Our ref: DOC20/996275
Your ref: SSD-9679

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Dear Anthony

Hills of Gold Wind Farm – Environmental Impact Statement Exhibition

Thank you for your email dated 1 December 2020 to the Biodiversity, Conservation and Science Directorate (BCS) inviting comments on the Environmental Impact Statement (EIS) for the Hills of Gold Wind Farm.

BCS notes that the project is made up of three components:

- a wind farm with up to 70 wind turbine generators
- a 330kV overhead transmission line connecting the onsite substation to the existing 330kV TransGrid Liddell to Tamworth transmission line
- minor upgrades to the New England Highway and the local road network to facilitate haulage of the turbines from the Port of Newcastle to the development site.

Given the nature of the project, the proponent may wish to stage the construction of the project. Under a staged scenario the retirement of the relevant biodiversity credits attributed to each stage could also be staged, meaning only the credit obligation related to the stage under construction must be retired prior to impact occurring, rather than the entire credit obligation.

If a staged offset delivery strategy was proposed, the offset strategy must be detailed in the BDAR and clearly identify the stages that the project will be divided into, with information including:

- stage name/identifier
- diagram of physical location of the stage including plant community type (PCT) mapping, PCT zones and species polygons
- area (hectares) to be impacted
- ecosystem credits (per PCT) and species credits.

Recommendations are provided in **Attachment A** and BCS's detailed biodiversity comments are provided in **Attachment B.** Please note that comments from the National Parks and Wildlife Service (NPWS) will be provided in a separate submission.

If you require any further information regarding this matter, please contact David Geering, Senior Conservation Planning Officer, via david.geering@environment.nsw.gov.au or (02) 6883 5335.

Yours sincerely

Sarah Carr
Director North West
Biodiversity and Conservation Division

4 February 2021

Enclosure: Attachments A and B

Attachment A

BCS's recommendations

Hills of Gold Wind Farm – Environmental Impact Statement

1.1 The BADAR should be updated to completely fulfill the requirements of the BAM as described in Appendix 10 of the BAM.

1.2 The field data sheets should be provided as an appendix to the BDAR.

2.1 Justification for areas of non-native vegetation must be clearly provided in the BDAR.

3.1 Justification should be provided in the BDAR for the selection of all PCTs.

3.2 All vegetation zones must be clearly mapped.

4.1 Where vegetation plots are not located in the project footprint, justification must be provided, including evidence that the plot is in the correct PCT and vegetation zone, and that the plot data is consistent with other plot data collected in that vegetation zone.

5.1 A table should be created that states the permanent and temporary impacts for each vegetation category: exotic grassland, planted vegetation, cleared land and each PCT in order to clearly reconcile impacts across the development footprint.

6.1 Table 21 of the BDAR should contain only species credit species.

7.1 Ensure that all data entered into the BAM-C is consistent with the field data.

8.1 A standalone section addressing serious and irreversible impacts as required by sections 10.2.2 and 10.2.3 of the BAM for all listed entities known or likely to occur in the study area is required.

9.1 The potential impacts of turbine spacing should be addressed as prescribed impacts (see Issue 10).

10.1 Further assessment of the potential for blade strike on fauna, particularly microbats, is required.

10.2 Proposed mitigation measures for blade strike and barotrauma should be presented in the BDAR.

10.3 Options to compensate for unavoidable prescribed impacts, and the decision pathway and justification for suggested credit numbers or other compensatory actions, should be clearly documented in the BDAR.

11.1 Justification is required for the placement of turbines within cave bat roosting habitat buffers.

12.1 Further study to determine the size, extent and nature of the local bat population is required.

13.1 Further justification should be provided as to why the local population of the Greater Glider is not considered an important population.

14.1 Either additional surveys for large forest owls (equating to that required for a 90% probability of detection) be conducted, or an expert report be obtained, to confirm the presence or absence of large forest owls.

Attachment B

BCS's detailed comments

Hills of Gold Wind Farm – Environmental Impact Statement

1. Not all components of the BAM assessment were included in the BDAR

The Biodiversity Assessment Method (BAM) provides a consistent method to assess impacts to biodiversity values from a proposed development activity.

Appendix 10 of the BAM (2017) outlines the requirements of a Biodiversity Development Assessment Report (BDAR). Several of the requirements of the BAM were not met, for example the following were not provided in the BDAR:

- a checklist indicating compliance with Appendix 10
- maps of vegetation zones
- an estimate of the percent cleared value of each PCT
- a table with current vegetation integrity scores for vegetation zones.

Section 4.2.3 of the BDAR states that vegetation integrity scores are provided in Table 15, however they are not included in the table. Vegetation integrity scores are only available in the credit summary reports (Appendix E).

In order to facilitate a thorough and timely assessment of a development the BAM requires the proponent to provide all plot field data at the time of lodgement. The field data sheets were provided at the request of DPIE on 21 January 2021.

Recommendation:

1.1 The BDAR should be updated to fulfill the requirements of the BAM as described in Appendix 10 of the BAM.

1.2 The field data sheets should be provided as an appendix to the BDAR.

2. The methodology used to determine non-native vegetation must be clearly articulated

Areas that are not native vegetation do not require assessment under the BAM. It is important that justification for these areas are clearly provided in the BDAR. Table 11 states that the criteria for assigning non-native exotic grasslands was "*ground layer dominated by exotics, no native overstory. If trees present, they are non-native or outside known species range*". The BDAR does not state whether this was assessed through BAM plots, rapid assessment data or another method.

Where the development footprint occurs on land that is Category 1 – Exempt land, as defined by the *Local Land Services Act 2013* (LLS Act), assessment under the BAM is not required other than the additional biodiversity impacts in accordance with clause 6.1 of the Biodiversity Conservation Regulation 2017.

Landholders are responsible for determining the categorization of their land in accordance with section 60F of the LLS Act.

Recommendation:

2.1 Justification for areas of non-native vegetation must be clearly provided in the BDAR.

3. The selection of PCTs has not been adequately justified

As per section 5.2 of the BAM, the identification of plant community types (PCTs) must be in accordance with the NSW PCT classification as described in the BioNet Vegetation Classification. The BDAR must justify each PCT identification by describing how the site's attributes recorded on the field data sheets meet the chosen PCT's NSW PCT classification.

Appendix B of the BDAR provides detailed descriptions of the chosen PCTs. It is not clear whether the description, including species lists, is of the vegetation on site or a generic description of the PCT. Appendix B does not contain justification for the selection of these PCTs across the project site. While Table 11 of the BDAR provides the criteria used to assign vegetation condition classes, included exotic and planted vegetation, the BDAR provides no evidence to support these classifications that have been made and are displayed in Figure 5. Vegetation zones have not been mapped as required by the BAM.

Recommendations:

3.1 Justification should be provided in the BDAR for the selection of all PCTs.

3.2 All vegetation zones must be clearly mapped.

4. Inclusion of vegetation plots located outside the project footprint must be justified

In accordance with the BAM, the assessor must determine the impacts of the proposed development on native vegetation and threatened species habitat. Each vegetation zone must be surveyed using the methodology outlined, with a minimum number of plots completed for each vegetation zone as required by Table 16 of the BAM.

Vegetation plots were not completed in all vegetation zones. Table 12 of the BDAR indicates that 40 of 48 vegetation zones had fewer than the required number of plots with 29 zones having no plots completed at all. Of the 85 plots that were required only 25 were conducted.

It is noted that benchmark data were used in the BAM calculator (BAM-C) where insufficient plots were completed. BCS is supportive of this approach in the absence of site-based data.

The scale of some maps provided in the BDAR (Figure 5) makes it difficult to determine the location of the plot within the development footprint, however some plots (e.g. 1, 5, 8, 9, 21, 26) are clearly outside the footprint and therefore outside the related vegetation zones. The BAM requires plots to provide a representative assessment of the vegetation integrity of the vegetation zone. Plots must be appropriately placed within the vegetation zone and be geographically distributed throughout the project footprint. Where plots are not within the development footprint, the plot's inclusion must be justified. This should include providing evidence that the plot is in the correct PCT and that the plot data is consistent with other plot data collected in the vegetation zone. Where the inclusion of the plot cannot be adequately justified the use of benchmark data will be required.

Recommendation:

4.1 Where vegetation plots are not located in the project footprint, justification must be provided, including evidence that the plot is in the correct PCT and vegetation zone, and that the plot data is consistent with other plot data collected in that vegetation zone.

5. Permanent and temporary impacts for each vegetation category should be presented

Section 8.2.1 of the BDAR states that 279.75 hectares of impact will occur to exotic grassland and planted vegetation while 206.70 hectares of native vegetation will be cleared – a total of 486.45 hectares for the proposed development. As Table 5 of the BDAR indicates that the total footprint of the development is 513.0 hectares, it is uncertain what the remaining 26.55 hectares consists of. The BDAR should confirm whether this relates to cleared land and waterbodies, or other landscape features.

It is also stated in the BDAR that the development footprint includes both permanent and temporary impacts. The permanent development footprint is approximately 242.0 hectares (of the 513.0 hectares total footprint). The temporary footprint covers 271.0 hectares and is comprised of:

- access road construction batters
- underground electrical cable footprint
- concrete batching plants, transmission line temporary access roads
- laydown and assembly areas.

The EIS states that the impact assessment has been undertaken based on an estimated total worst-case development footprint which combines the temporary and permanent footprints, notwithstanding that temporary footprints will be rehabilitated. While the BDAR states that a total of 206.7 hectares of native vegetation will be cleared, the total native vegetation entered into the BAM-C is 206.58 hectares.

In order to provide clarity, the BDAR should include a table providing the permanent and temporary impacts for each vegetation category: exotic grassland, planted vegetation, cleared land and each PCT in order to clearly reconcile the above numbers.

Recommendation:

5.1 A table should be created that states the permanent and temporary impacts for each vegetation category: exotic grassland, planted vegetation, cleared land and each PCT in order to clearly reconcile impacts across the development footprint.

6. Ecosystem species have been included in discussions regarding species credit species

Targeted surveys or an expert report is required to confirm the presence or absence of species credit species. Section 5.2.2, and specifically Table 21, of the BDAR addresses the candidate species which require targeted survey. Many of the species listed in Table 21 are ecosystem species which do not require this assessment and should not have been included.

Recommendation:

6.1 Table 21 of the BDAR should contain only species credit species.

7. Inconsistencies exist between the field data and the data in the BAM calculator

There are inconsistencies between the field data provided and the data that has been entered into the BAM-C. These include:

- plots 2, 3, 4, 5, 6 and 8 have “0” entered in the BAM-C for a number of attributes – generally for structure condition scores
- the structure condition scores for plot 7 are entered incorrectly as benchmark values
- three of the structure condition scores for plots 14 and 25 are incorrectly entered
- plot 15 is entered as PCT 931 rather than PCT 934. The mapping indicates that it should be attributed to PCT 1194.
- plots 20 and 26 are entered twice for PCT 1194
- plot 16 has not been entered into the BAM-C at all
- data for Bench16, Bench17 and Bench18 for PCT 931 are not benchmark but are from plot 21
- data for b69 for PCT 1194 are not benchmark.

The data entered in the BAM-C must be consistent with the field data sheets. Any errors in the BAM-C data can have an impact on the final biodiversity credit liability for the project.

Recommendation:

7.1 Ensure that all data entered in the BAM-C is consistent with the field data.

8. Serious and Irreversible Impacts (SAII) have not been addressed

The consent authority is responsible for deciding whether an impact to listed entities is likely to be serious and irreversible. Section 10.2 of the BAM details the information that must be included in the BDAR regarding serious and irreversible impacts to allow an informed decision to be made by the consent authority.

An impact is regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

- it will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline
- it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size
- it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution
- the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

The following have potential, or are known, to occur in the study area and are threatened entities that are listed as being at risk of a SAII:

- White Box Yellow Box Blakely's Red Gum Woodland
- Glandular Frog *Litoria subglandulosa*
- Stuttering Frog *Mixophyes balbus*
- Regent Honeyeater *Anthochaera phrygia*
- Swift Parrot *Lathamus discolour*
- Large-eared Pied Bat *Chalinolobus dwyeri*
- Little Bent-winged Bat *Miniopterus australis*
- Large Bent-winged Bat *Miniopterus orianae oceanensis*
- Brush-tailed Rock-wallaby *Petrogale penicillate*
- Eastern Cave Bat *Vespadelus troughtoni*
- Fragrant pepperbush *Tasmannia glaucifolia*
- *Euphrasia arguta*

The BDAR concludes that there are no SAII resulting from the project as:

- there is sufficient habitat available in the wider landscape to continue to support threatened species
- the majority of vegetation impacts occur on areas of exotic grasslands
- the project avoids areas of breeding habitat for threatened microbats
- impacts to high quality vegetation communities has been minimised
- residual impacts will be offset on accordance with the Biodiversity Offset Scheme (BOS) and the EPBC Act Offsets Policy.

While information is provided for several entities, for example White Box Yellow Box Blakely's Red Gum Woodland, the frogs and Fragrant Pepperbush, the BDAR does not address all components of sections 10.2.2 and 10.2.3 of the BAM for the entities listed above. Information is

presented in an ad-hoc manner throughout the BDAR. A standalone section addressing SAII is required.

Recommendation:

8.1 A standalone section addressing serious and irreversible impacts as required by sections 10.2.2 and 10.2.3 of the BAM for all listed entities known or likely to occur in the study area is required.

9. The potential impact to fauna relating to turbine placement has not been adequately addressed

The corridor that runs along the ridgeline where much of the wind farm infrastructure is located bisects extensive areas of high-quality native vegetation in Ben Halls Gap Nature Reserve and contiguous areas. While much of the connecting vegetation between these areas will not be directly impacted by the project there is potential for the configuration of turbines to result in indirect impacts such as creating barriers to movement and turbine strike.

For prescribed impacts, such as barriers to movement and blade strike, the assessor needs to predict the likely consequences of the proposal and the impact it will have on all relevant species. Predictions must involve consideration of the effect on the species at the local, bioregional and state scales (see Issue 10 of this response).

It is noted that the inter-turbine spacing is, in many instances, around 340 metres. As the proposed turbines have a rotor diameter of 170 m the effective distance between blade tips is equivalent to one blade swept area. The BDAR does not address the potential impacts to aerial fauna that may traverse the ridgeline to access adjoining habitat or preferentially forage along the ridgeline.

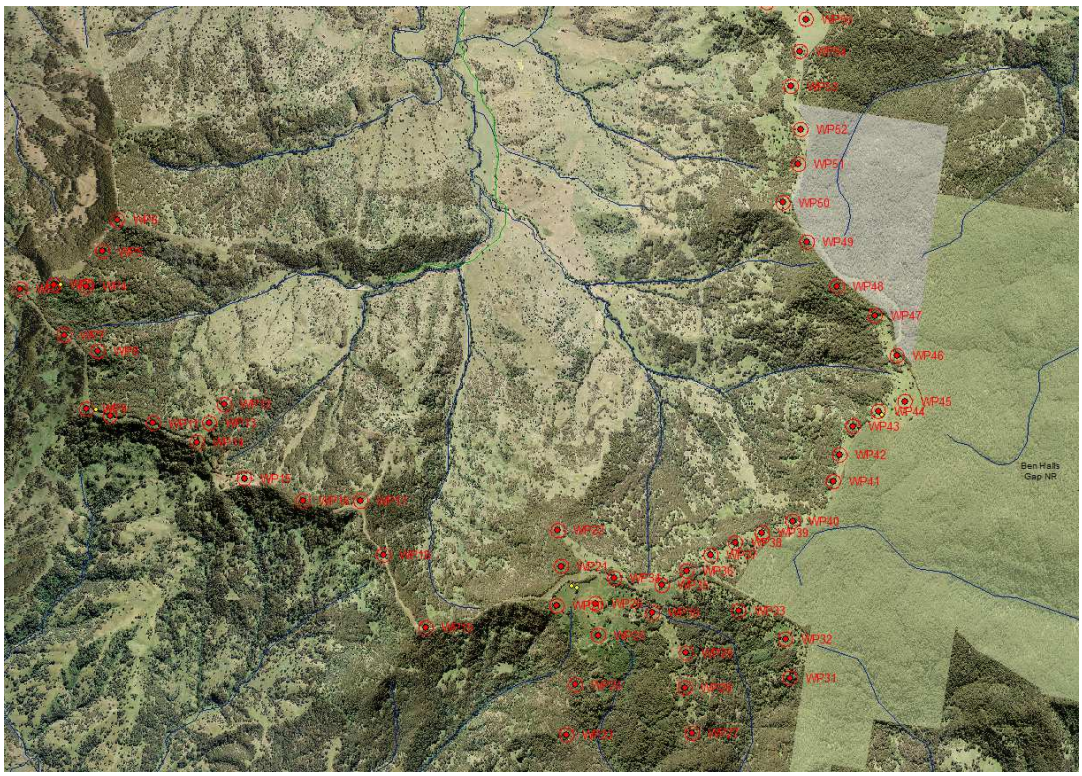

Figure 1: Location of turbines (red dots) along ridgeline bisecting contiguous vegetation, potentially creating a barrier to movement for aerial species (red circles are approximate blade swept area).

Recommendation:

9.1 The potential impacts of turbine spacing should be addressed as prescribed impacts (see Issue 10).

10. Prescribed impacts relating to wind farms have not been adequately addressed

The Biodiversity Conservation Regulation 2017 (clause 6.1) identifies actions that are prescribed as impacts to be assessed under the Biodiversity Offsets Scheme (BOS). Of relevance to windfarms is:

(e) impacts of wind turbine strikes on protected animals.

In selecting a project location, the proponent should:

- conduct an analysis of alternative locations that would avoid or minimise prescribed biodiversity impacts
- provide justification for selecting the proposed location
- carry out an analysis of alternative sites within a property on which the project is proposed that would avoid or minimise prescribed biodiversity impacts
- provide justification for selecting the proposed site.

Justifications for project location decisions should identify any site constraints that the proponent has considered in determining the location and design of the project. This would include proximity to microbat breeding and/or roosting habitat. Efforts to avoid and minimise impacts through appropriately locating the project must be documented and justified in the BDAR. While direct impacts to microbat roosting habitat has been assessed for this proposed development, prescribed impacts have not been adequately addressed. Information regarding prescribed impacts is presented in an ad-hoc manner throughout the BDAR.

Prescribed biodiversity impacts can be avoided and minimised through design of project elements to minimise interactions with threatened and protected species. BCS notes that the proposed turbines have a ground clearance of 58 metres from the blade tip and that the turbine layout achieves a minimum of 36 metres clearance from the top of the vegetation canopy to blade tip. This is higher than most of the approved wind farms in NSW. It is acknowledged that this may result in reduced rates of collision although it remains uncertain if the potential strike rate can be considered as insignificant given the high recorded number of microbats reported in the study area. This is further discussed in Issue 12 of this response.

Whilst the assessment of prescribed impacts does not result in the generation of biodiversity credits, the consent authority has the discretion to increase the number of biodiversity credits to be retired due to environmental, social and economic impacts of the proposed development, including for prescribed impacts. If mitigation measures or adaptive management do not adequately address the potential impacts, the retirement of additional relevant biodiversity credits or implementing conservation actions may be an acceptable approach.

The BDAR states that impacts of wind turbines strikes on protected animals will be mitigated under a Biodiversity Management Plan and the Bird and Bat Management Plan. These plans will be prepared following approval of the project. In order to provide some assurance that proposed mitigation measures are adequate these should be presented in the BDAR.

Recommendations:

10.1 Further assessment of the potential for blade strike on fauna, particularly microbats, is required.

10.2 Proposed mitigation measures for prescribed impacts such as blade strike and barotrauma should be presented in the BDAR.

10.3 Options to compensate for unavoidable prescribed impacts, and the decision pathway and justification for suggested credit numbers or other compensatory actions, should be clearly documented in the BDAR.

11. Direct impacts on cave bat roosts needs to be clarified

Considerable areas of potential roosting habitat for microbats have been mapped in the vicinity of the wind farm with a setback of 100 metres applied from identified roost sites, as required by the Threatened Biodiversity Database Collection (TBDC). The BDAR states that direct impacts have been avoided in these areas "*as much as possible*". The mapping provided indicates that a number of turbines are located within the 100-metre buffer. The turbines that appear to be clearly within the buffers include WP1, WP2, WP11, WP12, WP22, WP50, WP53, WP54 and WP57. A number of other turbines also appear to be on the boundary of the buffers. Of concern is the proximity of the blade swept area of these turbines to the mapped roost areas and the potential for significant blade strike (see Issue 12 in this response).

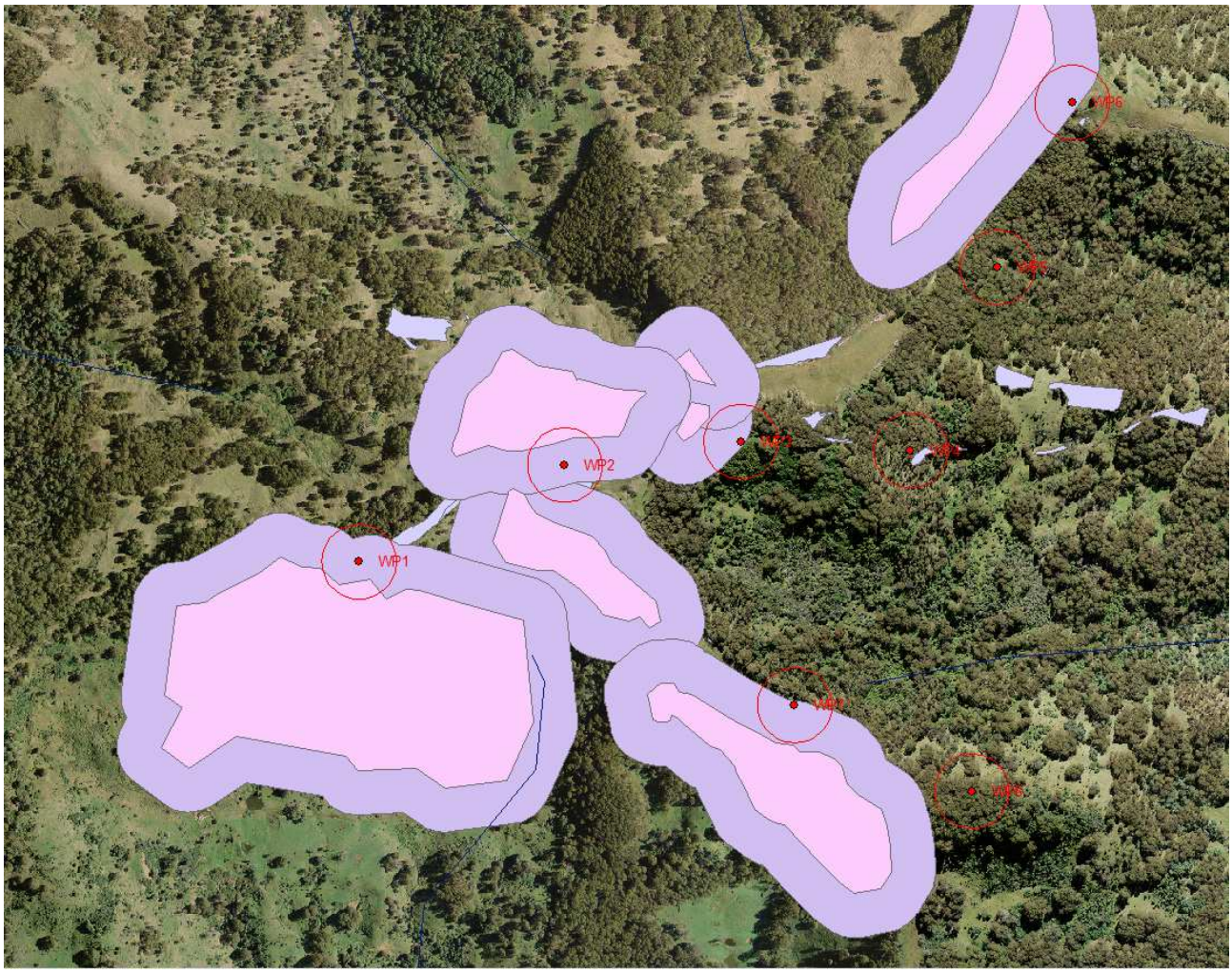

Figure 2: Location of turbines (red dots) in relation to cave bat roost polygons (pink polygons) and 100 metre buffers (purple polygons). Red circles are approximate blade swept area.

Recommendation:

11.1 Justification is required for the placement of turbines within cave bat roosting habitat buffers.

12. Indirect impacts on microbats have not been adequately addressed

While the BDAR states that there are no known maternity roost sites for threatened bats within the development footprint, high numbers of threatened cave-dwelling bats were recorded within the study area. A number of turbines are placed so that the blade swept area are in the immediate vicinity of mapped cave bate roost areas (Figure 2 of this response). The placement of turbines on the ridgeline immediately adjacent to these mapped roost areas (Figure 3 of this response) further places microbats at a potentially high risk of blade strike or barotrauma.

The BDAR makes conflicting statements regarding the potential for significant impacts to threatened microbats. Section 8.3.1 states that "*The assessment of bat activity at canopy height and rotor swept height indicates that there is a relatively low potential for microbats to forage in areas subject to collision risk with blades*" and "*The assessment has confirmed that the project is not likely to result in any significant or serious and irreversible impacts to threatened microbats associated with collision risk or barotrauma*". However, in Section 5.4.2.5 it is stated that "*The highest level of activity detected for microbats was at the 30m high detector on the met masts*" and that "*There is still a reasonable level of activity detected at 60m*". This indicates that the highest activity levels are above canopy levels. The two vulnerable bent-wing bat species were among the species recording the highest nightly mean call at the 60-metre height.

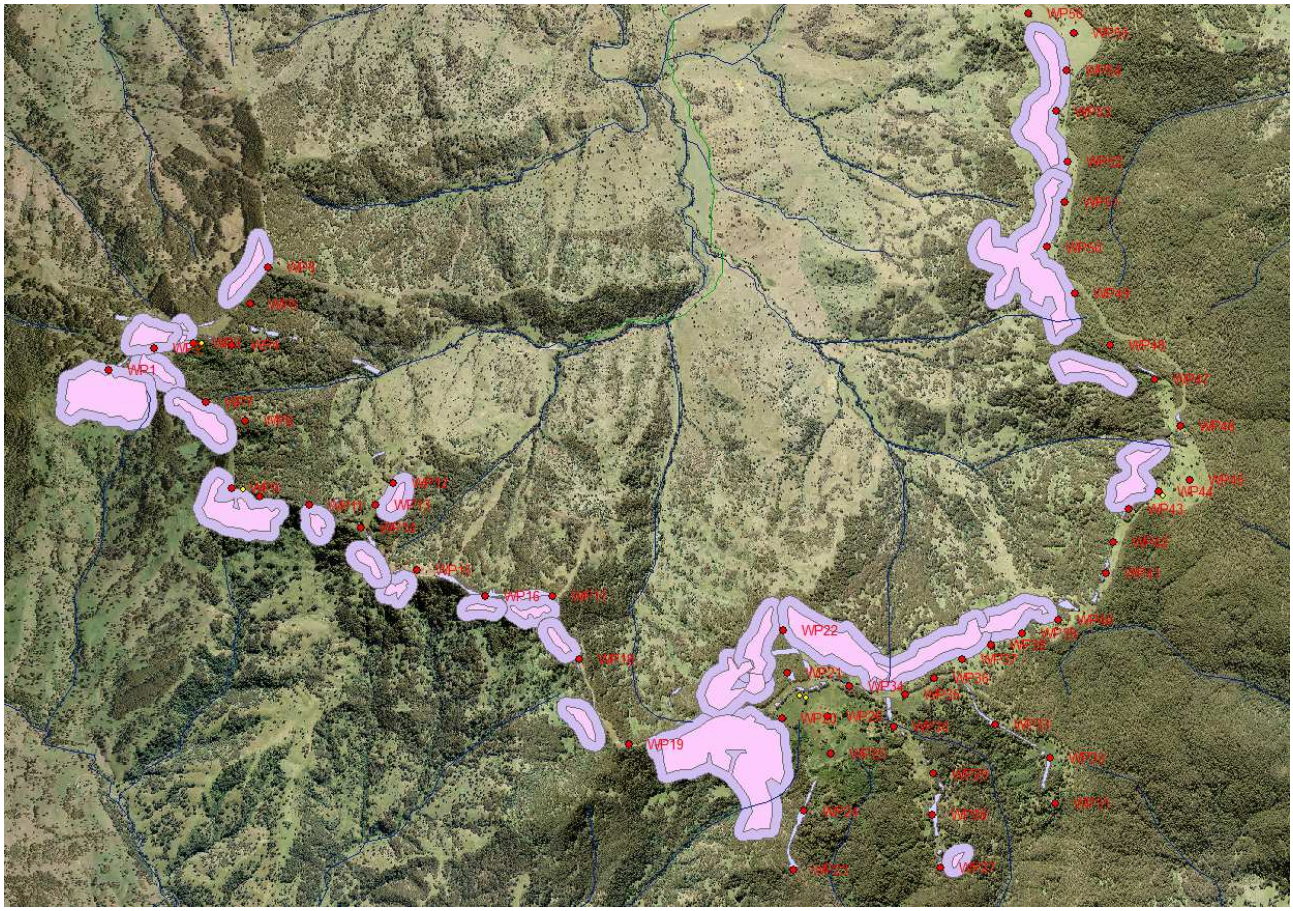

Figure 3: Location of turbines (red dots) in relation to cave bat roost polygons and 100 metre buffers.

It is stated that the turbines have a ground clearance of 58 metres from the blade tip and that the turbine layout achieves a minimum of 36 metres clearance from the top of the vegetation canopy to blade tip. This is higher than most of the approved wind farms in NSW and, while this may result in reduced rates of collision, the conclusion made in section 8.3.1 of the BDAR does not appear to be supported by evidence.

Given the high number of bats recorded in the study area and the proximity of roosting habitat the potential for significant blade strike and barotrauma of microbats exists. Further study to determine the size and extent of the local bat population is warranted. This should include investigations as to whether the site is a non-breeding roosting site or whether some species are breeding in the area.

Recommendation:

12.1 Further study to determine the size, extent and nature of the local bat population is required.

13. Additional assessment of a locally important population of the Greater Glider is required

The Greater Glider has been identified as one of four species listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) occurring in the study area. It is a requirement of the EPBC Act that an assessment is carried out to determine whether there will be a significant impact on these species. One of the significant impact criteria is the possibility that the development will "*reduce the area of occupancy of an important population*".

Section 5.4.2.6 of the BDAR states that there are no recognised important populations of the Greater Glider under the EPBC Act and three populations listed as endangered under the BC Act. On this basis it was concluded that the local population is not considered an important population. The EPBC Act does not list important populations. It is the responsibility of the accredited assessor to determine whether the population is important or not.

The Ben Halls Gap National Park Plan of Management states that the park contains one of the highest recorded densities of the Greater Glider. This is reflected by the relatively high number of individuals recorded in the study area. On this basis further justification is required for the decision that the local population should not be considered an important population of the species as defined by the Matters of National Environmental Significance.

Recommendation:

13.1 Further justification should be provided as to why the local population of the Greater Glider is not considered an important population.

14. The surveys completed for large forest owls are inadequate

Nocturnal bird surveys were conducted over four periods for a total of nine nights:

- 26-30 August 2019 (2 nights)
- 18-21 November 2019 (2 nights)
- 24-26 March 2020 (3 nights)
- 11-12 May 2020 (2 nights).

The Threatened Biodiversity Survey and Assessment Guidelines state that "*several sampling sessions were required to have even a 50% probability of detecting owl species that were in fact present on a site*". Table 5.6 of the guidelines provide an indicative number of sampling sessions required to obtain a 50% and 90% probability of detecting the large forest owl species.

Table 5.6 Number of sampling sessions required to find an owl species (that was in fact present on site) with a given probability (Debus 1995)

Owl Species	50% probability	90% probability
Powerful Owl	3	7
Masked Owl	4	9
Sooty Owl	3	8

The BAM survey period for large forest owls is May to August. The May and August survey periods were marginal while the March and November periods are outside the required survey period. Based on the survey effort within the required survey period the probability of detecting the targeted species is around 50%.

The guidelines recommend that when the required level of effort is not achieved, it cannot be assumed that the species is not present, particularly in areas of potential habitat and/or if there are records from the locality. The guidelines further recommend that if no evidence of owls is located an evaluation of whether the species are likely to occupy the habitat will need to be made.

The study area, and adjoining forests provide suitable habitat for the large forest owls with an abundance of prey items. Given the uncertainty concerning the adequacy of the survey to determine presence or absence with any degree of certainty due to timing and effort, and the large territories occupied by these species, BCS recommends that either additional surveys be conducted, or an expert report be obtained, to confirm the presence or absence of large forest owls.

Recommendation:

14.1 Either additional surveys for large forest owls (equating to that required for a 90% probability of detection) be conducted, or an expert report be obtained, to confirm the presence or absence of large forest owls.