

14 May 2018

Adrian Maddocks  
Development Manager  
Goldwind Australia Pty Ltd  
Suite 2, Level 23, 201 Elizabeth St  
Sydney NSW 2000

***bega***

suite 1, 216 carp st  
(po box 470)  
bega nsw 2550  
t 02 6492 8333

***brisbane***

level 5, 320 adelaide st  
brisbane qld 4000  
t 07 3511 0238

***canberra***

unit 8/27 yallourn st  
(po box 62)  
fyshwick act 2609  
t 02 6280 5053

***newcastle***

7/11 union st  
newcastle west nsw 2302  
t 02 4929 2301

***sydney***

unit 18, level 3  
21 mary st  
surry hills nsw 2010  
t 02 8202 8333

***wagga wagga***

suite 1, 39 fitzmaurice st  
(po box 5464)  
wagga wagga nsw 2650  
t 02 6971 9696  
f 02 6971 9693

[ngh@nghenvironmental.com.au](mailto:ngh@nghenvironmental.com.au)  
[www.nghenvironmental.com.au](http://www.nghenvironmental.com.au)



Dear Adrian,

**RE – White Rock Wind Farm site inspection of proposed substation site and access, April 2018 (ref. 16-321) v3**

On 17-18 April 2018, NGH Environmental ecologist James Rees inspected the proposed substation site and access track (Study Area; Appendix: Figure 1) to identify, map, and class condition of, vegetation within the proposed development footprint.

In the Study Area, Goldwind propose to install a 132-330kV substation linked to the existing powerlines and construct a vehicle access track (~3.8km) from the substation to the Gwydir Highway (the Proposal). Goldwind required an assessment of vegetation in the Study Area to inform the level of constraint and whether further investigation of biodiversity impacts was required.

The attached report details the plant community types identified and the plant species encountered and the extent of further investigation that would be required should the area be developed.

Incidentally during the inspection, a potential cultural scar tree was identified in the Study Area and the location and a photo of this tree is provided to assist further investigation, if required.

I would be pleased to discuss this work with you further, as required.

Yours sincerely,



Brooke Marshall | Manager, NSW SE & ACT  
Certified Environmental Practitioner (CEnvP)  
PO Box 470 Bega NSW 2550  
**T** (02) 6492 8333 **D** (02) 6492 8303 **M** 0437 700 915 **F** (02) 6494 7773  
NGH Environmental

## STUDY AREA

The Study Area is located on the western slopes of the New England Tablelands, 33km east of Inverell, and south of, and adjoining, the Gwydir Highway, on the Paraway Pastoral Company-owned Newstead Station. The Study Area is within the Glen Innes – Guyra Basalts Subregion of the New England Tablelands Bioregion (IBRA v. 7 2012) and its topography is undulating, with low hills and a dendritic drainage system. Historically, extensive areas of the Study Area and its surrounds were cleared of native vegetation, predominantly Box Gum Grassy Woodland, and were cultivated and sown with introduced pasture species. Paraway Pastoral Company currently use the land for producing beef cattle on improved and native pastures.

## PROPOSAL

In the Study area, Goldwind propose to install a 132-330kV substation linked to the existing powerlines and construct a vehicle access track (~3.8km) from the substation to the Gwydir Highway (Appendix: Figure 1). The Proposal is a component of the White Rock Wind Farm, which is a Major Project and State Significant Development. The site selected for the proposed substation (Survey Area 180411) is a gradually sloping (~5°) hillside and spur adjacent to pre-existing 330kV Transmission Network powerlines. The proposed vehicle access track follows an existing, graded farm vehicle track within a fenced corridor (North-South Section; ~3.1km) and crosses a paddock between the existing track and the proposed substation site (East-West Section; ~0.7km).

## AIMS

The aims of this investigation were as follows:

- To identify vegetation types within the Study Area, map their extents and assess and class their condition;
- To advise on further survey work that may be required, should the site be developed.

## METHODS

On 17 and 18 April 2018, an ecologist surveyed vegetation within the Study Area whilst walking over of the area slated for the proposed substation and the East-West Section of the proposed access track and slowly driving the North-South Section of the proposed access track. Vegetation was mapped using a GPS (Garmin GPSMAP 64) to mark the extent of vegetation communities and isolated remnant trees. During the survey (5.5 hours), all species of flora encountered (Appendix: Table 1) were recorded.

### *Classification rationale*

Where it occurred, the Endangered Ecological Community (EEC) White Box – Yellow Box – Blakely's Red Gum Woodland, commonly called box gum grassy woodland (BGGW), was defined and mapped according to the following criteria, provided by Office of Environment and Heritage (9/12/2016; OEH reference: DOC16/611006):

- Areas with trees with native grassland between them;
- Areas with trees spaced up to 50m apart with exotic cover or native grassland or bare earth between them;
- Trees and/or areas of native grassland, but excluding areas of exotic groundcover, where trees were spaced over 50m apart; and,
- Native grassland was defined as areas with over 50% native species composition.

The criteria for classification of BGGW applied by NSW OEH and employed here differs from that applied by the Federal Department for Environment and Heritage under the Environmental Protection and Biodiversity Conservation Act 1999.

## RESULTS

Two vegetation types were identified within the Study Area:

1. Native vegetation derived from the endangered BGGW.
2. Non-native vegetation.

In the Study Area, extensive areas were modified by clearing and cultivation, but fragments of BGGW also persisted in each of the forms described by OEH for this community (see Survey Method above). In many areas, these fragments of BGGW and areas of exotic cover were clearly demarcated, corresponding to untilled and historically tilled areas respectively.

### Endangered Ecological Community – White box, Yellow box, Blakely's red gum woodland

Box gum grassy woodland (BGGW) is an open woodland, or occasionally forest, community characterised by the presence of one or a combination of the following tree species: White box *Eucalyptus albens*, Yellow box *E. melliodora*, Blakely's red gum *E. blakelyi*. BGGW occurs on fertile soils on the western slopes and tablelands of the Great Dividing Range (Beadle 1981) and is listed as an Endangered Ecological Community (EEC) in NSW (Biodiversity Conservation Act 2016) and as Critically Endangered under Commonwealth legislation (Environmental Protection and Biodiversity Conservation Act 1999) because historical clearing for agriculture has extensively reduced and fragmented the communities' range. Remnants of BGGW may "survive with trees partly or wholly removed" or with "understorey highly modified by grazing and disturbance" and "disturbed remnants are still considered to form part of the community" (Final Determination of the NSW Scientific Committee).

On the proposed substation site, BGGW persisted in the following forms:

- Isolated remnant paddock trees in areas of historically tilled ground with exotic groundcover (low condition); and
- An isolated patch (~0.4ha) of derived native grassland (moderate to good condition; Appendix: Figure 3).

On the East-West Section of the proposed access track, BGGW persisted in the following forms:

- Fragmented patches of woodland with remnant trees, understorey and native grassland (moderate to good condition).
- Isolated remnant paddock trees in areas of historically tilled ground with exotic groundcover (low condition); and
- Fragmented patches of derived native grassland (moderate to good condition).

On the North-South Section of the proposed access track, in the existing fenced farm road corridor, BGGW persisted in the following forms:

- Woodland with remnant trees, understorey and native grassland (moderate to good condition).
- Derived native grassland (moderate to good condition).

In the Study Area, paddock remnants of BGGW with native grassland or derived native grassland were generally small and restricted to banks and gullies where slope and rock outcrops had prevented tillage. In the fenced farm corridor slated for development of the North-South Section of access track, groundcover was generally dominated by native grasses, but moderately grazed by cattle and with soils moderately compacted by cattle trampling and vehicles, with greater weed coverage and soil compaction at focal points of cattle activity, such as water points and gates.

A remnant *Eucalyptus albens* bearing a potential cultural scar was identified in the Study Area (Appendix: Figure 5; coordinates 56J 0346820 6702112). It is noted that the observer is not trained formerly in the identification of cultural features and this information is provided to assist further investigation, if required.

### Non-native vegetation

Most flat areas or gradual slopes within the site of the proposed substation and East-West Section of access track were cleared and cultivated with exotic pasture species (Appendix: Figure 4), especially Lucerne (*Medicago sativa*). Agricultural weeds and few hardy native grasses and groundcovers survived in these improved pastures. Exotic pasture species and other environmental weeds dominated areas of disturbed ground and also occurred in many areas of BGGW in low densities.

## POTENTIAL IMPACTS AND RECOMMENDATIONS

### Endangered Ecological Community – White box, Yellow box, Blakely's red gum woodland (BGGW)

The Proposal impacts on BGGW and derived native grassland in four main areas: (i) the entire undeveloped length of the North-South access track (~12.5ha), (ii and iii) in two gullies on the East-West access track (~1ha), and (iv) on a small (~0.4ha), isolated patch of derived native grassland on the substation site (Appendix: Figure 1). Additionally, the Proposal impacts 10 isolated, remnant trees, which are also classed as the EEC BGGW according to the OEH classification rationale specified above.

To avoid impacting BGGW and associated approval requirements, the Proposal plan could be reconfigured to within historically cultivated areas with exotic cover wherever practical. Any unavoidable BGGW impacts required as part of a modification to the approved White Rock Wind Farm would require assessment and offsetting in accordance with the Framework for Biodiversity Assessment (FBA). These requirements will depend upon the impact areas of the finalised proposal, but, potentially, BGGW data collected for the Stage 2 Modification Biodiversity Assessment Report (BAR) may satisfy these requirements. If the final plans necessitate further plot data collection, this should be scheduled for mid-late Spring.

### Threatened flora and fauna

The Biodiversity Assessment for the White Rock Wind Farm Modification (NGH Environmental 2017) includes an assessment of the impact of clearing BGGW. Of the list of threatened species requiring targeted survey for the FBA assessment, the following are potentially associated with the Study Area:

- *Thesium austral*, Austral Toadflax
- *Dichanthium setosum*, Bluegrass
- *Picris evae*, Hawkweed
- *Phascolarctos cinereus*, Koala
- *Goodenia macbarronii*, Narrow Goodenia
- *Prasophyllum* sp. *Wybong*
- *Anthochaera Phrygia*, Regent honeyeater
- *Swainsona sericea*, Silky Swainson-pea
- *Diuris pedunculate*, Small Snake Orchid

Of the FBA assessment-generated list of threatened species, the following are unlikely to occur in the Study Area:

- *Eucalyptus mckieana*, McKie's Stringybark
- *Eucalyptus nicholii*, Narrow-leaved Black Peppermint

It is noted that other threatened species associated with BGGW are listed in the NSW Scientific Committee Final Determination for that community, but if included in an FBA assessment only the above list is relevant.

Reconfiguring the Proposal Plan to avoid BGGW would also avoid impacting threatened species associated with this community. But where impacts to BGGW are unavoidable, targeted surveys for the threatened species listed above may be required. This will depend on the amount and location of the disturbance proposed.

## REFERENCES

Beadle, N. (1981) The vegetation of Australia. Cambridge University Press, Cambridge.

NGH Environmental (2017). Biodiversity Assessment White Rock Wind Farm. Report prepared for Goldwind, December 2017.

## DOCUMENT VERIFICATION

| Revision | Date       | Prepared by (name)             | Reviewed by (name) |
|----------|------------|--------------------------------|--------------------|
| Draft    | 26/4/2018  | James Rees                     | Brooke Marshall    |
| Final    | 26/4/2018  | James Rees                     | Brooke Marshall    |
| Final v2 | 07/05/2018 | Brooke Marshall (minor change) |                    |
| Final v3 | 14/05/2018 | Brooke Marshall (minor change) |                    |

# APPENDIX

**Table 1.** Flora species recorded at the proposal site on 17-18 April 2018 and their conservation status in NSW under the Biodiversity Conservation Act 2016.

| Community                                                                            | Strata      | Scientific name                 | common name               | Status         |
|--------------------------------------------------------------------------------------|-------------|---------------------------------|---------------------------|----------------|
| <b>White box, Yellow box Blakely's red gum woodland and derived native grassland</b> | Canopy      | <i>Eucalyptus albens</i>        | White box                 | Non-threatened |
|                                                                                      |             | <i>Eucalyptus melliodora</i>    | Yellow box                | Non-threatened |
|                                                                                      |             | <i>Eucalyptus dalrympleana</i>  | Mountain gum              | Non-threatened |
|                                                                                      |             | <i>Angophora floribunda</i>     | Rough-barked apple        | Non-threatened |
|                                                                                      | Shrub       | <i>Acacia leucoclada</i>        | Northern silver wattle    | Non-threatened |
|                                                                                      |             | <i>Acacia implexa</i>           | Hickory wattle            | Non-threatened |
|                                                                                      |             | <i>Notelaea microcarpa</i>      | Mock olive                | Non-threatened |
|                                                                                      |             | <i>Bursaria spinosa</i>         | Blackthorn                | Non-threatened |
|                                                                                      | Groundlayer | <i>Aristida ramosa</i>          | Purple Wiregrass          | Non-threatened |
|                                                                                      |             | <i>Austrostipa verticillata</i> | Slender bamboo grass      | Non-threatened |
|                                                                                      |             | <i>Anthosachne scabra</i>       | Wheatgrass                | Non-threatened |
|                                                                                      |             | <i>Eulalia aurea</i>            | Silky browntop            | Non-threatened |
|                                                                                      |             | <i>Rytidosperma bipartitum</i>  | Wallaby grass             | Non-threatened |
|                                                                                      |             | <i>Cynodon dactylon</i>         | Cooch                     | Non-threatened |
|                                                                                      |             | <i>Eragrostis alveiformis</i>   | Lovegrass                 | Non-threatened |
|                                                                                      |             | <i>Chloris truncate</i>         | Windmill grass            | Non-threatened |
|                                                                                      |             | <i>Cenchrus purpurascens</i>    | Swamp foxtail             | Non-threatened |
|                                                                                      |             | <i>Poa sieberiana</i>           | Fine-leaved tussock grass | Non-threatened |
|                                                                                      |             | <i>Sporobolus creber</i>        | Western rat-tail grass    | Non-threatened |
|                                                                                      |             | <i>Themeda triandra</i>         | Kangaroo grass            | Non-threatened |
|                                                                                      |             | <i>Enteropogon acicularis</i>   | Curly windmill grass      | Non-threatened |
|                                                                                      |             | <i>Cymbopogon refractus</i>     | Barbed-wire grass         | Non-threatened |
|                                                                                      |             | <i>Lomandra longifolia</i>      | Spiny mat-rush            | Non-threatened |
|                                                                                      |             | <i>Lomandra filiformis</i>      | Wattle mat-rush           | Non-threatened |
|                                                                                      |             | <i>Wahlenbergia communis</i>    | Tufted bluebell           | Non-threatened |

|                     |             |                              |                    |                |
|---------------------|-------------|------------------------------|--------------------|----------------|
| <b>Exotic cover</b> |             | <i>Glycine tabacina</i>      | Variable glycine   | Non-threatened |
|                     |             | <i>Swainsona galegifolia</i> | Smooth Darling-pea | Non-threatened |
|                     |             | <i>Pycnosorus globosus</i>   | Billy buttons      | Non-threatened |
|                     | Shrub       | <i>Rosa rubiginosa</i>       | Sweet briar        | Weed           |
|                     |             | <i>Rubus fruticosus</i>      | Blackberry         | Weed           |
|                     |             | <i>Opuntia stricta</i>       | Prickly pear       | Weed           |
|                     | Groundlayer | <i>Arrhenatherum elatius</i> | Tall oat-grass     | Weed           |
|                     |             | <i>Paspalum dilatatum</i>    | Paspalum           | Weed           |
|                     |             | <i>Medicago sativa</i>       | Lucerne            | Weed           |
|                     |             | <i>Lepidium bonariense</i>   | Lepidium           | Weed           |
|                     |             | <i>Conyza bonariensis</i>    | Fleabane           | Weed           |
|                     |             | <i>Cirsium vulgare</i>       | Spear thistle      | Weed           |
|                     |             | <i>Xanthium spinosum</i>     | Bathurst burr      | Weed           |
|                     |             | <i>Verbena bonariensis</i>   | Verbena            | Weed           |



- ▭ Proposed substation area
- ▭ Access Track
- Vegetation Type**
- ▭ Exotic
- ▭ White Box, Yellow Box, Blakely's Red Gum Woodland and Derived Native Grassland (Moderate to Good Condition)
- ▲ Remnant Trees of White Box, Yellow Box, Blakely's Red Gum Woodland (Low Condition)

0 75 150 300 Meters

A3 @ 1:10000  
Ref: 16-321 26.04.2018  
Author: C.Jones

**ngh environmental**

**Figure 1.** Map of the Study Area.



**Figure 2.** Site of proposed substation. Photo taken facing south from the centre of the northern boundary of the development footprint.



**Figure 3.** Derived native grassland patch on the site of the proposed substation.



**Figure 4.** Improved pasture on the site of the proposed substation, featuring Lucerne, weeds and few hardy native species.



**Figure 5.** Potential scar tree in the Study Area.