Jeff Bembrick

Development Compliance Manager

Goldwind Australia Pty Ltd

Level 23, 201 Elizabeth Street, Sydney NSW 2000

10 November 2015

Dear Jeff

White Rock Wind Farm (WRWF)
Visual impact - 132kV transmission line modification

Further to your email of the 23rd October 2015 Green Bean Design (GBD) understands that White Rock Wind Farm Pty Ltd (WRWFPL) is preparing a modification application to address proposed minor variations to the Stage 1 WRWF layout including an adjustment to the approved 132kV transmission line route to minimize clearing of native vegetation.

The approved line route, involving approximately 8km of 132kV transmission line, will connect the White Rock Wind Farm substation to the existing Glen Innes 132 kV transmission line to the south of the Gwydir Highway. An alternative line route has been identified that results in reduced impact on conservation significant vegetation. Both the approved and proposed modified 132kV transmission line routes are illustrated in **Figure 1**.

An assessment and determination of potential visual impacts associated with the approved 132kV transmission line was included in the Landscape and Visual Impact Assessment (March 2011) which accompanied the White Rock Wind Farm Environmental Assessment April (2011).

The Landscape and Visual Impact Assessment, March 2011 (LVIA)
noted that:

- *Views toward the transmission line from view locations to the east and south of the wind farm site would be largely blocked by the White Rock ridgeline, undulating landform and timbered areas.*
- *Views from residential dwellings along Spring Mountain Road would be partially screened by landform and vegetation between the transmission line and the dwellings.*
- *Where visible views toward the transmission line would not be significant due to the influence of distance where in excess of 3km.*
- *Views toward the transmission line would also be seen against the backdrop of the hillside when viewed from the north west through to south west, which would assist in visually absorbing the key elements of the transmission line and further reducing the overall level of visibility.*

- *Views toward the transmission line from a very small number of residential dwellings as well as vehicles travelling along the Gwydir Highway to the north of the wind farm site would be screened by tree cover alongside the road corridor.*

In order to assess and determine the nature and extent of potential visual impacts associated with the proposed modification route, GBD has:

- Carried out a desktop study to compare and contrast the approved and proposed 132kV transmission line routes; and
- Prepared photomontages of the approved and proposed modified routes which include the indicative placement of power poles together with the indicative extent of vegetative clearing to accommodate the 45m wide transmission line easement.

Our desk top study has confirmed, and/or notes that:

- There will be no change or significant visual difference to the proposed electrical infrastructure associated with the proposed modification. The proposed modification will utilise a single pole design with a dual circuit conductor arrangement. The power poles will vary from 20 metres to 26 metres in height;
- No additional sensitive receiver location (including dwellings) other than those identified in the original LIVA report has been identified within proximity to the proposed modification transmission line route;
- The approved and modified 132kV transmission line routes will overlap for approximately 2.3 kilometres south from the connection point at the existing Glen Innes 132kV transmission line; and
- The modified transmission line route will deviate from the approved route for approximately 5.6 kilometres; however the maximum deviation between the approved and proposed modification routes will be approximately 170 metres.

Photomontages have been prepared to illustrate the approved and proposed modified line routes from a view point located on the Gwydir Highway. This viewpoint provides extensive views toward the transmission line routes and is considered to be indicative of views available from the Gwydir Highway road corridor as well as residential dwellings located at more distant points in the surrounding landscape.
Figure 2 illustrates the extent of both the approved and proposed modification 132kV transmission line visible from the photomontage view location, with **Figures 3**, **4**, **5** and **6** presenting a detailed view within the overall panorama illustrated in **Figure 2**.

Whilst the majority of both transmission line alignments will be partially screened by existing vegetation, both alignments will extend across a short valley and drainage lines to the north west of White Rock Mountain. These transmission line sections will be located below ridgeline areas and will not result in any sky lining impacts. The approved transmission route will require more clearing of native vegetation than the modified line route.

The approved and modified alignments will also traverse and extend across the western shoulder of White Rock Mountain. This will require the removal of vegetation, which currently forms sky line views, to accommodate the 45 metre wide transmission line easement. The modified line route has been assessed as requiring less native vegetation removal and the proposal to adjust the alignment addresses the approval conditions for minimizing native vegetation impact. Although located at a higher elevation, the modified line easement is not considered to have any greater degree of visual impact on surrounding sensitive receiver locations due to the distance between receiver locations and the transmission line, as well as the screening influence of tree cover surrounding and between receiver locations and the transmission line corridor. Overall GBD do not consider that the modified transmission route will result in any changes to the assessment and determination of potential visual impacts identified and included in the original LVIA.

Based on our desktop study, existing site knowledge and comparison of photomontages prepared for the approved and modified transmission line routes, it is our professional opinion that the modified line route will have a negligible, and no additional discernible visual impact, over and above the visual impact determined in the original LVIA.

Kind regards,

Andrew Homewood, Registered Landscape Architect

GREEN BEAN DESIGN
landscape architects

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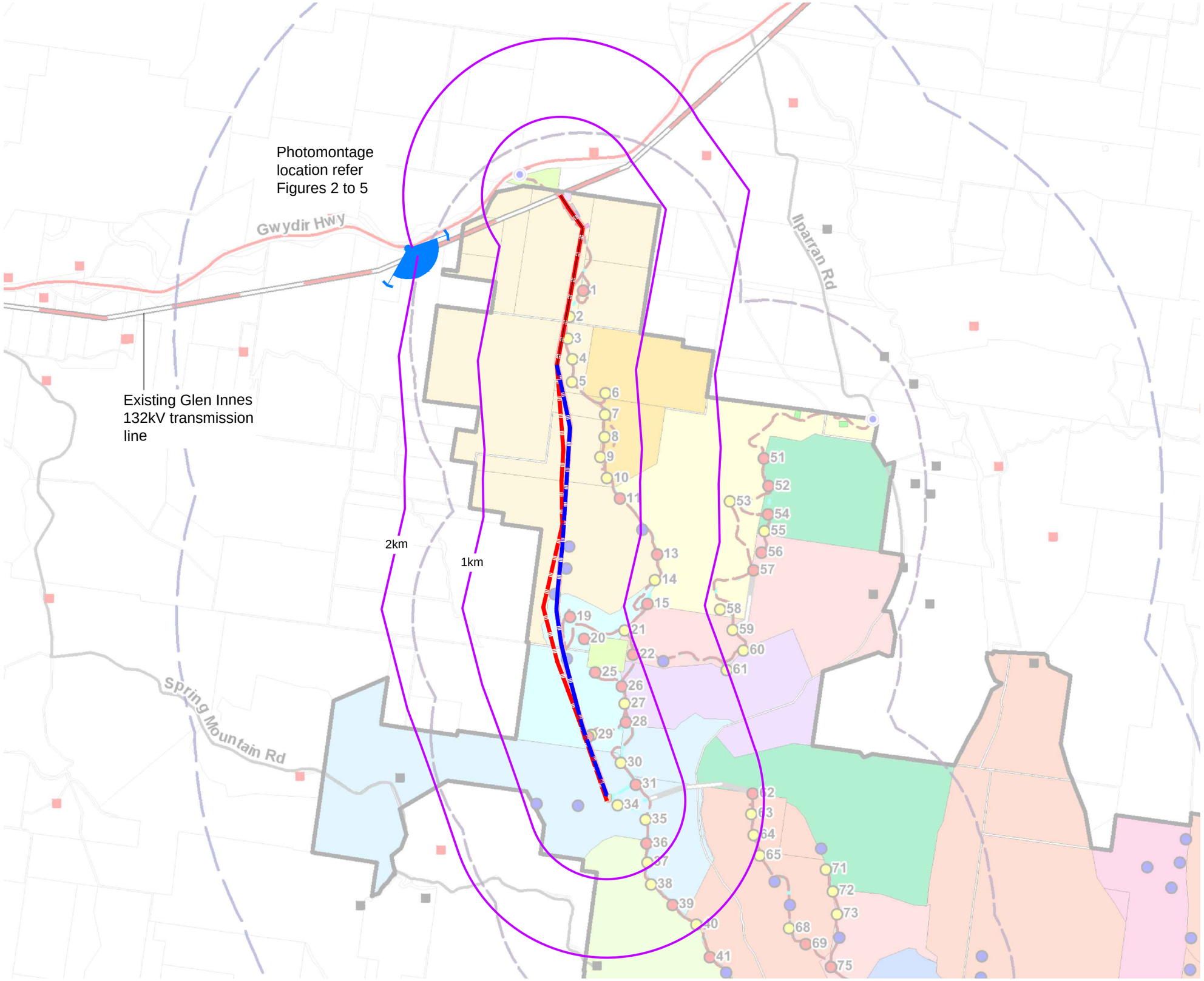

White Rock Wind Farm Stage 1 - Approved and modified transmission line routes

Figure 1 - Location plan

White Rock Wind Farm - 132kV transmission line modification

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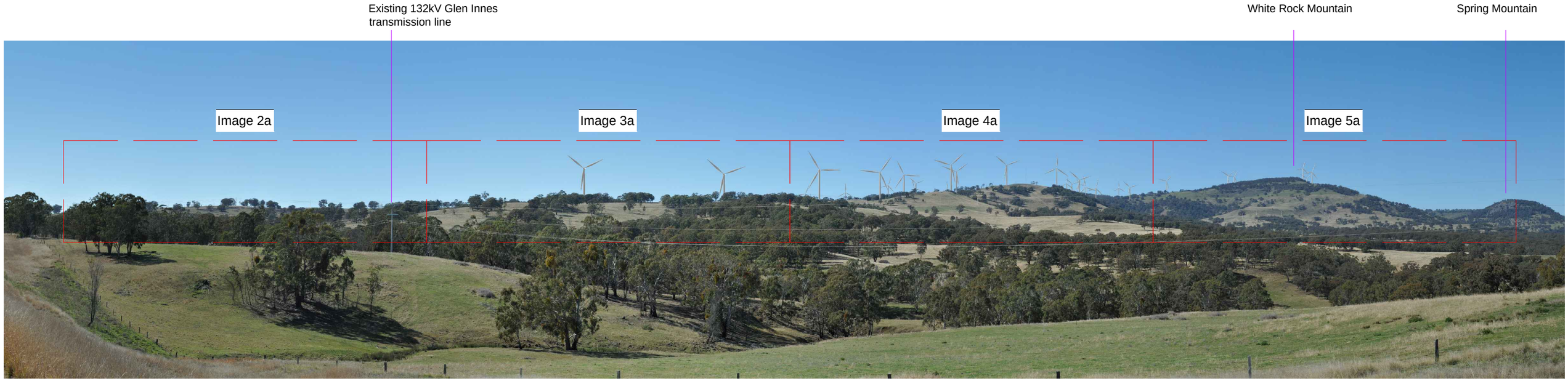

Image 1a Photomontage location Gwydir Highway - view toward the EA approved 132kV transmission line route - Refer Figures 2 to 5 for detail view

Image 1b Photomontage location Gwydir Highway - view toward the modified 132kV transmission line route - Refer Figures 2 to 5 for detail view

Figure 2 - Photomontage Sheet 1

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White Rock Wind Farm - 132kV transmission line modification

Image 2a Photomontage location Gwydir Highway - view toward the EA approved 132kV transmission line route

Image 2b Photomontage location Gwydir Highway - view toward the modified 132kV transmission line route

EA approved transmission line pole (indicative location)

PP

Modified transmission line pole (indicative location)

PP

Figure 3 - Photomontage Sheet 2

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White Rock Wind Farm - 132kV transmission line modification

Image 3a Photomontage location Gwydir Highway - view toward the EA approved 132kV transmission line route

Image 3b Photomontage location Gwydir Highway - view toward the modified 132kV transmission line route

EA approved transmission line pole
(indicative location)

PP

Modified transmission line pole
(indicative location)

PP

Figure 4 - Photomontage Sheet 3

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White Rock Wind Farm - 132kV transmission line modification

Image 4a Photomontage location Gwydir Highway - view toward the EA approved 132kV transmission line route

Image 4b Photomontage location Gwydir Highway - view toward the modified 132kV transmission line route

PP
EA approved transmission line pole
(indicative location)

PP
Modified transmission line pole
(indicative location)

Figure 5 - Photomontage Sheet 4

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White Rock Wind Farm - 132kV transmission line modification

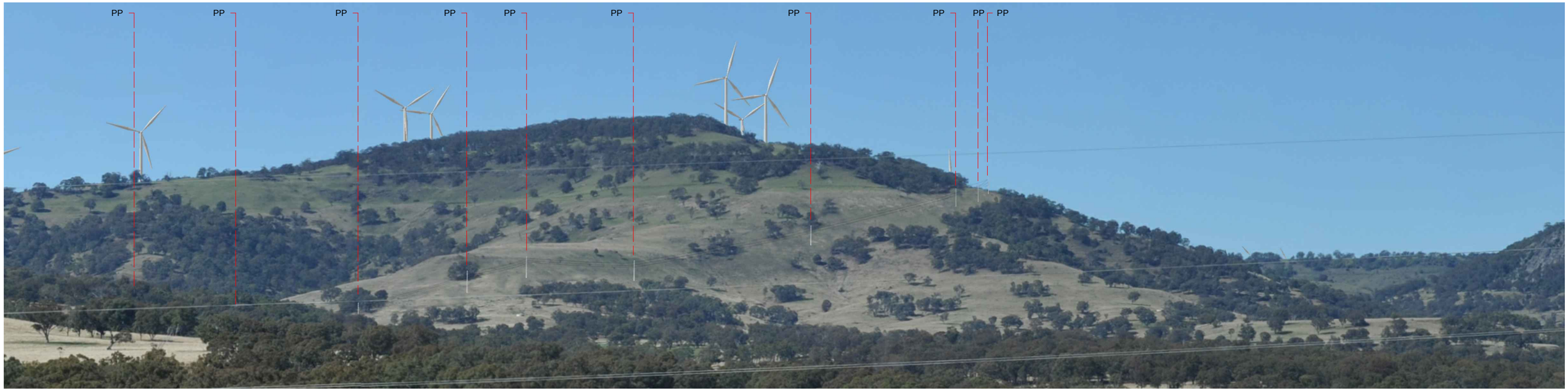

Image 5a Photomontage location Gwydir Highway - view toward the EA approved 132kV transmission line route

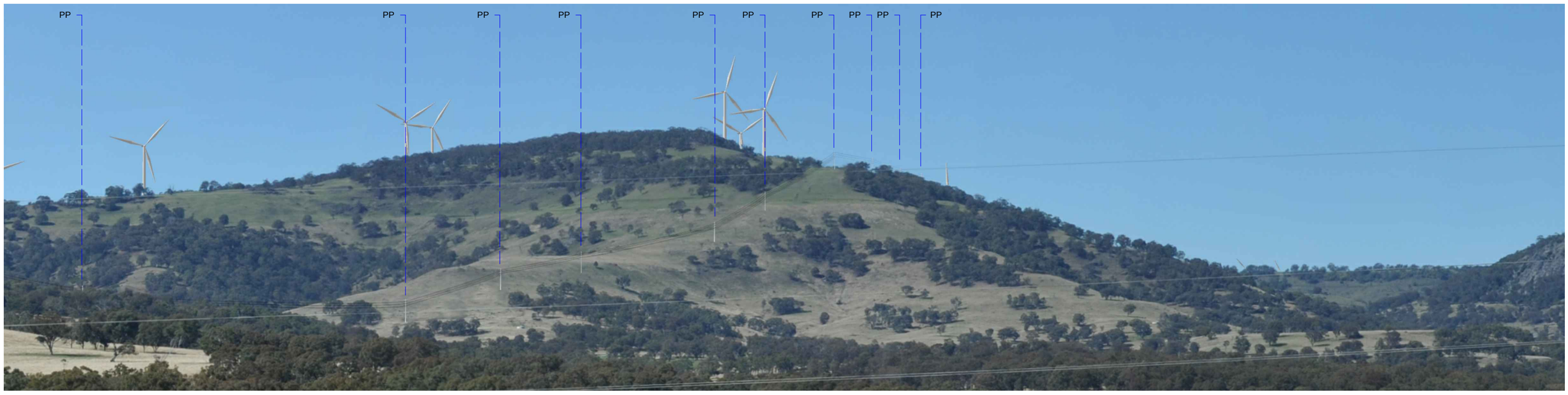

Image 5b Photomontage location Gwydir Highway - view toward the modified 132kV transmission line route

PP
EA approved transmission line pole
(indicative location)

PP
Modified transmission line pole
(indicative location)

Figure 6 - Photomontage Sheet 5

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White Rock Wind Farm - 132kV transmission line modification