPL, 26 March, 2020.

NGH 2020c. Wollar Solar Farm Onsite Offsets Potential, prepared for WSFPL, 9 April, 2020.