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Project Approval: MP10_0160

Our Ref: 17SUT-7609

15 December 2017

Dear Adrian,

RE: Biodiversity Offset Package – White Rock Wind Farm Stage 1 and modified Stage 2 Offsets

Purpose

This report has been prepared by Eco Logical Australia (ELA) to support an application for modification of the White Rock Wind Farm (WRWF) Project Approval MP10_160 (Mod 6) to allow a modified WRWF Stage 2 development involving 48 wind turbines (28 approved, 20 new sites), additional properties and variations to associated infrastructure. It provides details of a proposed variation to the WRWF Biodiversity Offset Package (BOP) to address increased offset requirements for the overall WRWF Project (Stage 1 and modified Stage 2).

WRWF Stage 1 Impacts

Eco Logical Australia (ELA) submitted a Biodiversity Offset Package (BOP) to the Department of Planning and Environment (DPE) for White Rock Wind Farm (WRWF) Stage 1 in July 2016 (**Attachment 1 –** BOP WRWF Stage1 ELA 2016a). The DPE approved this package on 19 August 2016 (**Attachment 2**).

The BOP committed to retire **76**7 ecosystem credits for two Plant Community Types (PCTs), as calculated by Anderson Environment and Planning (2016), in accordance with the credit trading rules within the Major Projects Offset Policy (the Framework for Biodiversity Assessment (FBA))(**Table 1**).

The approved BOP proposed the registration of a BioBank Agreement over part (184 ha) of a 650 ha property owned by White Rock Wind Farm Pty Ltd (WRWFPL) called 'Tangari' to generate these credits.

The proposed Tangari Biobank site Stage 1 has been assessed as generating **1,816** ecosystem credits across seven PCTs, five of which meet the FBA offset requirements for the calculated Stage 1 impacts as either matching PCTs or PCTs within the '*same Vegetation Class and per cent cleared in the major catchment area'* as allowed in the FBA or are from PCTs that are in the same Vegetation Formation and are associated with EECs[1]. An application to register this area as a BioBank site was formally submitted to the Office of Environment and Heritage (OEH) in December 2016 (**Attachment 3 –** Tangari BioBank Assessment Credit Report Stage 1– ELA 2016b) but

[1] Section 10.5 of the FBA (and Table 5 of the FBA), allows an offset to be met if the PCT in the offset area is the same as the impacted PCT or any PCT that is of the same Vegetation 'Class' that has an equal or greater percent cleared in in the major catchment area. Further, a variation may be granted for PCTs that are in the same Vegetation 'Formation' as long as the impacted PCT is not associated with a critically endangered PCT and the proposed offset PCT is also associated with an EEC.

as of December 2017, OEH have not completed their review/audit of this application. Once registered, 767 ecosystem credits will be retired in accordance with the approved BOP.

In December 2016, WRWFPL submitted a modification to the WRWF (Mod 4) for an alternative 330kv grid connection (**Attachment 4 –** FBA Assessment of WRWF Alternative Grid Connection – ELA 2016c). ELA undertook an FBA calculation of the credits required for this modification and in consultation with OEH (refer email, of 5 May 2017), agreed to retire an additional **251** ecosystem credits (including 42 for derived grassland impacts) for three PCTs (**Table 2**).

Further in April 2017, WRWFPL wrote to the Secretary of the DPE providing supplementary information to the Mod 4 application, regarding clarifying the extent of clearing permitted by Condition C1(b) and that the amount of permitted clearing was likely to be exceeded. A request was made to increase the amount of permitted clearing to the '*Ribbon Gum – Mountain Gum – Snow Grass Grassy Forest*' EEC from 22 ha to 28 ha (**Attachment 5** – White Rock Wind Farm Part 3A Section 75W Modification Application 4 – Supplementary Information – WRWF, 21 April 2017).

ELA were commissioned to calculate the number of credits required for this additional clearing and used the same data (credits required per hectare of impact) as for the original Stage 1 clearing assessment (Anderson Environment and Planning 2016). The assessment (**Attachment 6** – Independent assessment of clearing Ribbon Gum – Mountain Gum - Snow Grass grassy forest/woodland to support WRWF Modification Application- ELA 2017) calculated that an additional **251** ecosystem credits would be required in addition to the **767** already calculated by Anderson Environment and Planning, to meet all of the expected clearing associated with the Stage 1 WRWF (**Table 3**). It is noted that the final expected clearing resulted in increased impacts to one PCT and a decrease to a second PCT, hence the negative number of credits in **Table 3.**

The already submitted Tangari Stage 1 Biobank site (**Figure 1**) was able to meet all of the offset requirements for the approved Stage 1 impacts, the request for increased Stage 1 clearing and the Mod 4 alternative powerline (182 ha site generating 1,816 ecosystem credits, 1,269 ecosystem credits required, 547 surplus credits).

WRWF Stage 2 Impacts

The proposed WRWF Stage 2 involves a modified project layout, additional properties and larger wind turbines. A modification of the Project Approval MP10_160 (Mod 6) is required to allow the modified Stage 2 project to proceed and WRWFPL is preparing an application for that purpose.

Associated with preparation of the modification application for Stage 2, NGH Environmental has been engaged by WRWFPL to undertake an FBA assessment of the clearing required for the modified Stage 2. NGH has found that **4,547** ecosystem credits (**Attachment 7 –** NGH Stage 2 Credit Report) are required for impacts associated with the construction of the modified WRWF Stage 2.

The Stage 1 Tangari Biobank site does not generate sufficient credits to meet this requirement.

In order to meet the offset requirements of the Stage 2 impacts, WRWFPL propose to extend the Tangari Biobank site by approximately 250 ha in areas that have been previously assessed by ELA as likely to provide the appropriate vegetation types (**Figure 2**). ELA has consulted with the OEH and reached an agreement that this assessment can be completed under the savings provisions of the new Biodiversity Conservation Act 2016, using the former BBAM, so that there is no uncertainty regarding the number of credits required for impacts or generated at offset sites, due to differences in methodologies and equitability between credit types calculated under the FBA and the new Biodiversity Assessment Method (BAM).

It is estimated, based on the number of credits generated per hectare in Stage 1 (8.93-11.53 credits per hectare with a 3rd order stream and standard management actions) that this will create an additional 3,284 FBA 'matching' ecosystem credits at 13 credits per hectare. This estimate is based on the proposed expanded biobank site including both sides of a 4th order creek (a Strategic Location), averted loss (as the property is zoned RU1 Primary

Production) and the implementation of 'additional management' actions (bringing in logs, stags and nest boxes salvaged from the wind farm impact area) (**Figure 2** and **Table 4**). It is noted that the Stage 1 biobank site will also benefit from these additional management actions and the 4th order stream, increasing the number of credits generated in the Stage 1 area from 1,816 to an estimated 2,396.

The field assessment for the expanded Tangari Biobank site was completed in December 2017, credit calculations will be completed in January 2018 and the revised application to register a larger Tangari Biobank site will be submitted to OEH for review, audit and registration before 25 February 2018 to meet the savings provisions cut-off date.

Further, WRWFPL has entered into discussions with the owners of the Matheson Block 1 Biobank site, submitted to OEH for registration in April 2017 (**Attachment 8 –** Matheson Credit Report) to secure and additional **584** PCT 554 ecosystem credits if required (**Figure 3** and **Table 4**).

The proposed extension to the Tangari Biobank site and the credits available from the Matheson Block 1 Biobank sites are able to meet all of the offset requirements for the calculated Stage 2 impacts other than eight credits for PCT 554 '*Ribbon Gum – Mountain Gum'*, and a relatively small 98 credit deficit (approximately 7.5 ha) for PCT 565 Silvertop '*Stringybark – Mountain Gum grassy open forest*'. This is based on matching PCTs, PCTs from the same Vegetation Class and the same or higher per cent cleared (as per Table 5 of the FBA) or variations that allow the use of a PCT form the same Vegetation Formation that is also associated with a CEEC or EEC (Section 10.5.4.2 of the FBA and **Table 4**).

Subject to the results of the formal credit calculations, there is scope to modify the boundary of the proposed expanded offset area, if required, to generate these credits. In addition, there will be an estimated surplus of 422 PCT 508 credits that are part of the Box Gum Woodland EEC but have been classified in BioNet as being from a Dry Sclerophyll Forest Vegetation Formation rather than a Grassy Woodland Vegetation Formation (and thus not strictly meeting the credit trading rules) which could be used to meet any deficit for PCT 554, Similarly, these credits could be retired to meet the estimated deficit for PCT 565 (98 credits). In the unlikely event that the proposed extension to the Tangari Biobank site does not generate the required number of credits as estimated, WRWFPL has commenced discussion with several other interested landowners in the project area to meet the offset requirements (**Figure 3**), or can purchase any remaining deficit credits from the new Biodiversity Conservation Trust, once operational.

Commitments

WRWFPL will:-

1. Complete the assessment for the expanded Tangari Biobank site and submit the application for registration by 25 February 2018.
2. Once the Tangari BioBank site has been registered by OEH (expected to be by mid to late 2018, WRWFPL will retire:-
    a. 1,018 FBA matching ecosystem credits to complete the commitments for Stage 1 impacts as shown in **Table 4** (767 credits for original Stage 1 impacts and an additional 251 credits for the additional clearing)
    b. 251 credits for the additional powerline (Mod 4)
    c. 4,547 credits for the calculated Stage 2 impacts (Mod 6)
3. Commence the active management of the entire expanded BioBank site from 1 Jan 2019.
4. Subject to the number of 'matching' credits generated by the proposed extension to the Tangari Biobank site, WRWFPL will enter into an agreement or agreements to purchase and retire any additional credits required to fully comply with the Stage 2 offset requirements from either the Matheson Block 1 Biobank site, other Biobank sites or the Biodiversity Conservation Trust

Conclusion

This letter confirms detail of the proposed expansion of the WRWF BOP (Stage 1 and 2) and demonstrates that suitable credits are available to meet the required credit estimate. Subject to approval of the Modification Application No. 6, WRWFPL will seek formal approval of the DPE and OEH for the modified BOP.

Robert Humphries

Robert Humphries
Eco Logical Australia

Cc. Dimitri Young, Senior Team Leader Planning Section North East – Office of Environment and Heritage

Attachment 1: White Rock Wind Farm Stage 1 Biodiversity Offset Package, Letter to DPE dated 11 July 2016

Attachment 2: DPE Approval of Stage 1 BOP dated 19th August 2016

Attachment 3: Tangari Stage 1 Biobank site application credit report

Attachment 4: FBA credit calculations for WRWF Mod 4 – alternative powerline connection – Letter to WRWF dated 2 December 2016

Attachment 5: WRWF Mod 4 supplementary information regarding extent of clearing in Stage 1 letter to DPE dated 21 April 2017

Attachment 6: Independent Stage 1 Clearing assessment – Letter to WRWF from ELA dated 19 April 2017

Attachment 7: NGH White Rock Stage 2 FBA impact credit report

Attachment 8: Matheson Block 1 Biobank site application credit report

References

AEP (2016) White Rock Wind Farm Stage 1 Draft Biodiversity Offset Package March 2016

ELA (2016a) Final Offset package – White Rock Wind Farm – Letter to Department of Planning and Environment, 11 July 2016.

ELA (2016b) FBA Assessment of White Rock Wind Farm Alternative Grid Connection (Mod 4). Letter to White Rock Wind Farm Pty Ltd, 2 December 2016.

ELA (2016c) Biobanking Agreement Credit Assessment Report – Tangari Biobank Site. Prepared for White Rock Wind Farm Pty Ltd, 14 December 2016

ELA 2017 Independent assessment regarding clearing of Ribbon Gum – Mountain Gum – Snow Gum grassy forest/woodland EEC to support White Rock Wind Farm Section 75W Modification Application (Mod 4), letter to WRWF Pty Ltd dated 19 April 2017.

Table 1: Anderson Environment & Planning FBA impact calculations and credit requirements – Stage 1 White Rock Wind Farm

Vegetation Code	Vegetation Zone	Condition Class	Area (ha)	Credits Required	Credits / ha	Total Credits Required
BR329	Ribbon Gum – Mountain Gum – Snow Gum grassy open forest	Moderate/ Good	19.85	595	29.97	**647**
BR329	Ribbon Gum – Mountain Gum – Snow Gum grassy open forest (Area estimated from 50% Scattered Native Vegetation)	Moderate/ Good_ Poor	2.65	52	19.62	
BR272	Blakely's Red Gum – Yellow Box grassy woodland	Moderate/ Good	2.09	69	33.01	**120**
BR272	Blakely's Red Gum – Yellow Box grassy woodland (Area estimated from 50% Scattered Native Vegetation)	Moderate/ Good_ Poor	2.65	51	19.25	

Table 2: Mod 4 impact calculations and credit requirements for alternative powerline

Veg Zone	Plant Community Type	Ancillary	Current SV	Area (ha)	Future SV	Credits	Credits/ha
1	Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Woodland	63.93	1.21	22.95	42	34.65
2	Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	DNG	32.79	3.72	32.79	14	3.76
3	Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Woodland	90.62	0.53	27.60	27	50.65
4	White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Woodland	63.93	4.06	22.95	140	34.46
5	White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	DNG	40.44	7.58	40.44	28	3.69
				17.12		**251**	**14.66**

Table 3 – Mod 4 Supplementary Stage 1 Clearing estimates and credits requirements

Vegetation type (as mapped by RPS 2015)	Vegetation Code	Total Predicted Clearing Stage 1	Approved Biodiversity Offset Package - Stage 1			Additional Impacts - Stage 1		
Stage 1 Impacts (RPS Vegetation Mapping)			**Area (ha)**	**Credits**	**Credits / ha**	**Area**	**Pro-rata credits req/ha**	**Credits**
Ribbon Gum - Mountain Gum Woodland EEC	BR329	27.10	19.85	595	29.97	7.25	29.97	217
Scattered Vegetation (= non EEC Ribbon Gum)	BR329	8.55	2.65	52	19.62	5.90	19.62	116
Yellow Box - Blakely's Red Gum Woodland EEC	BR272	1.15	2.09	69	33.01	-0.94	33.01	-31
Scattered Vegetation (= non EEC Yellow Box)	BR272	0.00	2.65	51	19.25	-2.65	19.25	-51
Total		**36.80**	**27.24**	**767**	**28.16**	**9.56**	**26.26**	**251**

Table 4: Credit requirements for Stage 1, additional clearing Stage1, Mod 4 and Mod 6 impacts and credits generated by proposed offsets

						Impacts					Offset Areas							Credit Status Tangari Stage 1 & 2		Credit Status (Tangari + Matheson Block 1)	
						Stage 1		Stage 2 (Mod 4 & 6)		Total Credits required	Tangari Stage 1		Tangari Stage 2		Total Tangari	Matheson Block 1 BB Site (Huard)	Total Available	Surplus / deficit credits	Surplus / deficit FBA matching credits (Veg Formation & EEC)	Surplus / deficit credits	Surplus / deficit matching credits (Veg Formation and/or EEC)
PCT/BVT	Vegetation	EEC	Vegetation Formation	Vegetation Formation / Class	% Cleared	Credits Required Stage 1 Impacts (Approved BOP)	Credits required additional Stage 1 Impacts (ELA)	Credits required alternative Powerline (ELA)	Credits Required Stage 2 Impacts (NGH)		Total Area (ha)	Est No. Credits generated Stage 1 & 2 combined)	Total Area (ha)	Est No. Credits generated		No. Credits generated					
PCT590 / BR391	White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland	Grassy Woodland	Western Slopes Grassy Woodland	87%	0	0	168		168	25.30	329	4.27	56	**384**		384	216	-592	216	-8
PCT599/ BR271	Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South and Nandewar Bioregion		Grassy Woodland	Western Slopes Grassy Woodland	80%	0		56		56	5.84	76	163.78	2,129	**2,205**		2,205	2,149		2,149	
PCT 510 / BR 272	Blakely's Red Gum - Yellow Box grassy woodland of the New England Tablelands Bioregion		Grassy Woodland	New England Grassy Woodland	65%	120	-82	0	482	520	0	0	0.00	0	**0**		0	-520		-520	
PCT571 / BR330 PCT921 / BR153	Ribbon Gum (Manna Gum) - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tableland Bioregion and NSW North Coast Bioregion		Grassy Woodland	New England Grassy Woodlands	78%	0		27		27	121.41	1,578	33.16	431	**2,009**		2,009	1,982		1,982	
PCT 554 / BR329	Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Ribbon Gum - Mountain Gum - Snow Gum grassy open forest/woodland of the New England Tableland Bioregion	Grassy Woodland	Tableland Clay Grassy Woodland	84%	647	333	0	3,445	4,425	12.49	162		0	**162**	584	746	-4,263		-3,679	
PCT 507 / BR269	Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion		Grassy Woodland	Tableland Clay Grassy Woodland	87%				157	157		0		0	**0**		0	-157		-157	
PCT 508 / BR270	Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tablelands Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland	Dry Sclerophyll Forest (Shrubby sub-formation)	Northern Tablelands Dry Sclerophyll Forest	61%	0		0		0	6.61	86	25.87	336	**422**		422	422	422	422	422
PCT 564 / BR 394	White Cypress Pine - Silver-leaved Stringybark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tablelands Bioregion	N/A	Dry Sclerophyll Forest (Shrub/grass sub-formation)	North-west Slopes Dry Sclerophyll Forest	70%	0		0		0	7.76	101		0	**101**		101	101	-98	101	-98

						Impacts					Offset Areas							Credit Status Tangari Stage 1 & 2		Credit Status (Tangari + Matheson Block 1)	
						Stage 1		Stage 2 (Mod 4 & 6)		Total Credits required	Tangari Stage 1		Tangari Stage 2		Total Tangari	Matheson Block 1 BB Site (Huard)	Total Available	Surplus / deficit credits	Surplus / deficit FBA matching credits (Veg Formation & EEC)	Surplus / deficit credits	Surplus / deficit matching credits (Veg Formation and/or EEC)
PCT/BVT	Vegetation	EEC	Vegetation Formation	Vegetation Formation / Class	% Cleared	Credits Required Stage 1 Impacts (Approved BOP)	Credits required additional Stage 1 Impacts (ELA)	Credits required alternative Powerline (ELA)	Credits Required Stage 2 Impacts (NGH)		Total Area (ha)	Est No. Credits generated Stage 1 & 2 combined)	Total Area (ha)	Est No. Credits generated		No. Credits generated					
PCT 565 / BR352	Silvertop Stringybark - Mountain Gum grassy open forest of the New England Tableland Bioregion	N/A		New England Dry Sclerophyll Forest	44%				458	458		0	19.90	259	**259**		259	-199		-199	
PCT84 / BR194	River Oak - Rough-barked Apple - Red Gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	N/A	Forested Wetland	Eastern Riverine Forest	60%	0		0	5	5	1.12	15	5.11	66	**81**		81	76	76	76	76
Other			Tracks / Dams / Easements								3.77	49	0.52	7	**56**		56				
	Total					**767**	**251**	**251**	**4,547**	**5,816**	**184.30**	**2,396**	**252.61**	**3,284**	**5,680**	**584**	**6,208**	**-192**	**-192**	**392**	**392**

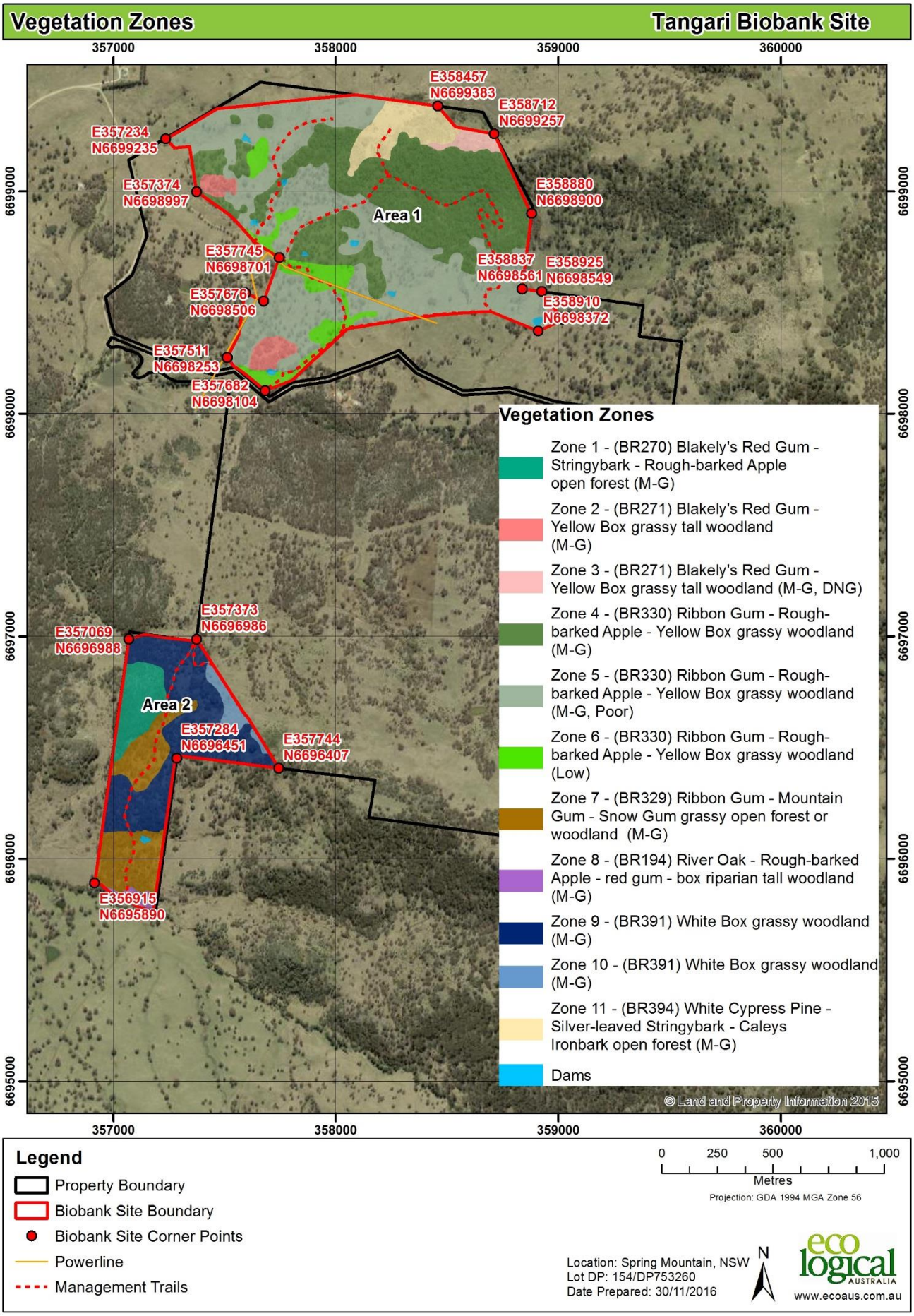


Figure 1: Plant Community Types Mapped on Tangari Stage 1 Offset area

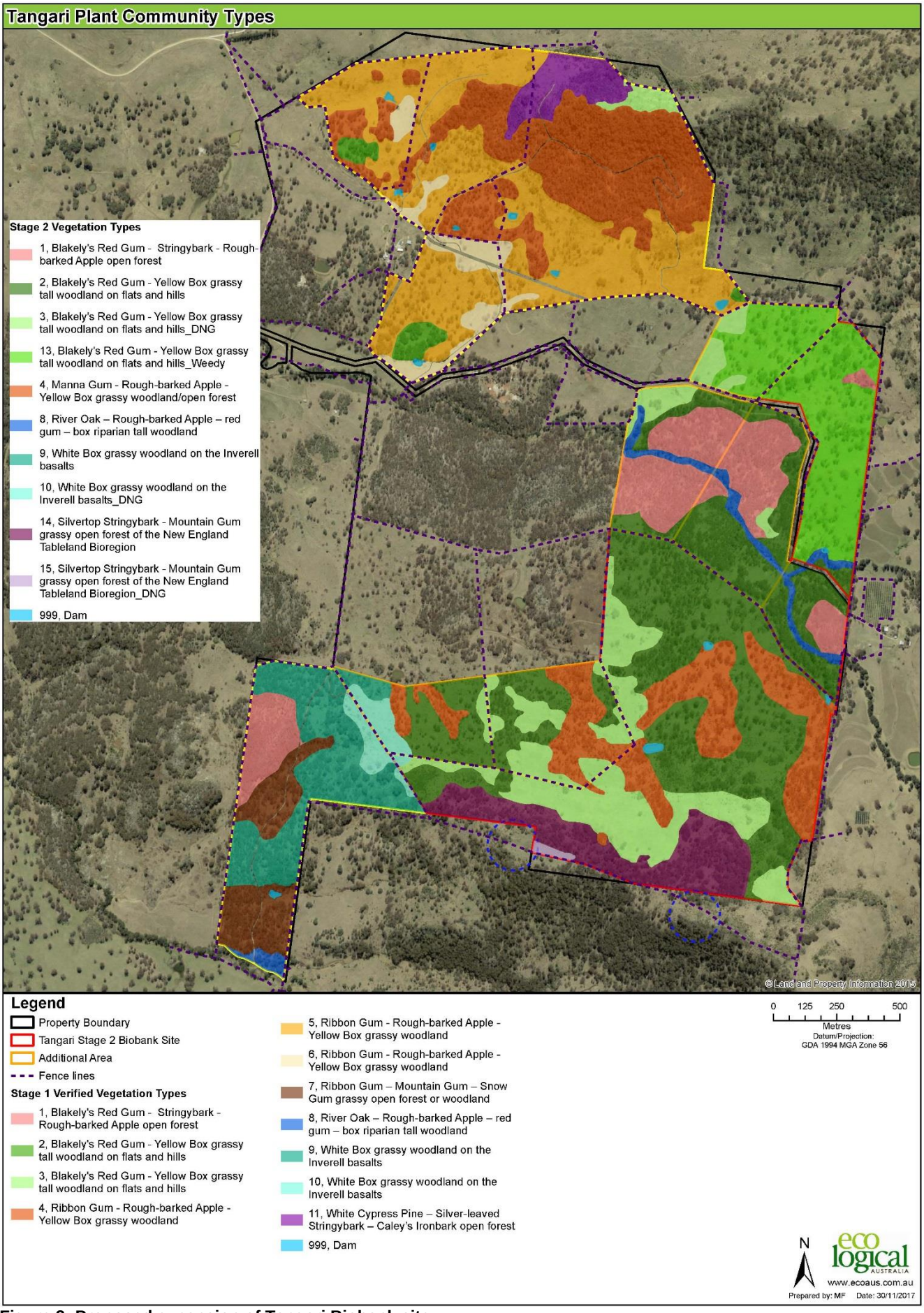


Figure 2: Proposed expansion of Tangari Biobank site

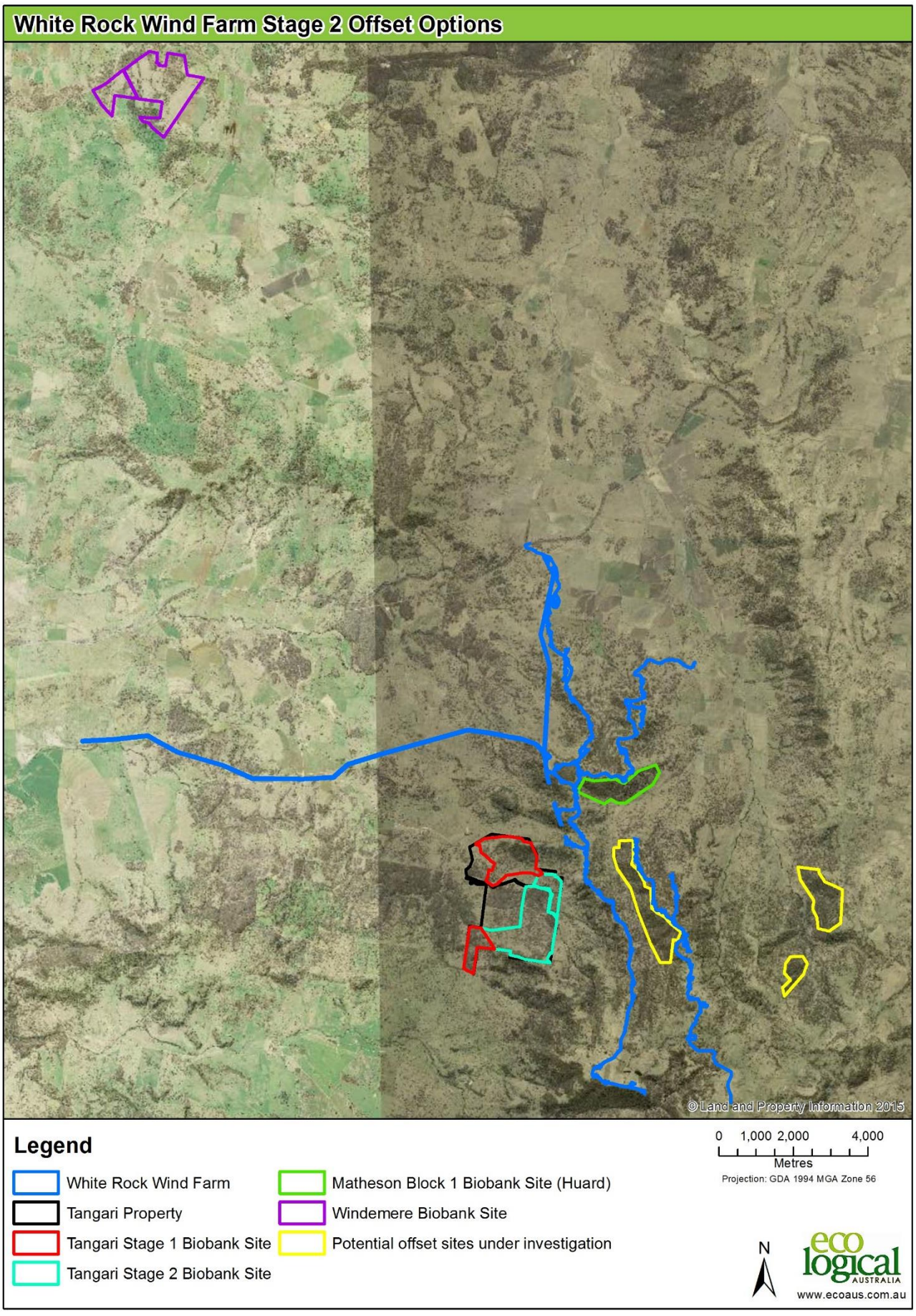


Figure 3: Regional location of proposed offset sites to meet offset requirements for Stage 2 impacts

Attachment 1

BioBanking credit report

This report identifies the number and type of credits required at a BIOBANK SITE

Date of report: 5/12/2016 Time: 2:01:03PM Calculator version: v4.0

Biobank details

Proposal ID:	110/2016/4098B
Proposal name:	Tangari
Proposal address:	1117 Spring Mountain Road Spring Mountain NSW 2360
Proponent name:	Goldwind Australia Pty Ltd
Proponent address:	Suite 2, Level 23 201 Elizabeth St Sydney NSW 2000
Proponent phone:	0290081705
Assessor name:	Greg Steenbeeke
Assessor address:	PO Box 12 Sutherland NSW 1499
Assessor phone:	02 8536 8626
Assessor accreditation:	110

Additional information required for approval:

- ☐ Use of local benchmark
- ☐ Expert report...
- ☐ Request for additional gain in site value

Ecosystem credits summary

Plant Community type	Area (ha)	Credits created
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	6.61	78.00
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	5.84	59.00
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	12.49	144.00
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	121.41	1,178.00
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	1.12	10.00
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	25.30	272.00
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	7.76	75.00
Total	180.53	1,816

Credit profiles

1. Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329)

Number of ecosystem credits created	144
IBRA sub-region	Glen Innes-Guyra Basalts

2. Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR330)

Number of ecosystem credits created	1,083
IBRA sub-region	Glen Innes-Guyra Basalts

3. Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR330)

Number of ecosystem credits created	95
IBRA sub-region	Glen Innes-Guyra Basalts

4. White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion, (BR391)

Number of ecosystem credits created	272
IBRA sub-region	Glen Innes-Guyra Basalts

5. Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion, (BR271)

Number of ecosystem credits created	59
IBRA sub-region	Glen Innes-Guyra Basalts

6. White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion, (BR394)

Number of ecosystem credits created	75
IBRA sub-region	Glen Innes-Guyra Basalts

7. Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion, (BR270)

Number of ecosystem credits created	78
IBRA sub-region	Glen Innes-Guyra Basalts

8. River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion, (BR194)

Number of ecosystem credits created	10
IBRA sub-region	Glen Innes-Guyra Basalts

Species credits summary

Common name	Scientific name	Extent of impact Ha or individuals	Number of species credits created
Austral Toadflax	Thesium australe	75.00	532
McKie's Stringybark	Eucalyptus mckieana	20.00	142

Additional management actions

Additional management actions are required for:

Vegetation type or threatened species	Management action details
Austral Toadflax	Control of feral pigs
Austral Toadflax	Feral and/or over-abundant native herbivore control
Austral Toadflax	Slashing
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Exclude commercial apiaries
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Exclude miscellaneous feral species
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Fox control
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Slashing
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude commercial apiaries
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude miscellaneous feral species
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Feral and/or over-abundant native herbivore control
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Fox control
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Slashing
McKie's Stringybark	Feral and/or over-abundant native herbivore control
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Exclude miscellaneous feral species

Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Fox control
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Exclude commercial apiaries
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Exclude miscellaneous feral species
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Feral and/or over-abundant native herbivore control
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Fox control
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Slashing
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude commercial apiaries
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude miscellaneous feral species
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Feral and/or over-abundant native herbivore control
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Fox control
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Slashing
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Exclude commercial apiaries
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Exclude miscellaneous feral species
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Feral and/or over-abundant native herbivore control
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Fox control
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Slashing
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Exclude commercial apiaries
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Exclude miscellaneous feral species

White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Fox control
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Slashing

Attachment 2

NSW GOVERNMENT | Planning & Environment

Contact: Phillipa Duncan
Phone: (02) 9228 6451
Email: Phillipa.duncan@planning.nsw.gov.au

Mr Adrian Maddocks
Project Representative, White Rock Wind Farm
White Rock Wind Farm Pty Ltd
Level 23, 201 Elizabeth Street
Sydney NSW 2000

Dear Mr Maddocks

White Rock Wind Farm (MP 10_0160)
Biodiversity Offset Package

Thank you for correspondence dated 18 July 2016 providing the revised White Rock Wind Farm Biodiversity Offset Package (BOP).

The Department notes the BOP only covers Stage 1 of the project and that the BOP would be required to be updated to include Stage 2. It is expected that a suitable offset for Stage 2 be identified, agreed and secured prior to commencing construction of Stage 2.

I note the BOP proposes that the offset requirements will be met by the registration of a Biobanking Agreement over the land identified as Sites 1 and 4 that is considered capable of generating the required number of biodiversity credits. I also note the BOP identifies an alternative offset site (the Tangari property) that is proposed to be used to meet the future Stage 2 offset requirements but could also be used to meet the Stage 1 requirements should there be any unforeseen issues in securing Sites 1 and 4.

The Department has carefully reviewed the revised BOP in consultation with the NSW Office of Environment and Heritage (OEH), and is satisfied that the package is consistent with the requirements of condition C7 of the project approval subject to:

- notifying the Department upon completion of the formal BioBanking assessment that the number of credits required can be met by Sites 1 and 4 (noting this is scheduled by end of December 2016);
- notifying the Department if the number of credits required is unable to be met by Sites 1 and 4 and revising the BOP in consultation with OEH within 3 months (unless otherwise agreed by Secretary); and
- securing the offset in perpetuity, to be achieved once the Biobanking Agreement has been finalised and the appropriate credits have been retired.

Should you have any queries, please do not hesitate to contact Phillipa Duncan on the above contact details.

Yours sincerely

19.8.16.

Mike Young
Director
Resource Assessments

Attachment 3

BioBanking credit report

This report identifies the number and type of credits required at a BIOBANK SITE

Date of report: 5/12/2016 Time: 2:01:03PM Calculator version: v4.0

Biobank details

Proposal ID:	110/2016/4098B
Proposal name:	Tangari
Proposal address:	1117 Spring Mountain Road Spring Mountain NSW 2360
Proponent name:	Goldwind Australia Pty Ltd
Proponent address:	Suite 2, Level 23 201 Elizabeth St Sydney NSW 2000
Proponent phone:	0290081705
Assessor name:	Greg Steenbeeke
Assessor address:	PO Box 12 Sutherland NSW 1499
Assessor phone:	02 8536 8626
Assessor accreditation:	110

Additional information required for approval:

- ☐ Use of local benchmark
- ☐ Expert report...
- ☐ Request for additional gain in site value

Ecosystem credits summary

Plant Community type	Area (ha)	Credits created
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	6.61	78.00
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	5.84	59.00
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	12.49	144.00
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	121.41	1,178.00
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	1.12	10.00
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	25.30	272.00
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	7.76	75.00
Total	180.53	1,816

Credit profiles

1. Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329)

Number of ecosystem credits created	144
IBRA sub-region	Glen Innes-Guyra Basalts

2. Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR330)

Number of ecosystem credits created	1,083
IBRA sub-region	Glen Innes-Guyra Basalts

3. Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR330)

Number of ecosystem credits created	95
IBRA sub-region	Glen Innes-Guyra Basalts

4. White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion, (BR391)

Number of ecosystem credits created	272
IBRA sub-region	Glen Innes-Guyra Basalts

5. Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion, (BR271)

Number of ecosystem credits created	59
IBRA sub-region	Glen Innes-Guyra Basalts

6. White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion, (BR394)

Number of ecosystem credits created	75
IBRA sub-region	Glen Innes-Guyra Basalts

7. Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion, (BR270)

Number of ecosystem credits created	78
IBRA sub-region	Glen Innes-Guyra Basalts

8. River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion, (BR194)

Number of ecosystem credits created	10
IBRA sub-region	Glen Innes-Guyra Basalts

Species credits summary

Common name	Scientific name	Extent of impact Ha or individuals	Number of species credits created
Austral Toadflax	Thesium australe	75.00	532
McKie's Stringybark	Eucalyptus mckieana	20.00	142

Additional management actions

Additional management actions are required for:

Vegetation type or threatened species	Management action details
Austral Toadflax	Control of feral pigs
Austral Toadflax	Feral and/or over-abundant native herbivore control
Austral Toadflax	Slashing
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Exclude commercial apiaries
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Exclude miscellaneous feral species
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Fox control
Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tableland Bioregion	Slashing
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude commercial apiaries
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude miscellaneous feral species
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Feral and/or over-abundant native herbivore control
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Fox control
Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	Slashing
McKie's Stringybark	Feral and/or over-abundant native herbivore control
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Exclude miscellaneous feral species

Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Fox control
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Exclude commercial apiaries
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Exclude miscellaneous feral species
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Feral and/or over-abundant native herbivore control
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Fox control
Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Slashing
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude commercial apiaries
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Exclude miscellaneous feral species
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Feral and/or over-abundant native herbivore control
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Fox control
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Slashing
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Exclude commercial apiaries
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Exclude miscellaneous feral species
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Feral and/or over-abundant native herbivore control
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Fox control
White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Slashing
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Exclude commercial apiaries
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Exclude miscellaneous feral species

White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Fox control
White Cypress Pine - Silver-leaved Ironbark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tableland Bioregion	Slashing

Attachment 4

White Rock Wind Farm Pty Ltd
Suite 2, Level 23, 201 Elizabeth Street
Sydney NSW 2000

ECO LOGICAL AUSTRALIA PTY LTD
ABN 87 096 512 088
www.ecoaus.com.au

Attention: Jeff Bembrick

Your Ref: MP10_160

Our Ref: 16SUT-4935

2 December 2016

Dear Mr Bembrick,

RE: FBA Assessment of White Rock Wind Farm Alternative Grid Connection at 330kV

Eco Logical Australia (ELA) has been commissioned by White Rock Wind Farm Pty Ltd (WRWFPL) through Goldwind Australia to undertake an indicative Major Project Offset Policy calculations using the Framework for Biodiversity Assessment (FBA) offset credit calculator for a proposed alternative grid connection comprising approximately 13km of 132kV double circuit transmission line from the White Rock Wind Farm (WRWF) to TransGrid's existing 330kV transmission line near Swan Vale (**Figure 1**).

The White Rock Wind Farm was approved on 10 July 2012 with a grid connection at 132kV to the north of the wind farm and Stage 1 construction includes installation of some of the grid connection facilities described in the Project Application. As that connection is constrained and does not allow the full implementation of the approved WRWF project, an alternative grid connection is proposed using a new 13km section of 132kV transmission line that will connect at 330kV. This enables full development of WRWF, reduce electrical losses for the project and has an indirect benefit of facilitating further renewable energy development for the approved Glen Innes Wind Farm.

A supplementary flora and fauna assessment of the proposed alternative route was undertaken by Daniel O'Brien of Environmental Assessments Pty Limited in January 2013 and updated in 2016 (Environmental Assessments 2013; 2016). The flora and fauna assessment report has been referred to for this offset assessment and WRWFPL have advised that it will accompany the Modification Application together with this assessment.

The Environmental Assessments Pty Ltd assessment mapped the vegetation within a 100m corridor within which a 50 metre easement was finalised following recommendations to adjust the route to avoid and minimise impacts to remnant vegetation, which included endangered ecological communities and trees with hollows. The assessment included a targeted threatened flora and fauna survey and an assessment of significance of impacts to all recorded and potential threatened species. The assessment also committed to developing an appropriate offset plan consistent with the conditions of approval for the White Rock Wind Farm.

As the original project was a Major Project and the current offset policy for Major Projects requires the use of the FBA, ELA were commissioned by White Rock Wind Farm to undertake the FBA credit calculations on the final

alternative route and add these offset requirements to the approved Stage 1 Biodiversity Offset Package (BOP) (ELA 2016).

The field work for the Environmental Assessments Pty Limited study was undertaken in July-August of 2012 and 20 and 22 September 2016. These assessments recorded a number of threatened woodland birds, none of which require species credits under the FBA methodology as all are categorised as ecosystem credit species and potential habitat for a range of other threatened fauna. No threatened flora were recorded, however a threatened eucalypt, *Eucalyptus rubida ssp. barbigerorum* (Blackbutt Candlebark) had previously been identified in the locality of the powerline route and was provisionally identified as occurring in the study area. Specimens collected as part of this study could not be confirmed by the Royal Botanic Gardens as *Eucalyptus rubida ssp. barbigerorum* due to broad variation between Ribbon Gum, Mountain Gum and Blackbutt Candlebark. ELA senior field botanist, Dr Lachlan Copeland, who is familiar with the species did not record any Blackbutt Candlebark's in the study area or any Mountain Gums or Snow Gums. Ribbon Gum (*Eucalyptus viminalis*), was the only 'gum' species recorded.

The Environmental Assessments Pty Ltd vegetation mapping also followed the NSW Scientific Committee listings of the '*White Box – Yellow Box – Blakely's Red Gum grassy woodlands*' (Box Gum Woodland or BGW) and the '*Ribbon Gum – Mountain Gum – Snow Gum woodland'* EECs. In order to undertake the FBA assessments these vegetation types have been remapped by ELA into the 'best fit' Plant Community Types (PCTs) recognised by the FBA credit calculator tool i.e.

- BR271 Blakely's Red Gum – Yellow Box tall woodland in the Brigalow Belt South and Nandewar bioregions
- BR391 White Box grassy woodland on the Inverell basalts mainly in the Nandewar bioregion
- BR330 Ribbon Gum – Rough-barked Apple – Yellow Box grassy woodlands of the New England Tablelands bioregion

Whilst RPS (2011) and AEP (2016) mapped BR272 Blakely's Red Gum – Yellow Box grassy woodland of the New England Tablelands bioregion as part of the Stage 1 FBA impact assessment, following a floristic analysis and comparison of the plot data to the VIS database, as required by the FBA, ELA are of the opinion that BR271 'Blakely's Red Gum – Yellow Box tall woodland in the Brigalow Belt South and Nandewar bioregions' is a 'better fit' for this vegetation type. It is noted that both are representative of the listed EEC 'White Box – Yellow Box – Blakely's Red Gum grassy woodland' and both are vegetation types within the same Vegetation Formation and are thus interchangeable as offsets under the rules of the FBA. In reality the two vegetation types are the same they have just been assigned to different PCTs by different observers

Similarly, whilst RPS (2011), AEP (2016) and Environmental Assessments Pty Ltd (2013; 2106) all mapped BR329 'Ribbon Gum – Mountain Gum – Snow Gum grassy open forest' in the Wind Farm and powerline route, ELA did not record any Mountain Gum or Snow Gum along the powerline route and are of the opinion that BR330 'Ribbon Gum – Rough-barked Apple – Yellow Box grassy woodlands' is a better description of this vegetation type in the powerline easement.

ELA validated, and remapped where required, the native vegetation within the 50m easement into remnant woodland patches, individual trees and areas of derived native grassland (DNG). Seven full floristic biometric plots (BB01 to BB07 at locations shown in **Figure 2**) were collected to allow credit calculations to be undertaken in accordance with the FBA using the linear development model (**Table 1** provides Plot data). ELA has not prepared a full FBA assessment report as this is not a new project but a modification to an existing approved project. Copies of the raw plot data sheets, species lists and GIS files of plot locations, vegetation mapping and landscape assessment can be provided to DPE/OEH if/as required.

Table 1 – ELA plot data collected from within the 50m easement along the proposed powerline route

VegZone	Veg Type & condition	PlotName	NPS	NOS	NMS	NGCG	NGCS	NGCO	EPC	NTH	OR	FL
1	BRGYB Woodland	BB01	25	13	2	14	2	8	12.5	0	1	24
4	WB Woodland	BB02	27	13	1	12	2	8	16	0	1	22
3	Ribbon Gum Woodland	BB03	29	10	0	8	0	6	4	2	1	66
2	BRGYB DNG	BB04	20	0	0	14	0	10	18	0	0	13
2	BRGYB DNG	BB05	9	0	0	26	0	2	24	0	0	4
5	WB DNG	BB06	28	0	0	24	0	6	12	0	0	11
5	WB DNG	BB07	21	0	0	24	0	6	16	0	0	0

Environmental Assessments Pty Ltd calculated that up to 2.003 ha of '*Box Gum Woodlan*d' and 0.127 ha of '*Ribbon Gum – Mountain Gum'* EEC would be impacted within a 15m wide route corridor within the 50m easement. ELA has however, assessed a worst case scenario that assumes loss of all canopy, canopy regeneration and any hollow bearing trees and mid-story vegetation within a 45m corridor that is within the 50m easement to allow the establishment and ongoing maintenance of the easement (although individual trees will be retained within this corridor where possible (**Figure 3**)).

Based on the above, ELA have:

- Reduced the 'scores' for canopy, canopy regeneration, hollow bearing trees and mid-story vegetation to "0".
- The species richness attribute has also been reduced by one category (i.e. a score of "3" has been reduced to a score of "2") to reflect the loss of several species in the vegetation zone following removal of canopy species.
- No impact to ground cover, or fallen logs within woodland patches has been included in the assessment, as these attributes would not be impacted by the proposed method to remove trees (i.e. chain saws will be used to cut and lower trees in situ with no removal of woody material or disturbance to the soil or ground layer).
- Similarly areas of DNG have not been assessed as impacted as these areas have no tree cover to remove and will be maintained as grassland areas as part of the existing grazing management of these rural properties.

The results of the FBA credit calculations are shown in **Table 2** with a copy of the credit report and trading profile provided as **Attachment A.** The report shows that 209 ecosystem credits are required to offset the impacts to woodland areas and 42 credits for impacts to DNG areas, if these were to be impacted.

Table 2: FBA impact and credit calculations for loss of tree and mid-story vegetation along alternate 132kv powerline route

Veg Zone	Plant Community Type	PCT / BVT	Ancillary	Current SV	Area (ha)	Future SV	Credits	Credits/ ha
1	Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South and Nandewar Bioregion	PCT 599 / BVT 271	Woodland	63.93	1.21	22.95	42	34.65
3	Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	PCT 554 / BR330	Woodland	90.62	0.53	27.60	27	50.65
4	White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	PCT 590 / BR391	Woodland	63.93	4.06	22.95	140	34.46
					5.8		209	36.03

Derived Native Grassland Areas – not impacted

Veg Zone	Plant Community Type	PCT / BVT	Ancillary	Current SV	Area (ha)	Future SV	Credits	Credits/ha
2	Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South and Nandewar Bioregion	PCT 599 / BVT 271	DNG***	32.79	3.72	32.79	14	3.76
5	White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	PCT 590 / BR391	DNG***	40.44	7.58	40.44	28	3.69
					11.3		42	3.72

***DNG areas will not be impacted as all poles will be positioned to avoid DNG areas.

These credits are available from Area 1 and Area 2 of the Tangari Biobank site that is currently being assessed as part of the approved BOP for the Stage 1 wind farm impacts (**Figures 4, 5 and 6**). The assessment of this biobank site has now been completed with number and types of credits generated provided in the credit report (**Attachment C**). The application for registration of this biobank site will be submitted to the Office of Environment and Heritage (OEH) by the end of December 2016. Credits will be available to retire by around mid 2017, subject to OEHs audit and registration timeframes.

Table 3 provides a summary of the credits required for the Stage 1 impacts and proposed powerline modification together with the number and types of credits that will be generated by the Biobank site and how these meet the FBA 'credit profiles' for the modification proposal (**Attachment A**) and the Stage 1 impacts (**Attachment B**) as approved in the BOP. The proposed offset area of 183.44 ha will generate 1,816 ecosystem credits across seven PCTs (**Attachment C**), with 837 surplus credits that can be used for Stage 2 impacts. As noted in the BOP, a separate FBA impact assessment will be undertaken for the Stage 2 wind farm development (remaining 49 approved turbines) and the Biobank site will be extended, if required, to other parts of the 645 ha property to generate sufficient offset credits to meet the offset requirements for the WRWF Stage 2 impacts (**Figure 4**). As there are 838 surplus credits generated by the proposed Biobank site for potential Stage 2 impacts, the need to extend the Biobank site is considered unlikely.

Commitments

WRWF will:-

1. Purchase and retire the number of ecosystem credits shown in **Table 2** impacts to woodland patches from its Tangari Biobank site once credits are available, where practicable, prior to impacts occurring,
2. Avoid impacts to individual trees, especially those with hollows, within the 45m corridor where ever possible (as per Condition C3 and C5 of approval that relates to micro siting of turbines).
3. All cleared material to be left in situ to provide wildlife habitat (as per Condition C2 of approval)
4. Will ensure that all poles required for the powerline route avoid areas of mapped DNG
5. Ensure that contractors clearing trees do so in a manner that minimises impacts and follows the White Rock wind farm Construction Environment Management Plan (CEMP) in terms of 'weed free' vehicle/equipment hygiene protocols and potential spread of Chilean Needle Grass
6. An ecologist is present during the establishment/clearing phase of the powerline route, i.e. tree clearing, and follows the tree clearing protocol established for WRWF Stage 1, in regards to any displaced hollow dependant fauna.

Robert Humphries

Robert Humphries

Eco Logical Australia

Attachments:

Table 3: Area of each Plant Community Type (PCT) mapped in the Tangari Biobank Offset Areas 1 and 2 and the number of Credits required for impacts of WRWF Stage 1 and alternate grid connection facilities.

Figure 1 – Landscape view of approved and alternative powerline route

Figure 2 – Vegetation mapping and location of biometric plots (BB01 to BB07) along alternate powerline route

Figure 3 – Example of further refinement of alternative powerline route and avoidance of impacts to remnant woodland

Figure 4 – Plant Community Types mapped in the proposed Biobank Offset Areas 1, 2 and 3 of the Tangari property by Eco Logical, Australia, March, September and October 2016.

Figure 5 – Vegetation zones and plots in the Tangari Biobank Site (Area 1)

Figure 6 – Vegetation Zones and plots in the Tangari Biobank Site (Area 2)

Attachment A: FBA credit calculator credit report for grid connection modification

Attachment B: FBA credit calculator credit report for Stage 1 impacts (Anderson Ecology)

Attachment C: Biobanking credit report for Tangari Biobank site

References

AEP (2016) White Rock Wind Farm Stage 1 Draft Biodiversity Offset Package March 2016

ELA (2016) Final Offset package – White Rock Wind Farm – Letter to Department of Planning and Environment, 11 July 2016.

Environmental Assessments Pty Limited (2013) Supplementary Biodiversity (Flora and Fauna) Assessment for the alternative 132kv powerline for the White Rock Wind Farm Pty Limited. Report prepared by Daniel O'Brien for White Rock Wind Farm Pty Limited, January 2013.

Environmental Assessments Pty Limited (2016) Supplementary Biodiversity (Flora and Fauna) Assessment for the Alternative Grid Connection at 330kV for the White Rock Wind Farm Pty Limited. Report prepared by Daniel O'Brien for White Rock Wind Farm Pty Limited, November 2016

Epuron (2012) White Rock Wind Farm Request to modify a Major Project: Supporting Document, September 2012

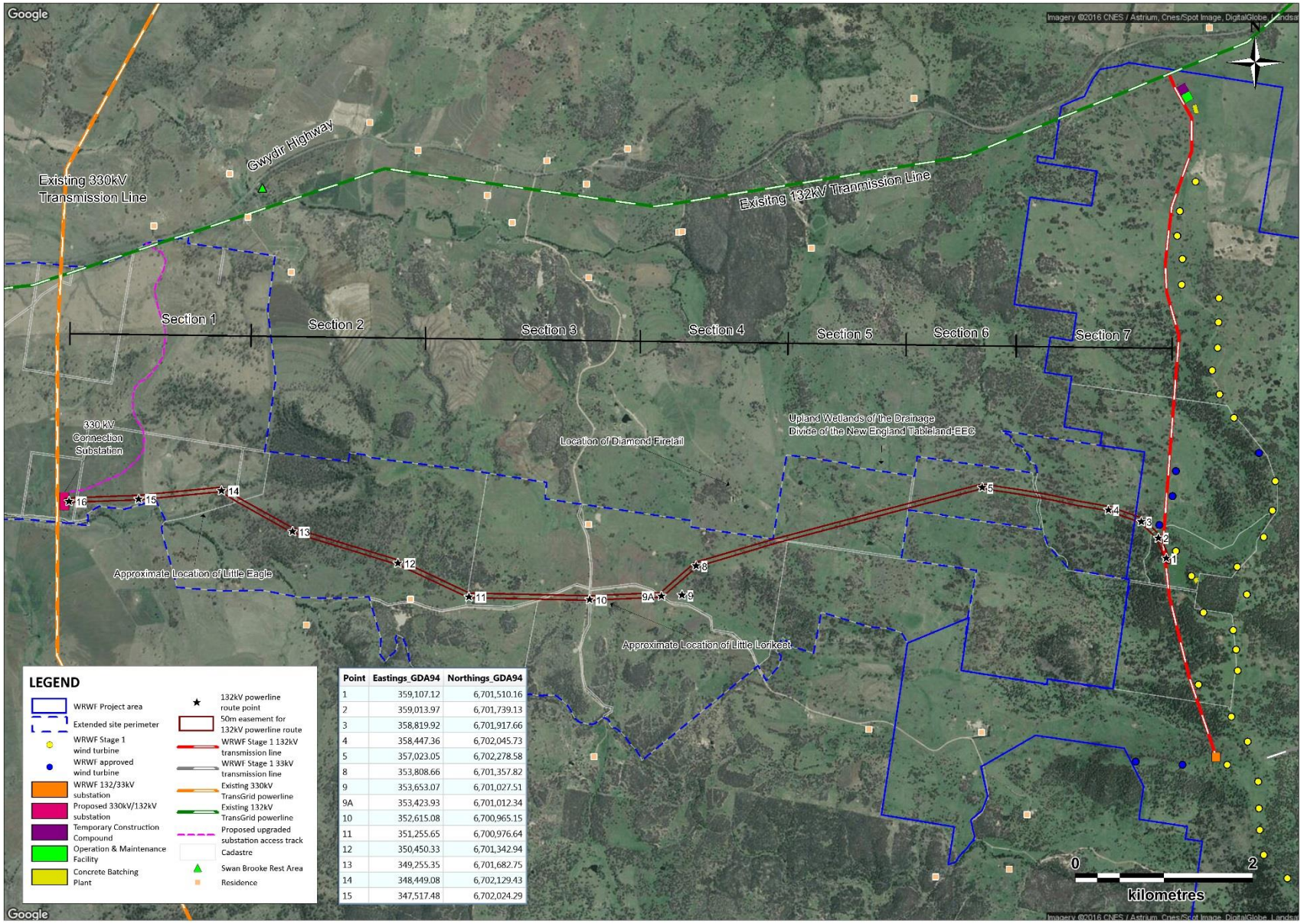
RPS (2011) Ecological Assessment Report – White Rock Wind Farm, near Glen Innes, NSW. Report to Epuron Pty Ltd, March 2011.

Table 3: Area of each Plant Community Type (PCT) mapped in the Tangari Biobank Offset Areas 1 and 2 and the number of credits required for impacts of WRWF Stage 1 and alternative grid connection.

					Impacts			Offset Areas					
PCT/BVT	**Vegetation**	**EEC**	**Vegetation Formation / Class**	**% Cleared**	**Credits Required Stage 1 Impacts**	**Credits required alternative Powerline**	**Total Credits required**	**Are 1 (Figure 5)**	**Area 2 (Figure 6)**	**Total Area (ha)**	**No. Credits generated**	**Surplus / deficit credits**	**Surplus / deficit matching credits***
PCT590 / BR391	White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	White Box - Yellow Box - Blakely's Red Gum grassy woodland	Western Slopes Grassy Woodland	85%	0	140	140	0.00	24.48	24.48	272	132	132
PCT 508 / BR270	Blakely's Red Gum - Stringybark - Rough-barked Apple open forest of the Nandewar Bioregion and western New England Tablelands Bioregion		Northern Tablelands Dry Sclerophyll Forest	60%	0	0	0	0.00	8.07	8.07	78	78	78
PCT599/ BR271	Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South and Nandewar Bioregion		Western Slopes Grassy Woodland	30%	0	42	42	6.01	0.00	6.01	59	17	545
PCT 510 / BR 272	Blakely's Red Gum - Yellow Box grassy woodland of the New England Tablelands Bioregion		New England Grassy Woodland	80%	120	0	120	0.00	0.00	0	0	-120	
PCT571 / BR330	Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tableland Bioregion and NSW North Coast Bioregion		New England Grassy Woodlands	80%	0	27	27	123.77	0.00	123.77	1,178	1,151	
PCT 554 / BR329	Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Ribbon Gum - Mountain Gum - Snow Gum grassy open forest/woodland of the New England Tableland Bioregion	Tableland Clay Grassy Woodland	80%	647	0	647	0.00	12.89	12.89	144	-503	
PCT 564 / BR	White Cypress Pine - Silver-leaved Stringybark - Caley's Ironbark open forest of the central Nandewar Bioregion and western New England Tablelands Bioregion				0	0	0	7.63		7.63	75	75	75
PCT84 / BR194	River Oak - Rough-barked Apple - Red Gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion				0	0	0	0.00	0.59	0.59	10	10	10
	Cleared (Dams/easements/tracks)						0			3.77			
	Total				**767**	**209**	**976**	**137.41**	**46.03**	**187.21**	**1,816**	**840**	**840**

*The credit surplus/deficit is based on the “like for like” offsets allowed in the credit profiles (Appendix A and B) and the FBA credit trading rules that allow offsets to be met by vegetation types that represent the same EECs.

Further it is noted that BR271 and BR272 are effectively the same impacted vegetation type and BR153 and BR330 are the same PCT.



Point	Eastings_GDA94	Northings_GDA94
1	359,107.12	6,701,510.16
2	359,013.97	6,701,739.13
3	358,819.92	6,701,917.66
4	358,447.36	6,702,045.73
5	357,023.05	6,702,278.58
8	353,808.66	6,701,357.82
9	353,653.07	6,701,027.51
9A	353,423.93	6,701,012.34
10	352,615.08	6,700,965.15
11	351,255.65	6,700,976.64
12	350,450.33	6,701,342.94
13	349,255.35	6,701,682.75
14	348,449.08	6,702,129.43
15	347,517.48	6,702,024.29

Figure 1 – Landscape view of approved and alternative powerline route

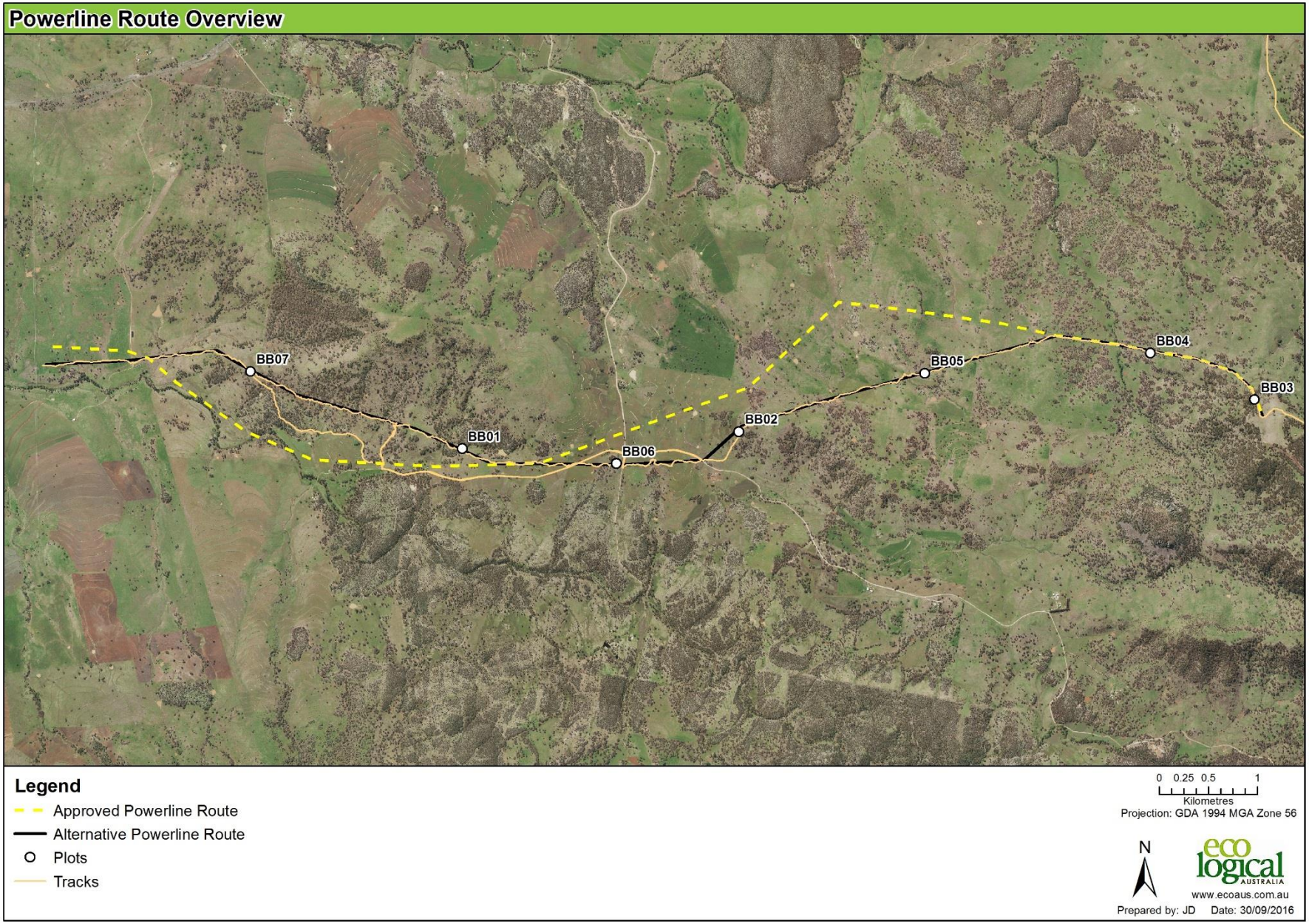


Figure 2 – Vegetation mapping and location of biometric plots (BB01 to BB07) along alternate powerline route

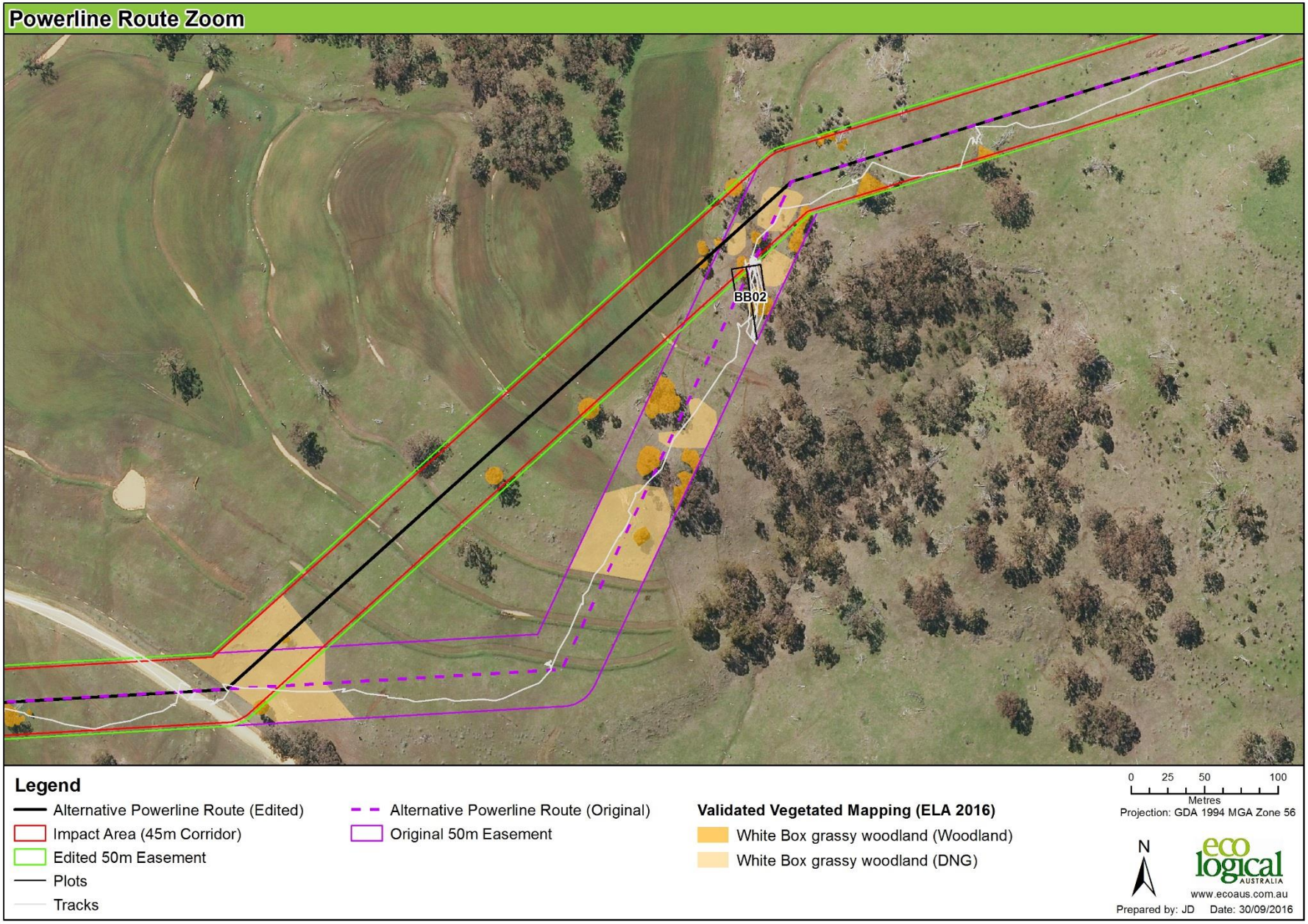


Figure 3 – Example of further refinement of alternative powerline route and avoidance of impacts to remnant woodland

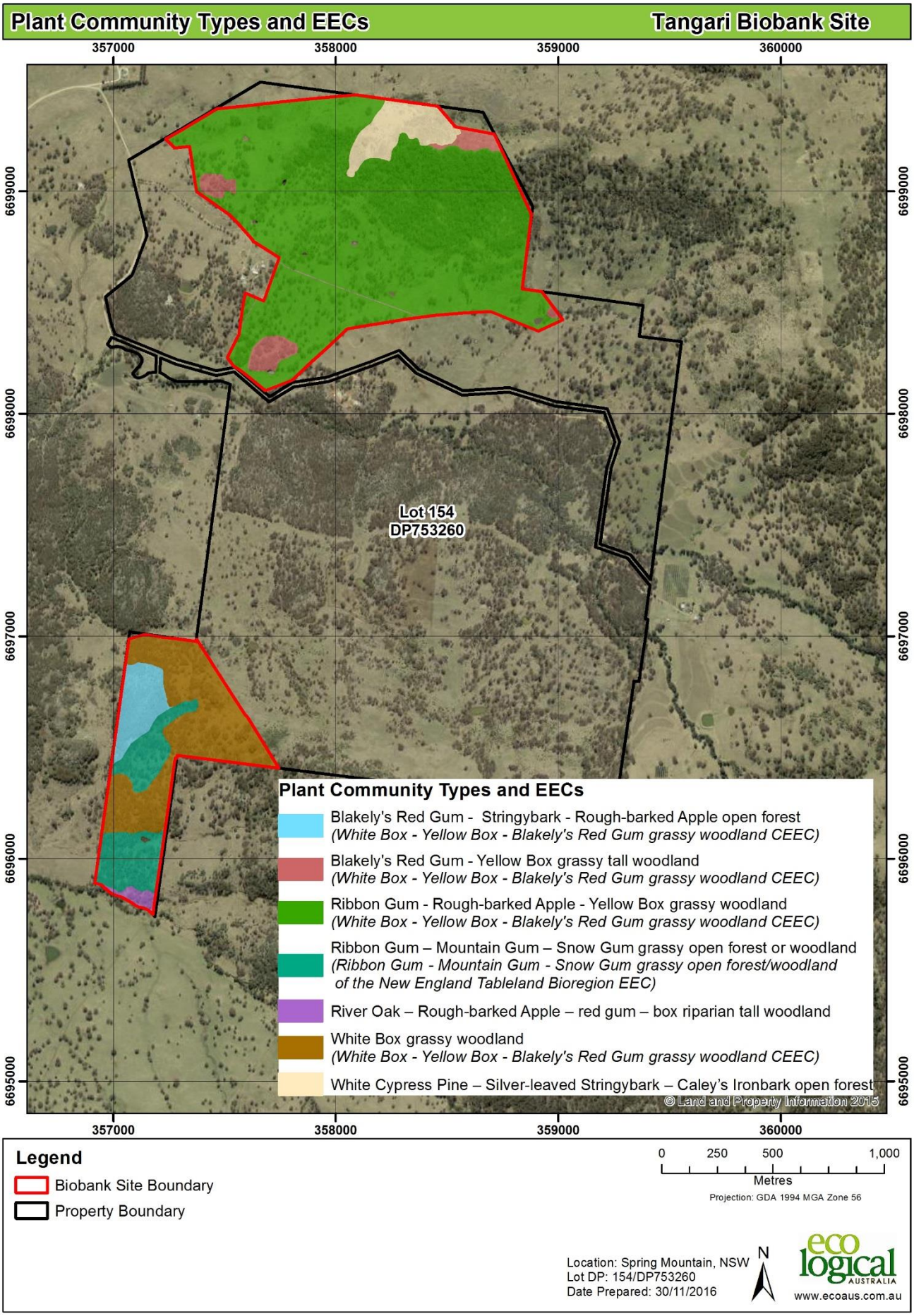


Figure 4: Plant Community Types mapped in the Tangari Biobank Site (Areas 1 and 2)

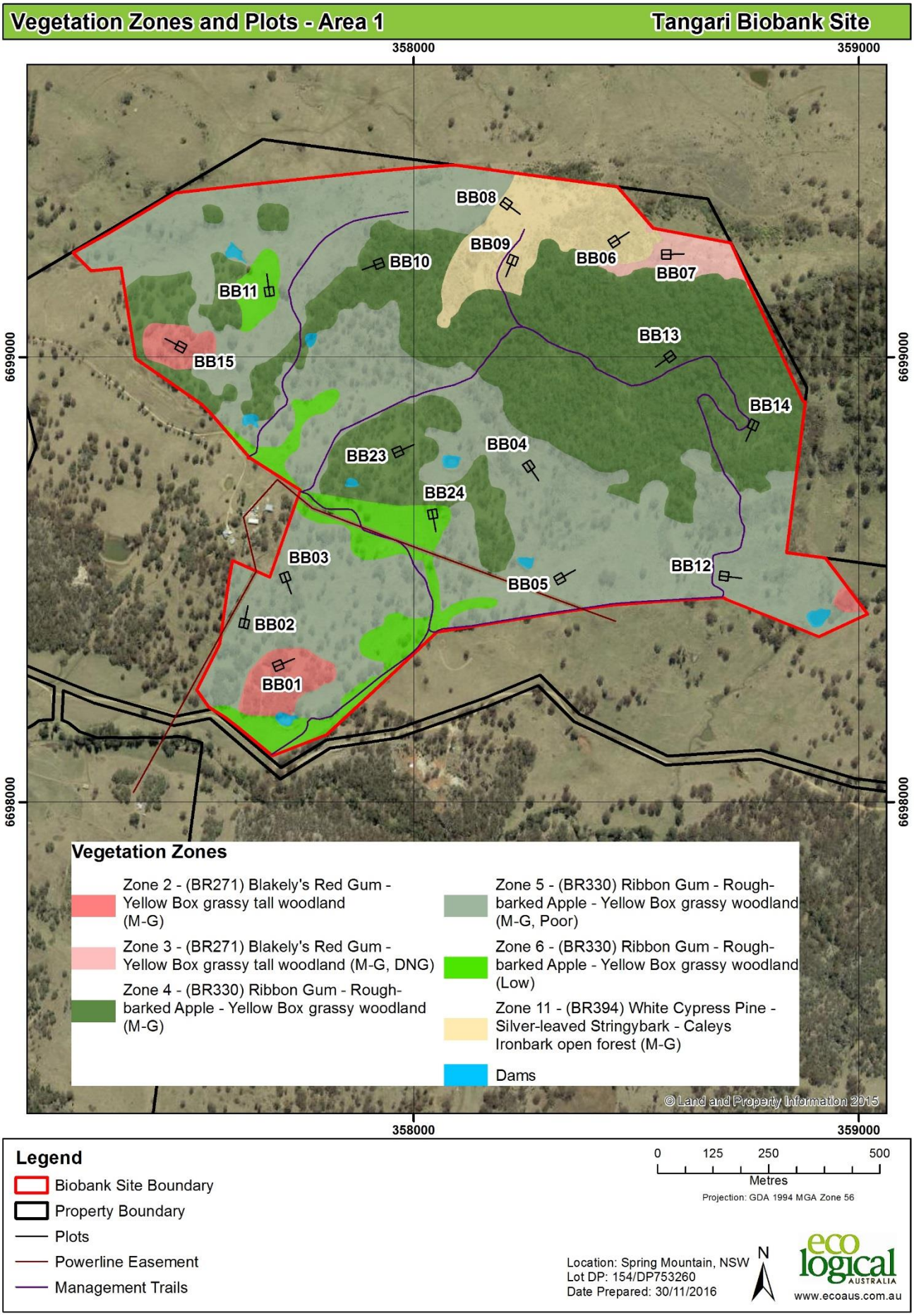


Figure 5: Vegetation Zones and plots in the Tangari Biobank Site (Area 1)

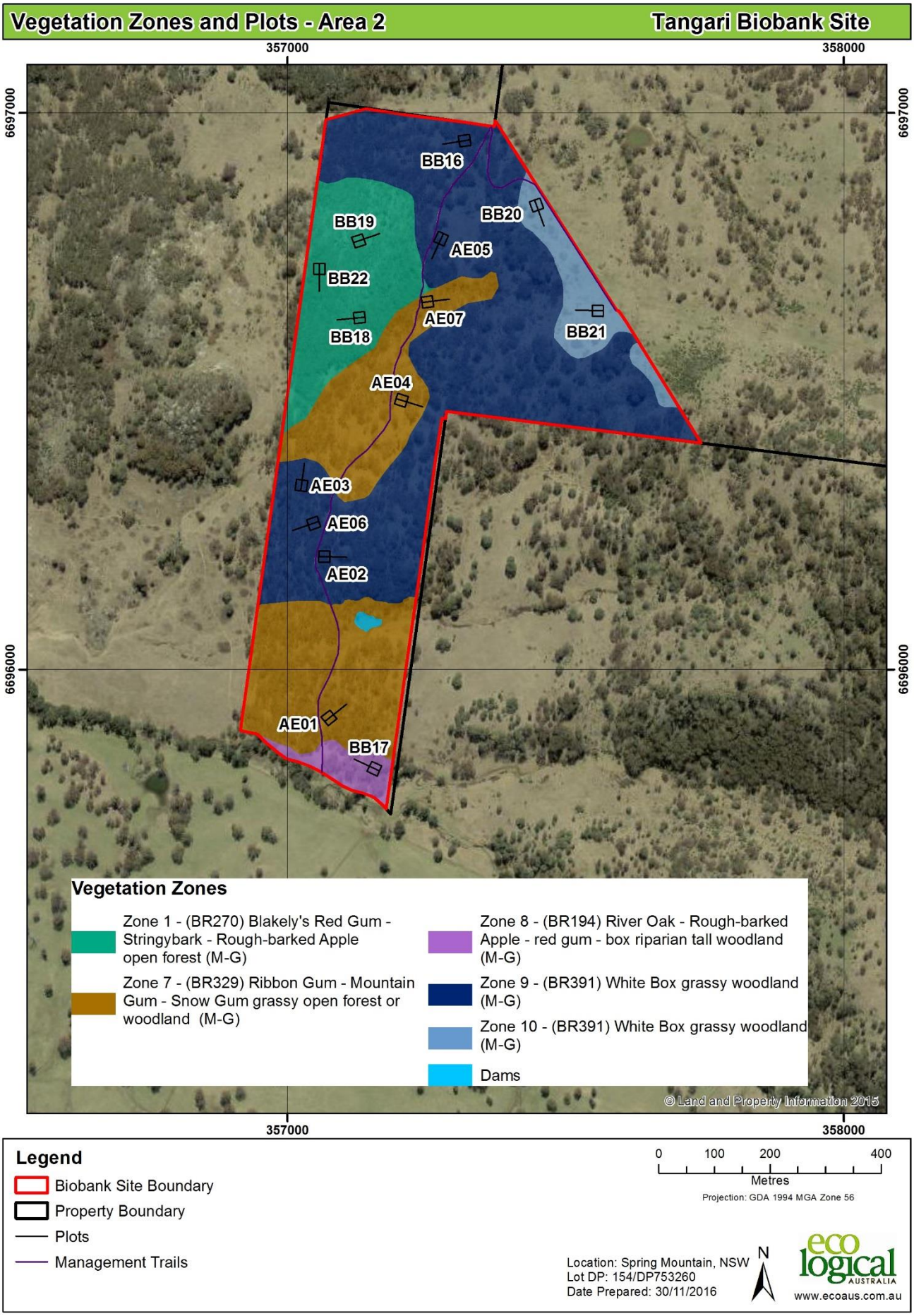


Figure 6: Vegetation Zones and plots in the Tangari Biobank Site (Area 2)

Attachment 5

White Rock Wind Farm Pty Ltd

Level 23, 201 Elizabeth Street, Sydney, NSW 2000
ABN 45 153 592 173

The Secretary
Department of Planning and Environment
Level 22, 320 Pitt Street
Sydney NSW 2000

21 April 2017

Attention: Stephen O'Donoghue (by email: stephen.odonoghue@planning.nsw.gov.au

Dear Secretary,

White Rock Wind Farm – Part 3A Project Approval MP10_0160
Section 75W Modification Application No. 4 – Supplementary information

1. Overview

White Rock Wind Farm Pty Ltd (**WRWFPL**) is the proponent of the White Rock Wind Farm, a critical infrastructure project located in the New England Tablelands of NSW comprising of up to 119 wind turbines and associated infrastructure. The construction and operation of the White Rock Wind Farm is authorised under Project Approval MP10_0160 granted by the Minister for Planning on 10 July 2012 (**Project Approval**) under Part 3A of the *Environmental Planning and Assessment Act 1979* (**EP&A Act**).

This letter supplements the information already provided in support of Modification Application No. 4 (**MOD 4**) submitted under section 75W of the EP&A Act (which continues to apply to 'transitional Part 3A projects' by virtue of clause 12 of Schedule 6A to the EP&A Act) which is currently pending. MOD 4 primarily relates to alternative grid connection infrastructure and provides for connection at 330kV rather than 132kV as set out in the Environmental Assessment Report dated December 2016.

Condition C1(b) of the Project Approval currently restricts clearing of Ribbon Gum - Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion Endangered Ecological Community (**RG-MG EEC**) to a maximum of 22 ha. As a result of recent reviews, it has become apparent that the approved Stage 1 construction cannot be completed within the clearing limit currently specified in Condition 1(b).

The Environmental Assessment Report dated December 2016 prepared in support of MOD 4 (MOD 4 EA) included, as Appendix 3A, a Biodiversity Assessment prepared by Environmental Assessments, November 2016 (**Mod 4 Biodiversity Assessment**). The Mod 4 Biodiversity Assessment confirmed that WRWFPL would seek an increase in the clearing limit for RG-MG EEC contained in Condition C1(b) of the Project Approval.

Accordingly, WRWFPL now seeks, as part of MOD 4, to increase the clearing limit for RG-MG EEC contained in condition C1(b) of the Project Approval by 6 ha so as to allow for the clearing of a maximum of 28 ha of RG-MG EEC. The increase addresses impacts of Stage 1 of the White Rock Wind Farm and the MOD 4 alternate grid connection infrastructure.

2. Background

White Rock Wind Farm is being constructed in 2 stages with:

- Stage 1 being the construction of 70 wind turbines and associated infrastructure; and
- Stage 2 being the remainder of the White Rock Wind Farm as approved by the Project Approval.

Construction of Stage 1 commenced on 25 May 2016. Stage 1 works are now well advanced with:

- a substantial part of the access tracks developed or under construction;
- 14 of the 70 Stage 1 turbines erected; and
- construction of the 132kV substation and 8km of 132kV transmission line scheduled for completion in June 2017.

All construction activities for Stage 1 have complied with the native vegetation conditions imposed on the Project Approval. In particular, WRWFPL has complied with:

- the current clearing limits for RG-MG EEC imposed under condition C1(b);
- condition C1 which requires it to minimise the clearing of native vegetation;
- condition C5 which requires all reasonable and feasible effort to be made to avoid native vegetation disturbance (including clearing of hollow bearing trees) during micro-siting and construction of the project so as to reduce as far as possible the extent of vegetation disturbance required for the project; and
- the Construction Flora and Fauna Management Plan required by condition E22(f) which details how construction impacts on ecology are minimised and managed.

The need for an increased clearing limit has arisen due to the following:

- the significantly more detailed knowledge of the site challenges and development requirements in 2017, now that construction is well advanced, compared to when the application was prepared in 2011 and, the clearing limit being established in 2012;
- limitations of preliminary engineering design during pre-construction planning and at the time MOD 3 was prepared;
- limitations of topographic data, LIDAR derived terrain, where there is substantive tree cover;
- various constructability issues due to the challenging topography.

3. Progressive review of Stage 1 impacts

To ensure compliance with the conditions of the Project Approval, WRWFPL has been undertaking regular reviews of vegetation clearance during the design and construction process for Stage 1. In particular, to improve the reliability of vegetation estimates, in late February 2017, WRWFPL obtained aerial imagery of the Stage 1 works. GIS software was then used to confirm the extent of vegetation clearance and analysis of vegetation impacts undertaken, based on vegetation mapping layers updated by RPS in 2015. The result of WRWFPL's recent assessment of Stage 1 impact on the RG-MG EEC, based on imagery from late February 2017, is shown in Table 1.

Table 1 – Impacts of progressive Stage 1 clearing works (RG-MG EEC) at February 2017

Hardstands, tracks, ancillaries	Clearance 132kV line	33kV installed	Permanent Met Masts	Sub-total (hectares) as at February 2017
15.88	0.32	0.65	0.46	**17.31**

Further detail is contained in the report prepared by Eco Logical Australia (Attachment 1).

4. Further Clearing of RG-MG EEC Required for Stage 1 and MOD 4 infrastructure

The 22 ha clearing limit for RG-MG EEC, currently contained in condition C1(b) of the Project Approval, was derived from initial estimates based on the preliminary project layout and design contained in the White Rock Wind Farm Environmental Assessment dated 2011.

These early estimates need to be updated to reflect the remaining clearing required for Stage 1 given the detailed civil design for Stage 1 and estimated impact for the alternative grid connection infrastructure the subject of MOD 4.

WRWFPL retained Eco Logical Australia (**ELA**) to provide an updated estimate of the additional impact on RG-MG EEC required for the construction of the remainder of Stage 1 (Attachment 1), excluding the alternative grid connection infrastructure already assessed in the MOD 4 EA (Dec 2016) and not including details for Stage 1 rotor assembly (Attachment 2).

Additionally, for turbine rotor assembly as part of Stage 1, the associated clearing (mainly vegetation pruning) was omitted from the ELA assessment. CNC was subsequently engaged to provide an estimate of the further clearing required for this project element. The CNC assessment identified the extent of clearing or pruning of vegetation required for the Stage 1 rotor assembly, beyond the project clearing already assessed by ELA. (Attachment 2)

Table 2 below summarises the assessment of future clearing required for Stage 1 as completed by ELA (see the MOD 4 Offset Assessment and Attachment 1) and CNC (see Attachment 2).

Table 2 – Estimate of further clearing to complete WRWF Stage 1 and MOD 4 infrastructure

Clearance 132kV line	33kV OH line and UG cabling	Permanent Met Masts	Stage 1 Rotor assembly	MOD 4	Total (hectares)
5.80	3.46	0.0	0.53	0.53	**10.32**

Based on the above, it is now estimated that the full extent of Ribbon Gum – Mountain Gum EEC that will be required to be cleared for Stage 1 and MOD 4 will be approximately 27.63 ha. This consists of:

- 17.31 ha which has already been cleared for Stage 1 as at the end of February 2017; and
- a further 10.32 ha which is required to enable construction of Stage 1 works to be completed (including the MOD 4 infrastructure).

Please refer to the reports prepared by Eco Logical Australia and CNC Project Management that are provided as Attachments 1 and 2 and the MOD 4 Offset Assessment already submitted as part of Mod 4 (Appendix 3C of MOD 4).

WRWFPL confirms that the further clearing required to enable construction of Stage 1 to be completed is not associated with any additional changes to the approved project layout other than those already assessed as part of Mod 4. Rather, it is simply the outcomes of the more accurate estimates now prepared of the actual and likely clearing associated with the approved Stage 1 project, now that the Stage 1 construction works are advanced.

WRWFPL also notes that it is likely that the construction of Stage 2 will also necessitate the clearing of additional RG-MG EEC. However:

- WRWRPL only seeks a clarification to condition C1(b) of the Project Approval as part of MOD 4 to cover the clearing of RG-MG EEC required for Stage 1 and MOD 4; and
- any further clearing of RG-MG EEC required for Stage 2 will be the subject of a further modification application for Stage 2 which will address the cumulative impact of the project as a whole.

Accordingly, WRWFPL seeks to increase the total clearing limit for RG-MG EEC in condition C1(b) of the Project Approval by 6 ha to allow for the clearing of a maximum of 28 ha so as to make provision for the construction of the remainder of Stage 1 of the White Rock Wind Farm and MOD 4 infrastructure.

5. WRWF Biodiversity Offset Package – increased offset

The existing Biodiversity Offset Package submitted under condition C7 of the Project Approval will be amended to further increase the credits proposed for RG-MG EEC to ensure sufficient credits are provided to offset the increased clearing limit sought as part of MOD 4. A Biobank Agreement application was submitted to OEH in December 2016 to register a 184 ha Biobank site over part of the 650 ha Tangari property owned by WRWFPL. As Eco Logical Australia have confirmed in the attached letter (Attachment 1), this existing biobank site will generate sufficient credits to offset the impacts associated with increasing the clearing limit for Ribbon Gum – Mountain Gum EEC to 28 ha. An overall increase of 6 ha would require additional credits in the order of approximately 180 credits for impact on Ribbon Gum – Mountain Gum EEC.

6. Conclusion

This letter supplements the information already provided in the MOD 4 EA and confirms that WRWFPL seeks a modification to increase the clearing limit for RG-MG EEC contained in condition C1(b) of the Project Approval by 6 ha so as to allow for the clearing of a maximum of 28 ha of RG-MG EEC for Stage 1 of the White Rock Wind Farm.

The proposed modification to condition C1 of the Project Approval is as follows:

> *The Proponent shall:*
>
> *(a) minimise the clearing of native vegetation on site; and*
>
> *(b) not clear more than ~~22~~ 28 hectares of the Ribbon Gum - Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC onsite.*
>
> *Note: The clearing limits for Ribbon Gum - Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC are based on the mapping undertaken by RPS Ecology in December 2015 and cover Stage 1 only and MOD 4 infrastructure.*

WRWFPL confirms that it will:

- continue to comply with the conditions of the Project Approval, including condition C5 which requires all reasonable and feasible effort to be made to avoid native vegetation disturbance (including clearing of hollow bearing trees) during micro-siting and construction of the project so as to reduce as far as possible the extent of vegetation disturbance required for the project; and
- update the Biodiversity Offset Package to ensure that, the additional 6 ha of RG-MG EEC which is required to be cleared to enable the construction of Stage 1 to proceed, is fully offset.

Should you have any questions in relation to this matter, please do not hesitate to contact me as follows: email jeffbembrick@goldwindaustralia.com or mobile phone: 0499156665.

Yours Sincerely

Jeff Bembrick
Development Compliance Manager, on behalf of White Rock Wind Farm Pty Ltd.

Attachments:

1. Eco Logical Australia – Independent assessment regarding clearing of Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC – to support White Rock Wind Farm – Section 75W Modification Application No. 4 – Part 3A Project Approval MP10_0160 (19 April 2017)

2. CNC Project Management – Additional Vegetation Removal for Rotor Assembly at White Rock Wind Farm, 20 April 2017

ECO LOGICAL AUSTRALIA PTY LTD
ABN 87 096 512 088
www.ecoaus.com.au

White Rock Wind Farm Pty Ltd
Suite 2, Level 23, 201 Elizabeth Street
Sydney NSW 2000

Attention: Jeff Bembrick

Your Ref:

Our Ref: 17SUT-6878

19 April 2017

Dear Mr Bembrick,

RE: Independent assessment regarding clearing of Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC – to support White Rock Wind Farm – Section 75W Modification Application – Part 3A Project Approval MP10_0160

Background

Eco Logical Australia (ELA) has been commissioned by White Rock Wind Farm Pty Ltd (WRWFPL), the proponent of the White Rock Wind Farm (WRWF), to undertake an independent assessment of clearing of Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland Endangered Ecological Community (EEC) as part of the construction of Stage 1 of the wind farm.

Based on ELAs assessment of the extent of clearing of the EEC to date, ELA understands that the approved clearing limit of the EEC contained in Condition C1(b) of the Project Approval may be inadequate to complete Stage 1 of the wind farm.

ELA has been engaged by WRWFPL to prepare an independent assessment in support of a modification application to increase the clearing limit of the EEC from 22 ha to 27.5 ha (being an increase of 5.5 ha).

Clearing of the EEC permitted by the Project Approval

The construction and operation of the WRWF is authorised under Project Approval MP10_0150 granted by the Minister for Planning on 10 July 2012 under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Condition C1 of the Project Approval, as originally approved, authorised the clearing of '*no more than 22 hectares of native vegetation, unless otherwise agreed by the Director-General*'.

In July 2015, a WRWFPL sought to modify Condition C1 of the Project Approval (Mod 2) to clarify that the clearance limit of 22 hectares applied to the EEC only. On 24 July 2014, the modification application was determined.

Condition C1 of the Project Approval (as modified) states that:

The proponent shall:

a) *Minimise the clearing of native vegetation on-site; and*
b) *Not clear more than 22 hectares of the Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC on site.*

In December 2015, WRWFPL lodged a further modification application relating to, among other things, minor changes to the proposed layout. For the purposes of Mod 3, RPS (2015) re-calculated the estimated impacts prepared based on refined/updated vegetation mapping in December 2015. RPS 2015 mapped the vegetation in the study area into four categories:-

1. Ribbon Gum – Mountain Gum woodland – that is described as being representative of the EEC;
2. Yellow Box grassy woodland - that is described as being representative of the EEC;
3. Scattered Native Vegetation - that was stated as being native vegetation but not representative of the EEC due to the extent of modification; and
4. Pasture grasses – not a native vegetation type.

RPS 2015 impact calculations based on the revised Mod 3 project layout are shown in **Table 1** which shows an estimated 18.675 ha of Ribbon Gum – Mountain Gum EEC to be impacted as well as 1.188 ha of Yellow Box EEC and 5.208 ha of scattered native vegetation.

Table 1: Pre-construction clearing estimates as calculated by RPS in Table S2 of RPS 2015

	Pre-construction clearing estimate RPS 2015 Estimates			
Infrastructure	**Ribbon Gum / Mountain Gum Woodland (ha)**	**Yellow Box Woodland (ha)**	**Scattered Native Vegetation (ha)**	**Total Native Vegetation Impacted (ha)**
Ancillary Facilities	0.002	-	-	**0.002**
Substation	-	-	0.041	**0.041**
Access Tracks (14–22 m)	6.403	0.095	3.003	**9.501**
Turbines (footings, hardstand and rotor blades)	3.336	-	1.274	**4.61**
132 kV Lines (8 km)	5.429	1.039	0.299	**6.767**
33 kV underground cables	1.214	0.015	0.506	**1.735**
33 kV overhead lines	0.385	0.039	0.029	**0.453**
Masts (permanent & temporary)	1.906	-	0.056	**1.962**
Total	**18.675**	**1.188**	**5.208**	**25.071**

An offset package for this predicted clearing was submitted and approved by the Department of Planning and Environment (DPE) in August 2016 (AEP 2016; ELA 2016a). The approved offset package was prepared using the Major Projects Framework for Biodiversity Assessment (FBA) and included offsets for all vegetation impacted (as required by the FBA), not just mapped EECs as stated in Condition C1 of the Project Approval. The approved offset package is shown in **Table 2**. It is noted that the approved offset package included impacts to 19.85 ha of the Ribbon Gum – Mountain Gum EEC as mapped by RPS and an additional 2.65 ha of scattered native vegetation that in RPS opinion did not meet the definition of the EEC but was attributed to the EEC.

Table 2: Approved Biodiversity Offset Package for estimated Stage 1 impacts (includes all native vegetation)

Vegetation Zone	Condition Class	Area (ha)	Credits Required	Credits / ha	Total Credits Required
Ribbon Gum – Mountain Gum – Snow Gum grassy open forest (BR329)	Moderate / Good	19.85	595	29.97	**647**
Ribbon Gum – Mountain Gum – Snow Gum grassy open forest (BR329) (Area estimated from 50% Scattered Native Vegetation)	Poor	2.65	52	19.62	
Blakely's Red Gum – Yellow Box grassy woodland (BR272)	Moderate / Good	2.09	69	33.01	**120**
Blakely's Red Gum – Yellow Box grassy woodland (BR272) (Area estimated from 50% Scattered Native Vegetation)	Poor	2.65	51	19.25	

Extent of clearing of the EEC during construction of Stage 1 of the project

Construction for Stage 1 of the wind farm commenced in May 2016 and is ongoing. To ensure compliance with the Project Approval during the construction period, ELA understands that WRWFPL undertook regular reviews of vegetation clearing. In November 2016 and late February 2017, WRWFPL commissioned high resolution aerial photographs of the study area so that an accurate assessment of the actual extent of clearing could be made.

To undertake this assessment, ELA was provided with:-

- the GIS layers for the approved Mod 3 footprint,
- the 2015 RPS revised vegetation mapping layer,
- the aerial image used to compile the pre-construction vegetation layer (September 2010); and
- post construction aerial images dated November 2016 and February 2017. The resolution of these images allows ELA to capture the loss of individual trees.

ELA has undertaken a 'desk top' review of the mapping undertaken by RPS and have added an additional 0.08 ha of 'scattered native vegetation' to the project pre disturbance footprint. ELA has mapped the extent of soil/ground cover disturbance in the project site using the February 2017 image and intersected this layer with the modified RPS 2015 vegetation layer to calculate the extent of Ribbon Gum – Mountain Gum EEC and other native vegetation (as mapped by RPS) impacted. ELA have not re-mapped or re-classified the vegetation mapping undertaken by RPS. An example of this process is shown in **Figures 1, 2** and **3**. The areas of each vegetation type impacted are shown in **Table 3** and compared to RPS' estimates in **Table 4**.

Table 3 shows that as of the end of February 2017, 17.31 ha of the Ribbon Gum – Mountain Gum EEC as mapped by RPS 2015 has been cleared.

Estimated Impacts of clearing required for Mod 4 - alternative powerline.

A further modification application 4 (Mod 4) has been submitted to DPE for an alternative 330 kv grid connection (ELA 2016b).

An assessment using the FBA calculated that 0.53 ha of Ribbon Gum – Mountain Gum EEC would be impacted as part of Mod 4. In addition Mod 4 would also impact on 4.92 ha of Blakely's Red Gum – Yellow Box and 11.64 ha of White Box.

Impact of additional clearing required to complete Stage 1 of the project and proposed measures to offset impact

Separately to the additional clearing required for MOD 4, clearing for the 132kv powerline and 33kv overhead/underground cables required as part of Stage 1 is not yet complete. Estimates for the extent of additional clearing required for these components of the project, assuming clearing all native vegetation within a 45m and 10m easement respectively, will add a further 9.26 ha of Ribbon Gum – Mountain Gum EEC to the total already cleared for Stage 1.

Impacts to other native vegetation have also been minimised and include 0.39 ha of Yellow Box EEC clearing to date and an additional estimated 0.76 ha (Total 1.15 ha) and 7.39 ha of scattered native vegetation and estimated additional 1.16ha (Total 8.55 ha).

Total Additional Clearing of Ribbon Gum – Mountain Gum EEC

As set out above, it is now estimated that the full extent of Ribbon Gum – Mountain Gum EEC that will be required to be cleared for the Stage 1 project will be approximately 27.10 ha. This consists of:

- 17.31 ha which has already been cleared for Stage 1 as at the end of February 2017;
- a further 0.53 ha which will be required to be cleared if Mod 4 is approved; and
- a further 9.26 ha which is required to enable construction of Stage 1 (excluding the works the subject of Mod 4) to be completed.

Accordingly, WRWFPL seeks to modify Condition C1(b) to increase the clearing limit for Ribbon Gum – Mountain Gum EEC to 27.5 ha, an overall increase of 5.5 ha.

ELA have not undertaken an 'impact assessment' of this additional clearing as:

- the clearing associated with Mod 4 has already been separately assessed in the Environmental Assessment Report prepared for Mod 4; and
- the further clearing required to enable construction of Stage 1 (excluding the works the subject of Mod 4) to be completed is not associated with any changes to the approved Mod 3 layout. Rather, it is simply the outcomes of the more accurate estimates now prepared of the actual and likely clearing associated with the approved Stage 1 project.

It is proposed that the Biodiversity Offset Package (**BOP**) for Stage 1 will be amended to take into account the additional clearing.

A Biobank Agreement application was submitted to OEH in December 2016 to register a 184 ha Biobank site over part of the 650 ha Tangari property owned by WRWFPL.

This biobank site will generate 1,816 ecosystem credits that is sufficient to meet the offsets for:

- the RPS 2015 estimated Stage 1 impacts shown in Table 2 (767 credits)
- the offsets for the alternative powerline subject to Mod 4 (251 credits); and
- an estimated additional 233 credits for the additional 5 ha of Ribbon Gum – Mountain Gum EEC clearing (which is the subject of this revised clearing assessment) and the associated other vegetation types (Yellow Box and scattered native vegetation).

Accordingly, WRWFPL's existing biobank site will generate sufficient credits to offsets the impacts associated increasing the clearing limit for Ribbon Gum – Mountain Gum EEC to 27.5 ha, being an overall increase of 5.5

ha. In this regard, WRWFPL proposes to submit an amendment to the Biodiversity Offset Package to address/offset these additional impacts.

Robert Humphries

Robert Humphries
Eco Logical Australia

Attachments:

Table 3: Area of each vegetation community impacted to 10 April 2107 and predicted to be cleared

Table 4: Comparison of cleared and predicted Ribbon Gum – Mountain Gum impacts to RPS 2015

Figure 1 – Approved Mod 3 footprint and predicted vegetation impacts

Figure 2 – Extent of disturbance associated with construction to 27 February 2017

Figure 3 – Extent of mapped vegetation impacted by current disturbance

References

AEP (2016) White Rock Wind Farm Stage 1 Draft Biodiversity Offset Package March 2016

ELA (2016a) Final Offset package – White Rock Wind Farm – Letter to Department of Planning and Environment, 11 July 2016.

ELA (2016b) FBA Assessment of White Rock Wind Farm Alternative Grid Connection. Letter to White Rock Wind Farm Pty Ltd, 2 December 2016.

RPS (2011) Ecological Assessment Report – White Rock Wind Farm, near Glen Innes, NSW. Report to Epuron Pty Ltd, March 2011.

RPS (2015) White Rock Wind Farm, Native Vegetation Impact Review – Modification Application. Prepared for White Rock Wind Farm Pty Ltd, Final Rev 5 / December 2015.

Table 3: Area of each vegetation Community impacted and predicted to be impacted as mapped by ELA, February 2017

	Native Vegetation cleared to date (as of 27/02/2017)								
Vegetation type (as mapped by RPS 2015)	**Hard stands, facilities and roads**	**132kV Easement**	**33kV cables**	**Wind Masts**	**Sub-total (cleared to date)**	**Predicted clearing in full 45m 132kv easement (nth and sth sections)**	**Predicted clearing in full 45m 132kv easement (central section)**	**33kV predicted assuming 10m width**	**Grand Total**
Ribbon Gum - Mountain Gum Woodland EEC	15.88	0.32	0.65	0.46	17.31	3.81	1.99	3.46	26.57
Yellow Box - Blakely's Red Gum Woodland EEC	0.08	0.31	0.00	0.00	0.39	0.70	0.00	0.06	1.15
Scattered Vegetation	6.98	0.02	0.39	0.00	7.39	0.30	0.00	0.86	8.55
					0.00				0.00
Grand Total	**22.94**	**0.65**	**1.04**	**0.46**	**25.09**	**4.81**	**1.99**	**4.38**	**36.27**

Table 4: Comparison of cleared and predicted Ribbon Gum – Mountain Gum impacts to RPS 2015.

	Pre-construction clearing estimate RPS 2015 Estimates				Actual clearing as of April 2017		
Infrastructure	**Ribbon Gum / Mountain Gum Woodland (ha)**	**Yellow Box Woodland (ha)**	**Scattered Native Vegetation (ha)**	**Total Native Vegetation Impacted (ha)**	**Ribbon Gum / Mountain Gum EEC (ha)**		
					Impacted (ha)	**Projected impact (ha)**	**Total Estimated**
Ancillary Facilities	0.002	-	-	**0.002**	**15.88**		**15.88**
Substation	-	-	0.041	**0.041**			
Access Tracks (14–22 m)	6.403	0.095	3.003	**9.501**			
Turbines (footings, hardstand and rotor blades)	3.336	-	1.274	**4.61**			
132 kV Lines (8 km)	5.429	1.039	0.299	**6.767**	**0.32**	**5.8**	**6.12**
33 kV underground cables	1.214	0.015	0.506	**1.735**	**0.65**	**3.46**	**4.11**
33 kV overhead lines	0.385	0.039	0.029	**0.453**			
Masts (permanent & temporary)	1.906	-	0.056	**1.962**	**0.46**		**0.46**
Total	**18.675**	**1.188**	**5.208**	**25.071**	**17.31**	**9.26**	**26.57**

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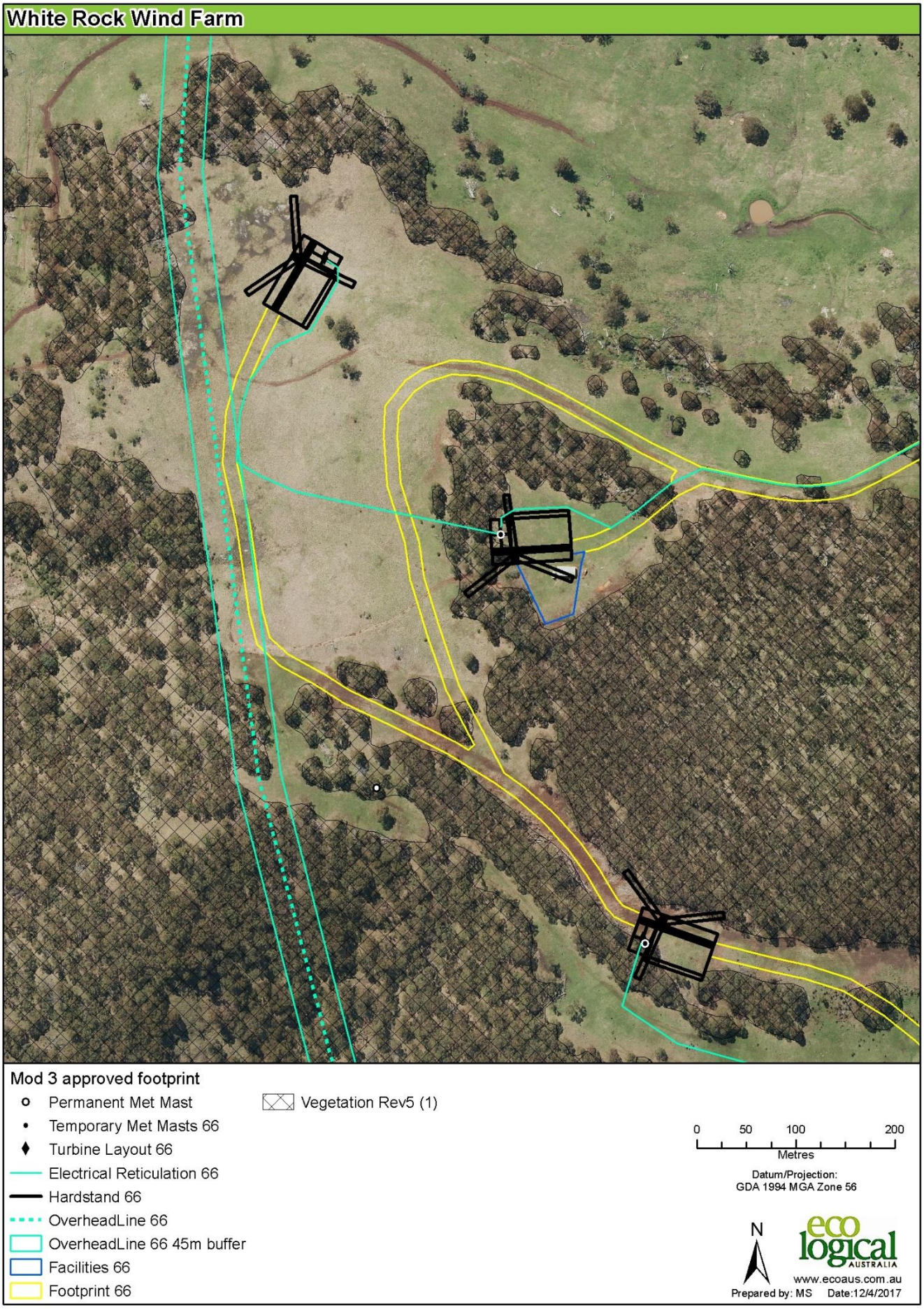


Figure 1: Approved Mod 3 footprint and predicted vegetation impacts

Figure 2: Extent of disturbance associated with construction to 27 February 2017

Figure 3: Extent of mapped vegetation impacted by current disturbance

20 April 2017

Adrian Maddocks
Development Manager
White Rock Wind Farm

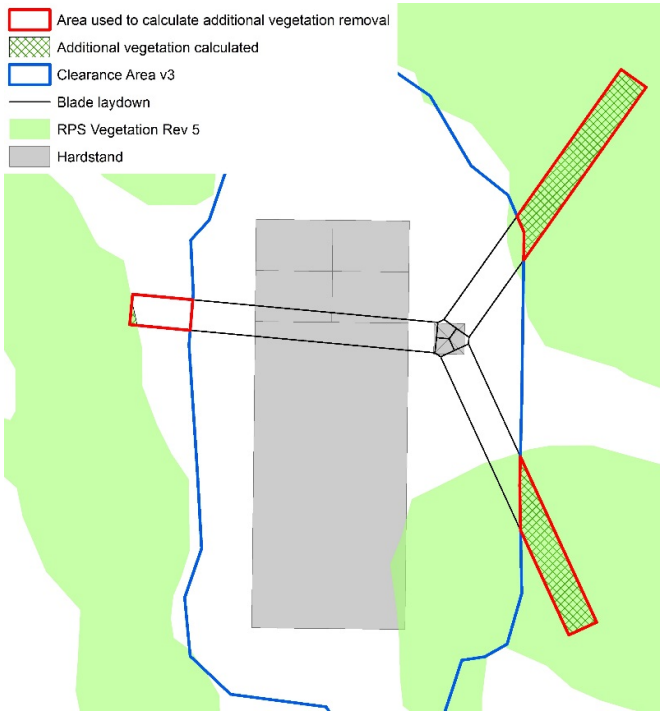
Submitted via email to: adrianmaddocks@goldwindaustralia.com

RE: Additional vegetation removal for rotor assembly at White Rock Wind Farm

Dear Adrian,

CNC Project Management has calculated the additional vegetation removal required for the blade laydown areas at White Rock Wind Farm. Blade laydown areas are required to layout and assemble the rotor hub and blades on the ground prior to lifting via crane and attaching to the nacelle at the top of the tower.

The blade laydown area consists of a hardstand to place the rotor hub and laydown for 3 blades attached to the hub. The turbine blades being installed at White Rock Wind Farm are 59.5m long. CNC has calculated the blade laydown areas as 60m long and 6m wide. A 6m width is used to address potential 'blade sail' during the lifting operation. The area is used is shown in the sketch below:



CONTACT US

Web	www.cncprojects.com.au
Email	info@cncprojects.com.au
Phone	**Peregian Beach** (07) 5471 3111
	Melbourne (03) 9663 4827
	Perth (08) 9212 6705

CNC is proudly certified to

QUALITY | ENVIRONMENTAL MANAGEMENT | OCCUPATIONAL HEALTH & SAFETY

Any vegetation overhanging these area will require to be lopped or removed to be able to safely crane the rotor and blades without damage into place.

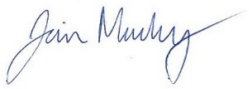
As the majority of the civil work and vegetation clearance for the project has already been carried out, CNC has only calculated vegetation removal for the blade laydown that sits outside of the already cleared area. This cleared area was mapped from Aerial Imagery flown on the 23rd of February 2017 and referred to as Veg Clearance Area v3.

Using the RPS vegetation survey data (revision 5), this results in the additional clearance of:

0.53ha of Ribbon Gum - Mountain Gum Woodland.

0.18ha Scattered Vegetation.

Yours sincerely,



Iain Mackey
GIS Manager
(Ph) 07 5471 3111 | (M) 0424 898 649
iain.mackey@cncprojects.com.au

CNC Project Management
Infrastructure Project Facilitators

Attachment 6

ECO LOGICAL AUSTRALIA PTY LTD
ABN 87 096 512 088
www.ecoaus.com.au

White Rock Wind Farm Pty Ltd
Suite 2, Level 23, 201 Elizabeth Street
Sydney NSW 2000

Attention: Jeff Bembrick

Your Ref:

Our Ref: 17SUT-6878

19 April 2017

Dear Mr Bembrick,

RE: Independent assessment regarding clearing of Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC – to support White Rock Wind Farm – Section 75W Modification Application – Part 3A Project Approval MP10_0160

Background

Eco Logical Australia (ELA) has been commissioned by White Rock Wind Farm Pty Ltd (WRWFPL), the proponent of the White Rock Wind Farm (WRWF), to undertake an independent assessment of clearing of Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland Endangered Ecological Community (EEC) as part of the construction of Stage 1 of the wind farm.

Based on ELAs assessment of the extent of clearing of the EEC to date, ELA understands that the approved clearing limit of the EEC contained in Condition C1(b) of the Project Approval may be inadequate to complete Stage 1 of the wind farm.

ELA has been engaged by WRWFPL to prepare an independent assessment in support of a modification application to increase the clearing limit of the EEC from 22 ha to 27.5 ha (being an increase of 5.5 ha).

Clearing of the EEC permitted by the Project Approval

The construction and operation of the WRWF is authorised under Project Approval MP10_0150 granted by the Minister for Planning on 10 July 2012 under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Condition C1 of the Project Approval, as originally approved, authorised the clearing of '*no more than 22 hectares of native vegetation, unless otherwise agreed by the Director-General*'.

In July 2015, a WRWFPL sought to modify Condition C1 of the Project Approval (Mod 2) to clarify that the clearance limit of 22 hectares applied to the EEC only. On 24 July 2014, the modification application was determined.

Condition C1 of the Project Approval (as modified) states that:

The proponent shall:

a) *Minimise the clearing of native vegetation on-site; and*
b) *Not clear more than 22 hectares of the Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC on site.*

In December 2015, WRWFPL lodged a further modification application relating to, among other things, minor changes to the proposed layout. For the purposes of Mod 3, RPS (2015) re-calculated the estimated impacts prepared based on refined/updated vegetation mapping in December 2015. RPS 2015 mapped the vegetation in the study area into four categories:-

1. Ribbon Gum – Mountain Gum woodland – that is described as being representative of the EEC;
2. Yellow Box grassy woodland - that is described as being representative of the EEC;
3. Scattered Native Vegetation - that was stated as being native vegetation but not representative of the EEC due to the extent of modification; and
4. Pasture grasses – not a native vegetation type.

RPS 2015 impact calculations based on the revised Mod 3 project layout are shown in **Table 1** which shows an estimated 18.675 ha of Ribbon Gum – Mountain Gum EEC to be impacted as well as 1.188 ha of Yellow Box EEC and 5.208 ha of scattered native vegetation.

Table 1: Pre-construction clearing estimates as calculated by RPS in Table S2 of RPS 2015

	Pre-construction clearing estimate RPS 2015 Estimates			
Infrastructure	**Ribbon Gum / Mountain Gum Woodland (ha)**	**Yellow Box Woodland (ha)**	**Scattered Native Vegetation (ha)**	**Total Native Vegetation Impacted (ha)**
Ancillary Facilities	0.002	-	-	**0.002**
Substation	-	-	0.041	**0.041**
Access Tracks (14–22 m)	6.403	0.095	3.003	**9.501**
Turbines (footings, hardstand and rotor blades)	3.336	-	1.274	**4.61**
132 kV Lines (8 km)	5.429	1.039	0.299	**6.767**
33 kV underground cables	1.214	0.015	0.506	**1.735**
33 kV overhead lines	0.385	0.039	0.029	**0.453**
Masts (permanent & temporary)	1.906	-	0.056	**1.962**
Total	**18.675**	**1.188**	**5.208**	**25.071**

An offset package for this predicted clearing was submitted and approved by the Department of Planning and Environment (DPE) in August 2016 (AEP 2016; ELA 2016a). The approved offset package was prepared using the Major Projects Framework for Biodiversity Assessment (FBA) and included offsets for all vegetation impacted (as required by the FBA), not just mapped EECs as stated in Condition C1 of the Project Approval. The approved offset package is shown in **Table 2**. It is noted that the approved offset package included impacts to 19.85 ha of the Ribbon Gum – Mountain Gum EEC as mapped by RPS and an additional 2.65 ha of scattered native vegetation that in RPS opinion did not meet the definition of the EEC but was attributed to the EEC.

Table 2: Approved Biodiversity Offset Package for estimated Stage 1 impacts (includes all native vegetation)

Vegetation Zone	Condition Class	Area (ha)	Credits Required	Credits / ha	Total Credits Required
Ribbon Gum – Mountain Gum – Snow Gum grassy open forest (BR329)	Moderate / Good	19.85	595	29.97	**647**
Ribbon Gum – Mountain Gum – Snow Gum grassy open forest (BR329) (Area estimated from 50% Scattered Native Vegetation)	Poor	2.65	52	19.62	
Blakely's Red Gum – Yellow Box grassy woodland (BR272)	Moderate / Good	2.09	69	33.01	**120**
Blakely's Red Gum – Yellow Box grassy woodland (BR272) (Area estimated from 50% Scattered Native Vegetation)	Poor	2.65	51	19.25	

Extent of clearing of the EEC during construction of Stage 1 of the project

Construction for Stage 1 of the wind farm commenced in May 2016 and is ongoing. To ensure compliance with the Project Approval during the construction period, ELA understands that WRWFPL undertook regular reviews of vegetation clearing. In November 2016 and late February 2017, WRWFPL commissioned high resolution aerial photographs of the study area so that an accurate assessment of the actual extent of clearing could be made.

To undertake this assessment, ELA was provided with:-

- the GIS layers for the approved Mod 3 footprint,
- the 2015 RPS revised vegetation mapping layer,
- the aerial image used to compile the pre-construction vegetation layer (September 2010); and
- post construction aerial images dated November 2016 and February 2017. The resolution of these images allows ELA to capture the loss of individual trees.

ELA has undertaken a 'desk top' review of the mapping undertaken by RPS and have added an additional 0.08 ha of 'scattered native vegetation' to the project pre disturbance footprint. ELA has mapped the extent of soil/ground cover disturbance in the project site using the February 2017 image and intersected this layer with the modified RPS 2015 vegetation layer to calculate the extent of Ribbon Gum – Mountain Gum EEC and other native vegetation (as mapped by RPS) impacted. ELA have not re-mapped or re-classified the vegetation mapping undertaken by RPS. An example of this process is shown in **Figures 1, 2** and **3**. The areas of each vegetation type impacted are shown in **Table 3** and compared to RPS' estimates in **Table 4**.

Table 3 shows that as of the end of February 2017, 17.31 ha of the Ribbon Gum – Mountain Gum EEC as mapped by RPS 2015 has been cleared.

Estimated Impacts of clearing required for Mod 4 - alternative powerline.

A further modification application 4 (Mod 4) has been submitted to DPE for an alternative 330 kv grid connection (ELA 2016b).

An assessment using the FBA calculated that 0.53 ha of Ribbon Gum – Mountain Gum EEC would be impacted as part of Mod 4. In addition Mod 4 would also impact on 4.92 ha of Blakely's Red Gum – Yellow Box and 11.64 ha of White Box.

Impact of additional clearing required to complete Stage 1 of the project and proposed measures to offset impact

Separately to the additional clearing required for MOD 4, clearing for the 132kv powerline and 33kv overhead/underground cables required as part of Stage 1 is not yet complete. Estimates for the extent of additional clearing required for these components of the project, assuming clearing all native vegetation within a 45m and 10m easement respectively, will add a further 9.26 ha of Ribbon Gum – Mountain Gum EEC to the total already cleared for Stage 1.

Impacts to other native vegetation have also been minimised and include 0.39 ha of Yellow Box EEC clearing to date and an additional estimated 0.76 ha (Total 1.15 ha) and 7.39 ha of scattered native vegetation and estimated additional 1.16ha (Total 8.55 ha).

Total Additional Clearing of Ribbon Gum – Mountain Gum EEC

As set out above, it is now estimated that the full extent of Ribbon Gum – Mountain Gum EEC that will be required to be cleared for the Stage 1 project will be approximately 27.10 ha. This consists of:

- 17.31 ha which has already been cleared for Stage 1 as at the end of February 2017;
- a further 0.53 ha which will be required to be cleared if Mod 4 is approved; and
- a further 9.26 ha which is required to enable construction of Stage 1 (excluding the works the subject of Mod 4) to be completed.

Accordingly, WRWFPL seeks to modify Condition C1(b) to increase the clearing limit for Ribbon Gum – Mountain Gum EEC to 27.5 ha, an overall increase of 5.5 ha.

ELA have not undertaken an 'impact assessment' of this additional clearing as:

- the clearing associated with Mod 4 has already been separately assessed in the Environmental Assessment Report prepared for Mod 4; and
- the further clearing required to enable construction of Stage 1 (excluding the works the subject of Mod 4) to be completed is not associated with any changes to the approved Mod 3 layout. Rather, it is simply the outcomes of the more accurate estimates now prepared of the actual and likely clearing associated with the approved Stage 1 project.

It is proposed that the Biodiversity Offset Package (**BOP**) for Stage 1 will be amended to take into account the additional clearing.

A Biobank Agreement application was submitted to OEH in December 2016 to register a 184 ha Biobank site over part of the 650 ha Tangari property owned by WRWFPL.

This biobank site will generate 1,816 ecosystem credits that is sufficient to meet the offsets for:

- the RPS 2015 estimated Stage 1 impacts shown in Table 2 (767 credits)
- the offsets for the alternative powerline subject to Mod 4 (251 credits); and
- an estimated additional 233 credits for the additional 5 ha of Ribbon Gum – Mountain Gum EEC clearing (which is the subject of this revised clearing assessment) and the associated other vegetation types (Yellow Box and scattered native vegetation).

Accordingly, WRWFPL's existing biobank site will generate sufficient credits to offsets the impacts associated increasing the clearing limit for Ribbon Gum – Mountain Gum EEC to 27.5 ha, being an overall increase of 5.5

ha. In this regard, WRWFPL proposes to submit an amendment to the Biodiversity Offset Package to address/offset these additional impacts.

Robert Humphries

Robert Humphries
Eco Logical Australia

Attachments:

Table 3: Area of each vegetation community impacted to 10 April 2107 and predicted to be cleared

Table 4: Comparison of cleared and predicted Ribbon Gum – Mountain Gum impacts to RPS 2015

Figure 1 – Approved Mod 3 footprint and predicted vegetation impacts

Figure 2 – Extent of disturbance associated with construction to 27 February 2017

Figure 3 – Extent of mapped vegetation impacted by current disturbance

References

AEP (2016) White Rock Wind Farm Stage 1 Draft Biodiversity Offset Package March 2016

ELA (2016a) Final Offset package – White Rock Wind Farm – Letter to Department of Planning and Environment, 11 July 2016.

ELA (2016b) FBA Assessment of White Rock Wind Farm Alternative Grid Connection. Letter to White Rock Wind Farm Pty Ltd, 2 December 2016.

RPS (2011) Ecological Assessment Report – White Rock Wind Farm, near Glen Innes, NSW. Report to Epuron Pty Ltd, March 2011.

RPS (2015) White Rock Wind Farm, Native Vegetation Impact Review – Modification Application. Prepared for White Rock Wind Farm Pty Ltd, Final Rev 5 / December 2015.

Table 3: Area of each vegetation Community impacted and predicted to be impacted as mapped by ELA, February 2017

	Native Vegetation cleared to date (as of 27/02/2017)								
Vegetation type (as mapped by RPS 2015)	**Hard stands, facilities and roads**	**132kV Easement**	**33kV cables**	**Wind Masts**	**Sub-total (cleared to date)**	**Predicted clearing in full 45m 132kv easement (nth and sth sections)**	**Predicted clearing in full 45m 132kv easement (central section)**	**33kV predicted assuming 10m width**	**Grand Total**
Ribbon Gum - Mountain Gum Woodland EEC	15.88	0.32	0.65	0.46	17.31	3.81	1.99	3.46	26.57
Yellow Box - Blakely's Red Gum Woodland EEC	0.08	0.31	0.00	0.00	0.39	0.70	0.00	0.06	1.15
Scattered Vegetation	6.98	0.02	0.39	0.00	7.39	0.30	0.00	0.86	8.55
					0.00				0.00
Grand Total	**22.94**	**0.65**	**1.04**	**0.46**	**25.09**	**4.81**	**1.99**	**4.38**	**36.27**

Table 4: Comparison of cleared and predicted Ribbon Gum – Mountain Gum impacts to RPS 2015.

	Pre-construction clearing estimate RPS 2015 Estimates				Actual clearing as of April 2017		
Infrastructure	**Ribbon Gum / Mountain Gum Woodland (ha)**	**Yellow Box Woodland (ha)**	**Scattered Native Vegetation (ha)**	**Total Native Vegetation Impacted (ha)**	**Ribbon Gum / Mountain Gum EEC (ha)**		
					Impacted (ha)	**Projected impact (ha)**	**Total Estimated**
Ancillary Facilities	0.002	-	-	**0.002**	**15.88**		**15.88**
Substation	-	-	0.041	**0.041**			
Access Tracks (14–22 m)	6.403	0.095	3.003	**9.501**			
Turbines (footings, hardstand and rotor blades)	3.336	-	1.274	**4.61**			
132 kV Lines (8 km)	5.429	1.039	0.299	**6.767**	**0.32**	**5.8**	**6.12**
33 kV underground cables	1.214	0.015	0.506	**1.735**	**0.65**	**3.46**	**4.11**
33 kV overhead lines	0.385	0.039	0.029	**0.453**			
Masts (permanent & temporary)	1.906	-	0.056	**1.962**	**0.46**		**0.46**
Total	**18.675**	**1.188**	**5.208**	**25.071**	**17.31**	**9.26**	**26.57**

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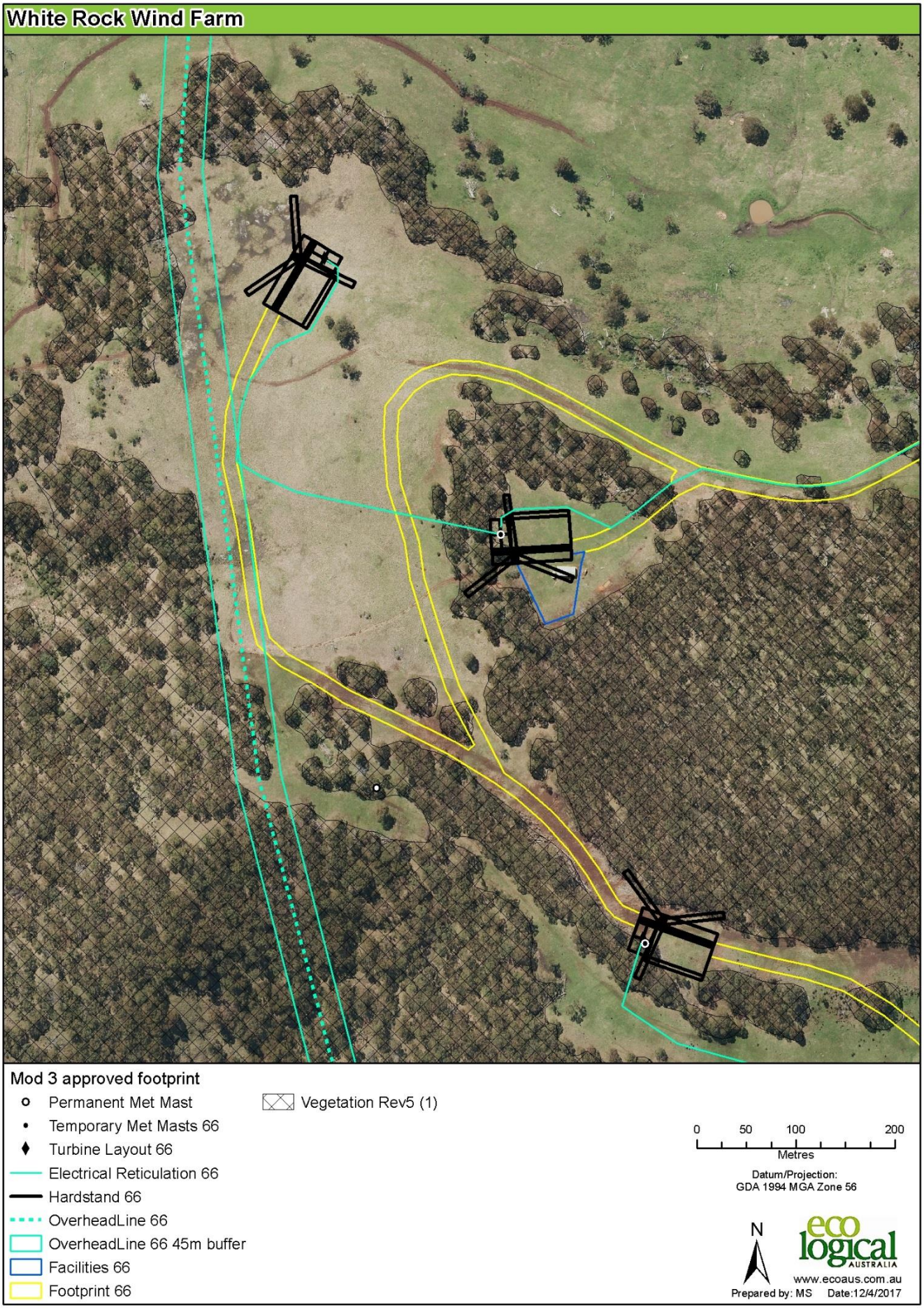

Figure 1: Approved Mod 3 footprint and predicted vegetation impacts

Figure 2: Extent of disturbance associated with construction to 27 February 2017

Figure 3: Extent of mapped vegetation impacted by current disturbance

Attachment 7

Biodiversity credit report

This report identifies the number and type of biodiversity credits required for a major project.

Date of report: 8/12/2017 Time: 1:04:29PM Calculator version: v4.0

Major Project details

Proposal ID:	0035/2016/4082MP
Proposal name:	White rock wind farm mod
Proposal address:	1 1 NSW 2370
Proponent name:	Goldwind Australia Pty Ltd
Proponent address:	Suite 2, Level 23, 201 Elizabeth Street 1 NSW 2000
Proponent phone:	000000
Assessor name:	Mitch Palmer
Assessor address:	7/11 Union street NEWCASTLE WEST NSW 2302
Assessor phone:	02 49292301
Assessor accreditation:	222

Summary of ecosystem credits required

Plant Community type	Area (ha)	Credits created
Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion	8.02	156.79
Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion	8.46	482.46
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	139.62	3,445.00
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	0.14	5.00
Silvertop Stringybark - Mountain Gum grassy open forest of the New England Tableland Bioregion	12.33	458.00
Total	168.57	4,547

Credit profiles

1. Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion, (BR269)

Number of ecosystem credits created	157
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion, (BR269) Candlebark - Ribbon Gum grassy woodland of the New England Tableland Bioregion, (BR279) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tableland Bioregion, (BR319) Mountain Gum - Ribbon Gum open forest of drainage lines of the southern New England Tableland Bioregion, (BR307)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

2. Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion, (BR269)

Number of ecosystem credits created	0
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion, (BR269) Candlebark - Ribbon Gum grassy woodland of the New England Tableland Bioregion, (BR279) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tableland Bioregion, (BR319) Mountain Gum - Ribbon Gum open forest of drainage lines of the southern New England Tableland Bioregion, (BR307)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

3. Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion, (BR272)

Number of ecosystem credits created	473
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion, (BR272) Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tableland Bioregion, (BR121) Rough-barked Apple - Cabbage Gum grassy woodland of the New England Tableland Bioregion, (BR334) Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR330)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

4. Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion, (BR272)

Number of ecosystem credits created	9
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tableland Bioregion, (BR121) Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion, (BR272) Rough-barked Apple - Cabbage Gum grassy woodland of the New England Tableland Bioregion, (BR334) Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR330)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

5. Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329)

Number of ecosystem credits created	3,445
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329) Black Sallee grassy woodland of the New England Tableland Bioregion, (BR112) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR153) Snow Gum - Black Sallee grassy woodland of the New England Tableland Bioregion, (BR218) Snow Gum - New England Peppermint grassy open forest of the New England Tableland Bioregion, (BR220) Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion, (BR269) Candlebark - Ribbon Gum grassy woodland of the New England Tableland Bioregion, (BR279) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tableland Bioregion, (BR319) Mountain Gum - Ribbon Gum open forest of drainage lines of the southern New England Tableland Bioregion, (BR307)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

6. Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329)

Number of ecosystem credits created	0
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Black Sallee grassy woodland of the New England Tableland Bioregion, (BR112) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tableland Bioregion and NSW North Coast Bioregion, (BR153) Snow Gum - Black Sallee grassy woodland of the New England Tableland Bioregion, (BR218) Snow Gum - New England Peppermint grassy open forest of the New England Tableland Bioregion, (BR220) Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion, (BR269) Candlebark - Ribbon Gum grassy woodland of the New England Tableland Bioregion, (BR279) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tableland Bioregion, (BR319) Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329) Mountain Gum - Ribbon Gum open forest of drainage lines of the southern New England Tableland Bioregion, (BR307)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

7. Silvertop Stringybark - Mountain Gum grassy open forest of the New England Tableland Bioregion, (BR352)

Number of ecosystem credits created	458
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
Silvertop Stringybark - Mountain Gum grassy open forest of the New England Tableland Bioregion, (BR352) Broad-leaved Stringybark - Mountain Gum - Apple Box open forest of the New England Tableland Bioregion, (BR122) Broad-leaved Stringybark - Mountain Ribbon Gum - Messmate open forest of the NSW North Coast Bioregion and New England Tableland Bioregion, (BR123) Mountain Gum - Broad-leaved Stringybark shrubby open forest on granites of the New England Tableland Bioregion, (BR158) Narrow-leaved Peppermint - Mountain Ribbon Gum grassy open forest of the eastern New England Tableland Bioregion, (BR165) Narrow-leaved Peppermint - Wattle-leaved Peppermint shrubby open forest of the New England Tableland Bioregion, (BR166) New England Blackbutt grassy open forest of the eastern New England Tableland Bioregion, (BR174) New England stringybarks - peppermint open forest of the New England Tableland Bioregion, (BR177) Mountain Ribbon Gum - Messmate - Broad-leaved Stringybark open forest on granitic soils of the New England Tableland Bioregion, (BR309) Silvertop Stringybark - Rough-barked Apple grassy open forest of southern Nandewar Bioregion, southern New England Tableland Bioregion and NSW North Coast Bioregion, (BR355) Stringybark - Rough-barked Apple - cypress pine shrubby open forest of the eastern Nandewar Bioregion and western New England Tableland Bioregion, (BR361) Youman's Stringybark - Mountain Gum open forest of the western New England Tableland Bioregion, (BR402) Broad-leaved Stringybark shrub/grass open forest of the New England Tableland Bioregion, (BR277) Silvertop Stringybark - Bendemeer White Gum - Ribbon Gum open forest in the Kaputar area of the Nandewar Bioregion, (BR351) Mountain Gum - Blakely's Red Gum open forest on metasediments of the Torrington area of the New England Tableland Bioregion, (BR306) Narrow-leaved Black Peppermint open forest mainly on acid volcanics in the western New England Tableland Bioregion, (BR314)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

8. River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion, (BR194)

Number of ecosystem credits created	5
IBRA sub-region	Glen Innes-Guyra Basalts

Offset options - Plant Community types	Offset options - IBRA sub-regions
River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion, (BR194)	Glen Innes-Guyra Basalts and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

Summary of species credits required

Attachment 8

BioBanking credit report

This report identifies the number and type of credits required at a BIOBANK SITE

Date of report: 4/04/2017 Time: 9:38:19AM Calculator version: v4.0

Biobank details

Proposal ID:	0150/2017/4212B
Proposal name:	Matheson Biobank Block 1
Proposal address:	189 Jenkins Road Matheson NSW 2370
Proponent name:	Mr Garry Huard
Proponent address:	PO Box 213 Adamstown NSW 2289
Proponent phone:	0418681581
Assessor name:	Craig Anderson
Assessor address:	Anderson St Newcastle NSW 2300
Assessor phone:	0418 681 581
Assessor accreditation:	0150

Additional information required for approval:

- ☐ Use of local benchmark
- ☐ Expert report...
- ☐ Request for additional gain in site value

Ecosystem credits summary

Plant Community type	Area (ha)	Credits created
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	75.75	584.00
Total	75.75	584

Credit profiles

1. Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion, (BR329)

Number of ecosystem credits created	584
IBRA sub-region	Glen Innes-Guyra Basalts

Species credits summary

Common name	Scientific name	Extent of impact Ha or individuals	Number of species credits created
Bluegrass	Dichanthium setosum	20.00	142

Additional management actions

Additional management actions are required for:

Vegetation type or threatened species	Management action details
Bluegrass	Feral and/or over-abundant native herbivore control
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Exclude miscellaneous feral species
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Feral and/or over-abundant native herbivore control
Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tableland Bioregion	Fox control