

Mr Jamie Chivers
Managing Director
Hills of Gold Wind Farm Pty Limited

09/02/2022

Via email: jamie.c@someva.com.au

Dear Mr Chivers

**Hills of Gold Wind Farm (SSD 9679)
Request for additional information**

I refer to the Submissions Report and Amendment Report for the Hills of Gold Wind Farm (SSD 9679). While the Department notes that the project design has been amended to reduce environmental impacts, the Department still has concerns about potential impacts on transport, visual amenity and biodiversity.

As such, the Department requests that you provide additional information on the matters below:

- **Transport** – further justification on why a private haulage road through Crown Reserve 85916 for Public Recreation is appropriate and necessary when alternative transport route options are available and considering the process required to secure access to this land;
- **Visual** –
 - status of agreements with the landowners of sensitive receivers where impacts are inconsistent with the Visual Performance Objectives outlined in the *Wind Energy Visual Assessment Bulletin (DPE 2016)*;
 - mitigation proposed (including consideration of removing turbines) in instances where a landowner agreement cannot be reached; and
- **Biodiversity** –
 - justification for the placement of wind turbines immediately adjacent to Ben Halls Gap Nature Reserve, having regard to:
 - potential barrier effects, displacement of home ranges and disruption to movement patterns of mobile species;
 - advice from Biodiversity, Conservation and Science Directorate and National Parks and Wildlife Service on the updated Biodiversity Development Assessment Report; and
 - input from a bat ecologist and other relevant experts.

Please provide the information, or notify us that the information will not be provided, by **Friday 25 March 2022**. If you cannot meet this deadline, please provide and commit to an alternative timeframe for providing this information.

If you have any questions, please contact Anthony Ko on 8217 2022 or at anthony.ko@planning.nsw.gov.au.

Yours sincerely,

A handwritten signature in blue ink, appearing to be 'NB', with a long horizontal line extending to the right.

Nicole Brewer
Director
Energy Assessments

Our ref: DOC22/56339

Your ref: SSD-9679

Anthony Ko
Team Leader Energy Resource Assessment
Planning & Assessment Group
Department of Planning and Environment
anthony.ko@planning.gov.nsw.au

Dear Anthony

Hills of Gold Wind Farm – Response to Submissions

Thank you for your e-mail dated 12 January 2022 to the Biodiversity, Conservation and Science Directorate (BCS) of the department inviting comments on the Response to Submissions (RTS) for the Hills of Gold Wind Farm.

Many of the issues raised by BCS in our submission of 4 February 2021 have been addressed; however, concerns remain around several issues, particularly the proximity of the development to the high biodiversity values of adjoining Ben Halls Gap Nature Reserve and nearby national park estate, the ability of the proponent to mitigate blade strike given the high levels of species diversity and densities, and the lack of ability to apply large buffers to turbines due to landform constraints. BCS recommends that the proponent be requested to provide, prior to project determination, a statement of commitments outlining blade strike trigger points and associated mitigation measures.

BCS notes that the proponent proposes to stage the construction of the project and that a detailed Staging Plan will be prepared and submitted in advance of construction. The intention is that prior to works commencing the biodiversity offset requirements associated with each stage will be confirmed and secured through the legal mechanisms required by the NSW Biodiversity Offset Scheme and the EPBC Act Offsets Policy. We further note the commitment that the project impacts will remain within the “worst-case” scenario assessed as part of the updated Biodiversity Development Assessment Report (BDAR). BCS requests that the Staging Plan and supporting credit obligation calculations be provided to us for review and verification. BCS welcomes the opportunity to discuss the mechanisms of how this may be achieved and conditioned.

Recommendations and comments on the RTS are provided in **Attachment A** and detailed comments are provided in **Attachment B**.

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, Conservation & Science Directorate

1 February 2022

Enclosure: Attachments A and B

BCS's recommendations and comments

Hills of Gold Wind Farm – Response To Submissions

BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BBAMP	Bird and Bat Adaptive Management Plan
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCS	Biodiversity, Conservation and Science Directorate
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
CEEC	Critically Endangered Ecological Community
DNG	Derived Native Grassland
DPE	Department of Planning and Environment
EEC	Endangered Ecological Community
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
IBRA	Interim Biogeographic Regionalisation for Australia
LLS Act	<i>Local Land Services Act 2013</i>
MNES	Matters of National Environmental Significance
PCT	Plant Community Type
SAII	Serious and Irreversible Impacts
TEC	Threatened Ecological Community
TBDC	Threatened Biodiversity Data Collection
VIS	Vegetation Information System

- 1.1 The advice regarding the BAM assessment is for the assessor's information only and requires no further action for this project.
- 2.1 The assessor should note BCS advice regarding the separate assessment of exotic vegetation and areas which are excluded from further assessment under the BAM, as a consequence of the provisions within the Local Land Services Act 2013, for future assessments.
- 3.1 Justification should be provided in the BDAR for the selection of all PCTs.
- 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 The BOAMs cases be split between IBRA sub-regions, with separate cases for each sub-region.
- 5.2 Where benchmark data is used, the benchmark data for the relevant IBRA must be used.
- 5.3 Lists of candidate threatened species be reviewed to determine whether any additional species need to be assessed.
- 5.4 Biodiversity credits be recalculated for each IBRA sub-region.
- 6.1 Vegetation condition classes be reviewed to ensure that they accurately reflect vegetation integrity scores.
- 6.2 Biodiversity values that are influenced by vegetation condition and integrity (e.g. candidate threatened species, allocation of PCTs to threatened ecological communities) be reviewed and the BDAR updated accordingly.

- 6.3 All spatial data and maps are to be updated to accurately identify vegetation condition classes and vegetation zones.
- 7.1 The information provided regarding permanent and temporary impacts is adequate and no further action necessary.
- 8.1 Discussion regarding species credit species and ecosystem credits have been differentiated. No further action necessary
- 9.1 All plot data be checked for accuracy.
- 9.2 Explanations be provided for differences in plot data between spreadsheets.
- 9.3 Ensure accurate data is entered into BOAMs.
- 10.1 All SAI have been adequately addressed. No further action necessary
- 11.1 Discussion regarding the potential for the displacement of home ranges, or the sterilisation of suitable habitat through fauna avoiding turbines, thus disrupting movement patterns is required.
- 11.2 Justification be provided for the distance between turbines along ridge lines.
- 12.1 Options to compensate for unavoidable prescribed impacts, the decision pathway and justification for suggested credit numbers or other compensatory actions, should be clearly documented.
- 13.1 Additional input be sought from a bat ecologist regarding the report presented in Appendix F of the BDAR and the potential for smaller scale bat roosts in the vicinity of the development footprint.
- 13.2 Monitoring of bats take place prior to construction adjacent to geological features with high bat activity at “fly-out” times to determine whether further investigation of potential roost sites is required.
- 14.1 Full details of trigger points and mitigation measures be addressed and presented prior to a final determination of the project rather than in a post-consent BBAMP.
- 14.2 Data from ongoing bird and bat monitoring surveys be provided to DPE annually as well as made publicly available on the project’s website.
- 15.1 No significant impact is likely on the local population of Greater Glider. No further action necessary.
- 16.1 The species polygon for Sooty Owls is acceptable.
- 16.2 Species polygons for Powerful, Barking and Masked Owls be reconfigured to include any suitable habitat containing trees with hollows with an entrance greater than 20cm in diameter. A buffer of 100 m may be applied to individual hollow-bearing trees.
- 16.3 The species polygon for Koala, Eastern Pygmy Possum and Squirrel Glider be reconfigured to include all suitable habitat.
- 17.1 Stewardship sites be located sufficiently remote from the influence of the turbines.
- 18.1 The BDAR should address all Matters of National Environmental Significance with clear justification as to why any species have been ruled out.
- 18.2 A credit requirement for the Greater Glider should be calculated under advice from the Commonwealth Department of Agriculture, Water and the Environment.

BCS's detailed comments

Hills of Gold Wind Farm – RTS

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

A checklist indicating compliance with Appendix 10 of the Biodiversity Assessment Method (BAM) (2017) was not provided in the exhibited BDAR. Table 11 of the updated Biodiversity Development Assessment Report (BDAR) provides a summary of where the required information for a BDAR is located.

Table 11 indicates that the estimates of percent cleared of each Plant Community Type (PCT) is available in Appendix H; however, Appendix H does not contain estimates of percent cleared for PCTs, rather plot data.

The percent cleared value is defined as the percentage of a PCT that has been cleared as a proportion of its pre-1750 extent, as identified in the BioNet Vegetation Classification. This information may have been best provided in the detailed PCT description (Appendix B).

Comment

1.1 This advice is for the assessor's information only and requires no further action for this project.

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

Section 4.2.1 of the updated BDAR describes the method used to identify and map non-native vegetation. The details provided on this method is considered adequate.

This issue has been resolved.

BCS notes the method detailing how non-native vegetation has been identified and mapped has been combined in Section 4.2.1 with detail on the method used to apply land categorisation, under the *Local Land Services Act 2013* (LLS Act), within the site.

The assessor should note that areas of exotic vegetation and areas which are excluded from further assessment under the BAM i.e. Category 1 Land, should be assessed and delineated separately within a BDAR. This is because the two categories are assignable according to different criteria i.e. exotic vegetation is mapped according to the dominance of weed species and the absence of native vegetation cover, whereas areas which are not subject to assessment under the BAM, as a consequence of the provisions within the LLS Act, are assigned according to land use information and history.

This advice is for the assessor's information only and requires no further action for this project.

Comment

2.1 The assessor should note BCS advice regarding the separate assessment of exotic vegetation and areas which are excluded from further assessment under the BAM, as a consequence of the provisions within the Local Land Services Act 2013, for future assessments.

3 The selection of PCTs has not been adequately justified

Section 4.1.3 describes the method for mapping PCTs within the site and condition metrics assigned to vegetation zones. BCS advise that the detail provided on this method and condition metrics are considered adequate.

BCS note that while Appendix B has been updated to include justification for PCT selection, the justification of PCT selection does not clearly articulate why a given PCT was determined to be the 'PCT of best fit' and the most accurate representation of vegetation within the site. Limited analysis and demonstration of comparative equivalence between site context and PCT attributes has been provided i.e. soil types, landscape position, existing mapping or attributes recorded in the field data sheets.

For example, the justification for the selection of PCT 507 states that: *"PCT was found to support a common occurrence of Eucalyptus stellulata within the canopy with an understorey of native shrubs and groundcovers. The PCT was found to represent an open forest with a mid-dense crown cover, at high elevation undulating plateaux, on a basalt-derived heavy soils."*

The above excerpt from Appendix B provides an adequate description of the PCT within the subject lands; however, the excerpt does not articulate any justification on why the assessor considered PCT 507 to represent the 'PCT of best fit' for this vegetation type within the subject land.

It would be beneficial if each justification provided a short-list of candidate PCTs, based on the key diagnostic features collected through the field survey and comparative PCT selection tools used, i.e. the VIS vegetation diagnostic tool, with a final justification describing why the selected PCT was the best fit for the site.

Recommendation

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

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

In BCS's original submission it was stated: *"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."*

Section 4.1.4 within the updated BDAR provides a statement describing the rationale behind why certain plots are located outside of the development footprint: *"During the planning and implementation of the field survey, BAM plots have been located as much as possible within the development footprint. Due to the multiple revisions to the development footprint, there are some instances where plots are no longer located within the final development footprint assessed in the Updated BDAR. Where BAM plots have not been located within the development footprint, they have been located within a contiguous and/or representative patch of vegetation suitable for collection of data commensurate within the impacted vegetation zone. This allows the vegetation integrity scores to be included in the BAM-Calculator to be consistent with the area impacted in the development footprint"*.

From review of the statement above, BCS understands the rationale behind some plots being located outside of the project footprint. However, this does not preclude the need for evidence to be provided for BCS to verify that all plots outside the subject land are adequately representative of impacted vegetation. This should include, but not be limited to, a table listing:

- each plot located outside of the subject land
- justification, referencing appropriate evidence, to demonstrate each plots representativeness of its equivalent vegetation zone within the subject land and consistency with other plots collected within the same vegetation zone; and
- a distance between the plot and the nearest area of vegetation within the subject land the plot is representing and reference to an informing map.

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 Separate BOAMs cases are needed for each IBRA subregion

The BAM (section 5.2.1) requires that, for linear-shaped proposals, the assessor must assess the habitat suitability for each IBRA subregion separately. This is important as the IBRA bioregions and IBRA subregions inform:

- Identification of PCTs and benchmarks
- Habitat suitability for threatened species

For linear projects, BCS expects that the accredited assessor will submit a separate Biodiversity Offsets and Agreement Management System (BOAMS) case for each IBRA subregion.

The revised BDAR identifies that the assessment area intersects four IBRA subregions, as shown in Table 12 of the report.

Table 12 IBRA region and sub-regions in which the subject land is located

IBRA Region	IBRA Sub-region	Extent (ha)	% Assessment area
New England Tablelands	Walcha Plateau	59,71	19%
Nandewar	Peel	13,655	44%
NSW North Coast	Tomalla	3,183	10%
Sydney Basin	Hunter	8,586	27%

The accredited assessor has concluded that the majority of the project is located within the Nandewar bioregion and Peel sub-region. Two BOAMS cases have been submitted:

- Case 00020780 – Nandewar IBRA, Peel subregion (containing 45 vegetation zones)
- Case 00021863 - Sydney Basin IBRA, Hunter subregion (containing two vegetation zones).

Using GIS, BSC has calculated that Walcha Plateau and Tomalla contain fifteen and twenty vegetation zones respectively. Peel has twenty-four vegetation zones. While there is considerable overlap with the vegetation zones located in each IBRA sub-region, there are zones that are found in one sub-region and not the other two (for example zones 526 moderate and 526 high are only in Walcha Plateau sub-region).

In addition, the accredited assessor has used benchmark data for vegetation zones where no BAM plots have been done. Some vegetation zones are in more than one IBRA, and benchmark data is different for each IBRA. For example, PCT 486 has vegetation zones in both Nandewar and NSW North Coast IBRAs that will be impacted by the project. Benchmarks for the two IBRAs differ. However, the accredited assessor has only used the Nandewar benchmark in BOAMs.

Recommendations

- 5.1 The BOAMs cases be split between IBRA sub-regions, with separate cases for each sub-region.
- 5.2 Where benchmark data is used, the benchmark data for the relevant IBRA must be used.
- 5.3 Lists of candidate threatened species be reviewed to determine whether any additional species need to be assessed.
- 5.4 Biodiversity credits be recalculated for each IBRA sub-region.

6 Vegetation zone conditions should be reviewed

In reviewing the BOAMs case, BCS notes that some condition classes do not reflect the vegetation integrity score for the vegetation zone.

Accurate condition classes for vegetation zones are important because development should be located in areas of no or low value native vegetation. If areas with high vegetation integrity scores are being mapped as low condition with development focussed in these areas, there will be high biodiversity impacts.

Vegetation integrity also has implications for threatened species habitat identification and allocation of vegetation zones to threatened ecological communities.

For example, PCT 540 has three condition classes: high, moderate and low. The low condition class should have the lowest vegetation integrity score. However, the condition classes for PCT 540 are:

PCT 540 condition class	Vegetation integrity score
High	80.3
Moderate	86.1
Low	95.9

Of the forty vegetation zones listed in Table 18 of the revised BDAR, nineteen of these use PCT benchmark data rather than data from BAM plots. Using benchmark data means that vegetation integrity scores for these zones are automatically assigned as high in the BAM-C (e.g. a VIS score of 99.9).

Of the zones that use benchmark data, four are classed as high condition, five as moderate and seven as low. Three zones are derived native grasslands that used benchmark data for groundcover but no shrub or tree canopy was recorded. Table 17 provides an overview of criteria used to assign vegetation condition class but there is no detailed explanation of how the high, medium and low conditions were decided for sites where benchmark data was used. As benchmark data was used it is assumed that plots were not used to refine these condition classes.

Recommendations

- 6.1 Vegetation condition classes be reviewed to ensure that they accurately reflect vegetation integrity scores.
- 6.2 Biodiversity values that are influenced by vegetation condition and integrity (e.g. candidate threatened species, allocation of PCTs to threatened ecological communities) be reviewed and the BDAR updated accordingly.
- 6.3 All spatial data and maps are updated to accurately identify vegetation condition classes and vegetation zones.

7 Permanent and temporary impacts for each vegetation category is adequate

In BCS's original comment it was recommended that a table 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.

Additional information has been provided in Table 21, a breakdown of the area of each condition class of vegetation, and Table 22, which provides a summary of the PCTs, vegetation zones, condition, extent, integrity score and associated TECs for the development footprint. Biodiversity Risk Ratings have been added to the table in accordance with Appendix 10 of the BAM.

BCS advise that the information provided is adequate.

Comment

- 7.1 The information provided regarding permanent and temporary impacts is adequate and no further action is required.

8 Ecosystem species have been included in discussions regarding species credit species

Table 28 (previously Table 21 in the original BDAR) has been updated in the amended BDAR. Biodiversity Risk Ratings have been added to the table in accordance with Appendix 10 of the BAM.

This issue has been resolved.

Comment

- 8.1 Discussion regarding species credit species and ecosystem credits have been differentiated. No further action necessary

9 Inconsistencies exist between the field data and the data in the BAM calculator

BCS obtained three sets of plot data from the proponent:

1. HoGWindFarm_raw_plot_data.xlsx sent on 21 January 2021 (Spreadsheet #1)
2. Hills.of.Gold.WF.BAMplot.data_20210916_BCS.xlsx sent on 21 January 2022 (Spreadsheet #2)
3. 34963_HoGWF_AppHb-Plot data summary_20220124.xlsx sent on 27 January 2022 (Spreadsheet #3)

We note that the data in BOAMs follows that provided in spreadsheet #3 provided on 27 January 2022, and matches the data presented in Appendix H of the BDAR. BCS has not done a full comparison of this spreadsheet with BOAMs but assumes that the data has been directly uploaded to BOAMs and as such should match the spreadsheet.

Spreadsheet #3 does not entirely match with spreadsheets #1 and #2. For example, comparing the first plot (plot 1 HoG_Mar_13) of spreadsheet #3 with spreadsheet #1, there are inconsistencies, e.g.:

Item	Spreadsheet #1	Spreadsheet #3
Northing	6509750	6509746.22
Comp Forbs	5	4
Comp fern	0	1
StrucForbs	2.7	2.6
StrucFerns	0.0	0.1
Funlittercover	5.1	4.0

Spreadsheet #2 did not provide all data, only including the zone function data for trees, trees with hollows and length of logs. Other composition and structure data was not provided in this spreadsheet as it was in the other two spreadsheets.

However, there are differences between spreadsheet #2 and spreadsheet #3. Some examples are provided in the table below:

Examples of differences in large tree counts between spreadsheets #2 and #3

Plot number	Spreadsheet #2	Spreadsheet #3
30	4	8
34	12	24
35	10	20

Examples of differences in large tree counts between spreadsheet #1, #2 and #3

Plot number	(Spreadsheet #1)	Spreadsheet #2	Spreadsheet #3
17	1	16	16

The information provided and entries in BOAMs should be checked, with explanations provided outlining the differences in the data sets.

Recommendations

- 9.1 All plot data should be checked for accuracy.
- 9.2 Explanations be provided for differences in plot data between spreadsheets.
- 9.3 Ensure accurate data is entered into BOAMs.

10 Serious and Irreversible Impacts (SAIL) have not been addressed

The consent authority is responsible for deciding whether an impact to listed entities is likely to be serious and irreversible. Assessments undertaken in accordance with Section 10.2 of the BAM for potential SAIL entities is provided in Appendix E of the updated BDAR.

SAIL to cave dwelling microbats and their potential breeding habitat have been avoided through removal and relocation of specific turbines from the project footprint (see Issue 11).

Overall design refinements undertaken since the exhibited BDAR have resulted in a material reduction of impact to Box Gum Woodland CEEC from 13.3 hectares to 6.07 hectares. Approximately 41 % of the remaining impacts to Box Gum Woodland (2.47 hectares) as a result of the project will occur on areas of Derived Native Grassland (DNG) or that have been assessed as occurring in Low condition. Accordingly, the Project is not considered likely to reduce the extent of the Box Gum Woodland Critically Endangered Ecological Community (CEEC) at the national, bioregional or local scales, and the Project will not lead to a reduction in the geographic distribution of Box Gum Woodland.

Recommendation

- 10.1 All SAIL have been adequately addressed. No further action necessary

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

The proposal now consists of up to 65 turbines operating over an approximate linear distance of 30 kilometres along ridgelines. The BDAR addresses the potential impacts of blade strike but fails to address the potential impacts of barriers to movement. The section in Table 64, for example, that should specifically refer to this issue refers to Sections 8.3.1, 8.3.2 and Appendix D of the BDAR (the Collision Risk Model Report). While loss of habitat connectivity is mentioned, none of these

specifically address this issue other than in the context of blade strike. There is no discussion regarding the potential for the displacement of home ranges, or the sterilisation of suitable habitat through fauna avoiding turbines, thus disrupting movement patterns. The latter may be important for large forest owls, and potentially tree-roosting microbats, that may include the more fragmented habitat to the west of the ridgeline as foraging habitat.

The section on habitat connectivity in Section 8.5 of the updated BDAR suggests that the removal of five turbines from the project will mitigate impacts of wind turbine placement to habitat connectivity. It is noted that removing four of these turbines will reduced the incursion of the development into native vegetation (see Figure 1 of the BDAR) but has done little to reduce potential barrier impacts.

BCS has concerns about the spatial arrangement of turbines along ridge lines and recommends that the proponent justify the distances between turbines in relation to potential barrier effects.

Recommendations

- 11.1 Discussion regarding the potential for the displacement of home ranges, or the sterilisation of suitable habitat through fauna avoiding turbines, thus disrupting movement patterns is required.
- 11.2 Justification be provided for the distance between turbines along ridge lines.

12 Prescribed impacts relating to wind farms have not been adequately addressed

Section 8.5 of the updated BDAR discusses prescribed impacts. Of particular relevance to this project is the impact of the project on connectivity of threatened entities (see Issue 9) and the assessment of impacts of wind turbine strike on protected fauna (see Issue 14).

BCS's submission of 4 February 2021 recommended that the proponent options to compensate for unavoidable prescribed impacts, and the decision pathway and justification for suggested credit numbers or other compensatory actions, be clearly documented in the BDAR.

The Submissions Report suggests that the Biodiversity Offsets Strategy will “*provide further options to ensure that unavoidable impacts are fully offset as required by the NSW Biodiversity Offset Scheme and the EPBC Act Offsets Policy to ensure no net loss to biodiversity*”. It further states that “*This is expected to provide further options to compensate for unavoidable impacts*”.

The BDAR and the Submission Report both fail to provide a quantifiable credit requirement for unavoidable prescribed impacts.

Recommendation

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

13 Direct impacts on cave bat roosts needs to be clarified

It is noted that the cave bat roost polygons have been modified based on expert advice regarding the presence of geological features of significance within the study area and in the broader landscape. This change has resulted in a significant reduction in the area of these polygons.

BCS acknowledges that, based on the information provided, that significant areas previously mapped as microbat roost habitat are unlikely to contain significant roosts. While it appears that there are unlikely to be habitat features to accommodate a large colony in the immediate area, the report provided in Appendix F of the BDAR states that there is high potential for features that might support smaller roosting sites across the landscape. Collectively, these features may support large numbers of bats, which is supported by the data collected by the microbat acoustic surveys.

BCS recommends that input by an acknowledged bat ecologist be sought to substantiate the findings of the geomorphology and geology report particularly in relation to the potential for small scale roosts to occur within or adjacent the development footprint.

BCS notes that 3 turbines (WP 23, WP, 27, WP 31) creating a high risk of impact and 1 turbine (WP 01) creating a moderate risk of impact have been removed. Two additional turbines (WP 50 and WP 2) with either high or moderate risk to impact have been relocated to create a greater buffer to mapped habitat. It is stated that *“As a result of additional surveys and project amendments to remove turbines from updated mapping habitat, the project will not result in any direct impacts to cave bat roosts, nor will any project infrastructure occur within cave bat roosting habitat buffers”*. *The project will not result in any direct impacts to cave bat roosts, nor will any project infrastructure occur within cave bat roosting habitat buffers”*.

BCS suggests that this may apply to larger scale roost sites but may not account for minor roosts that has the potential to account for a significant number of bats.

It is noted that several mitigation measures are proposed to minimise direct disturbance to cave-dwelling bats including:

- Disturbance to roosting microbats as a result of ground vibration during the breeding season (November to February) or winter torpor season (May to September) will be avoided and minimised as far as practicable; and
- Monitoring of the presence of microbats within the habitat feature(s) near WP 50 will be undertaken prior to vibration-causing construction activities where required works coincide with breeding/torpor periods.

BCS acknowledges that it is difficult to mitigate direct impacts on features that may contain smaller roosts, but recommends that where turbines are located in areas with high bat activity at “fly-out” times, additional monitoring occurs to determine when further investigation is warranted to identify the presence of potential roost sites.

A precautionary approach should be taken in regard to construction adjacent to geological features, unless it has been demonstrated that the site has no potential to contain microbat roost sites.

Recommendations

- 13.1 Additional input be sought from a bat ecologist regarding the report presented in Appendix F of the BDAR and the potential for smaller scale bat roosts to be present in the vicinity of the development footprint.
- 13.2 Monitoring of bats take place prior to construction adjacent to geological features with high bat activity at “fly-out” times to determine if further investigation if warranted to identify potential roost sites.

14 Indirect impacts on microbats have not been adequately addressed

Nineteen out of the total twenty-eight species of microbats recorded during the field surveys were recorded by acoustic detectors mounted at approximately 60 meters elevation on met masts, and thus within the expected rotor swept area. Eight of these species are *Biodiversity Conservation Act 2016* (BC Act) and or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed threatened species. While it is acknowledged that there is a general trend for reduced activity levels with increased elevation with ground detectors, the risk assessment for the potential for turbine strike impacts for microbats indicates that the risk to nine species of bat is confirmed to be moderate. Table 57 of the BDAR suggests that the collision risk of two microbat species is “possible”, all others being regarded as “unlikely” or “rare”. Possible is defined as “*repeated loss of individuals*” while unlikely is defined as “*repeated loss of small number*”.

While the Bird and Bat Adaptive Management Plan (BBAMP) has yet to be developed, the impact trigger for a threatened species is generally defined as “*a threatened bird/bat species (or*

recognisable parts thereof) listed under the EPBC Act or BC Act is found dead or injured under or close to a wind turbine during any mortality search or incidentally by wind farm personnel". An unacceptable impact, where population numbers are not known, is generally regarded as "more than three carcasses found of one threatened species over a two-month period".

An impact trigger for non-threatened species is defined as "*any two successive monthly carcass searches, two or more bird or bat carcasses (or parts thereof) of a non-threatened species*", with an unacceptable impact being "*more than four carcasses of one non-threatened species are found during both formal and incidental carcass searches in a two-month period*".

Even where the collision risk is considered "unlikely" there is potential for impact triggers, and unacceptable impacts, to occur. This potential is increased greatly for species where the collision risk is "possible". Nine species are subject to a moderate risk of impact from turbine strike.

BCS notes the diversity and high density of microbat fauna on the development site and has ongoing concerns regarding the ability of the proponent to mitigate blade strike. Twenty-eight turbines have been assessed as representing a moderate risk of impact to threatened species.

BCS notes the proposal to conduct intensive carcass monitoring for the first six months of operation, and for moderate risk turbines increased frequencies of bird and bat monitoring/mortality surveys for at least months 7 to 18 of operation. No indication is provided as to what "*intensive monitoring*" or "*increased frequencies*" entail. BCS recommend monthly carcass searches of turbines for the first five years of operation, ideally with the first two years utilising dogs to provide meaningful data on the impact of blade strike on microbat species.

BCS also strongly recommends that details of trigger points and mitigation measures be addressed and presented prior to a final determination of the project, rather than in a post-consent BBAMP as suggested. This should include but not limited to commitments on the low wind speed operational curtailment strategies, a list of mitigation options that would be applied should certain triggers be realised, and commitments regarding worst-case scenarios of when turbine/s may need to be either temporarily or permanently shut down.

BCS also recommends that should the project be approved, reporting of data from ongoing bird and bat monitoring surveys be provided to DPE as well as made publicly available on the project's website.

Recommendations

- 14.1 Full details of trigger points and mitigation measures be addressed and presented prior to a final determination of the project rather than in a post-consent BBAMP.
- 14.2 Data from ongoing bird and bat monitoring surveys be provided to DPE annually as well as made publicly available on the project's website.

15 Additional assessment of a locally important population of the Greater Glider has been provided

The Greater Glider was identified as one of four species listed as threatened under the 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*".

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

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. The site is also at the western limit of the species range. On this basis, further justification was 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.

Section 8.8.5 of the MNES Significant Impact Assessment and Table 72 of the updated BDAR includes an updated EPBC Act significant impact assessment for Greater Glider and provides evidence this population does not constitute an important population.

Table 72 suggests that Ben Halls Gap National Park is not at the limit of the species range but does not indicate where this limit is. Greater Glider records in Bionet clearly show Ben Halls Gap as the western limit of the contiguous range of the species although there are additional records to the south-west along the spur of the range that takes in Crawny Pass and Walladah National Parks. Two isolated populations occur at Coolah Tops and Mount Kaputar.

BCS is of the view that the local population could be considered an 'important population' given its location and the high densities present.

The EPBC Act significant impact assessment states that *"preclearance assessments would be undertaken and clearing of hollow-bearing trees would be supervised by an ecologist, and any Greater Gliders utilising the habitat being removed from the Development Footprint would be captured and relocated. Due to the large areas of suitable habitat nearby (i.e. within the reserve system), it is likely that displaced individuals would be successfully relocated, assuring that the local population would not decrease in numbers as a result of the proposed works"*. BCS has reservations regarding the potential success of such actions given the habitat is likely already fully occupied. Relocated gliders are likely to vacate the area to return to their former home range, or be attacked by resident gliders and forced out, within the first week.

While the development could be regarded as impacting an important population and will decrease the area of occupancy of this population, the development is unlikely to have a significant impact on the population. The loss of 37.45 hectares of habitat within the development footprint would not significantly reduce the local population size or decrease the viability of the local population due to the extent of adjoining habitat and the high population density.

BCS considers that no further action is required for this issue.

Recommendation

15.1 No significant impact is likely on the local population of Greater Glider. No further action necessary

16 Species polygons for some species credit species are unacceptable

The original assessment for large forest owls was unable to meet the 90% probability requirement outlined in the Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities Working Draft November 2004 to exclude the species presence.

The approach to mapping species credit polygons for large forest owls in the updated BDAR is to assume presence in areas of habitat suitability. The modelling of habitat suitability determined that potential large forest owl breeding habitat was restricted to wetter forested gullies/drainage lines. The lack of sheltered gullies, along with existing disturbances associated with clearing and agricultural land use and highly edge-effected patches of vegetation, rendered much of the site unsuitable for owl breeding.

While the above approach is acceptable for Sooty Owl, the Threatened Biodiversity Profile Data Collection (TBDC) indicates that Powerful, Barking and Masked Owls are all able to breed and forage in very small patches of vegetation. These species are not restricted to sheltered gullies and all suitable habitat, as indicated in the TBDC, should be regarded as potential breeding habitat. As

large forest owls require large hollows in which to breed, BCS suggests that the species polygon for breeding owls should therefore include any suitable habitat containing trees with hollows with an entrance greater than 20cm in diameter. A buffer of 100 m may be applied to individual hollow-bearing trees.

It is noted that the species polygon for Koala, Pygmy Possum, Squirrel Glider has been refined based on parameters not included in the TBDC. Where no habitat constraints are provided in the TBDC the species polygon should include all suitable habitat.

Comment

16.1 The species polygon for Sooty Owls is acceptable.

Recommendations

- 16.2 Species polygons for Powerful, Barking and Masked Owls be reconfigured to include any suitable habitat containing trees with hollows with an entrance greater than 20cm in diameter. A buffer of 100 m may be applied to individual hollow-bearing trees.
- 16.3 The species polygon for Koala, Eastern Pygmy Possum, Squirrel Glider be reconfigured to include all suitable habitat.

17 Stewardship sites should consider proximity to turbine influence

A Biodiversity Offset Strategy has been developed which outlines the three broad options available for securing the offsets required for the project. This includes identifying a number of properties that may be suitable as Biodiversity Stewardship Sites. BCS recommends that any stewardship sites be located sufficiently remote from the influence of the turbines.

BCS supports the establishment of biodiversity stewardship sites where these secure landscape connectivity with existing reserves.

Recommendation

17.1 Stewardship sites be located sufficiently remote from the influence of the turbines.

18 Additional information is required for Matters of National Environmental Significance

The Commonwealth determined the project was a controlled action under section 75 of the EPBC Act and that there was likely to be significant impacts to the five threatened entities. A further eight species were identified as having some potential risk of significant impacts. Further information was requested by the Commonwealth to determine the extent of potential impacts associated with the transport route road upgrades for twenty-four threatened entities.

Section 6.2 of the BDAR states that “*Based on the results of the desktop investigations, field surveys and the likelihood of occurrence assessments (contained in the EPBC assessment prepared by Arup), significant impact assessments were found to be required for the EPBC Act listed species and TECs that are known to occur or have a ‘high’ likelihood of occurrence, as listed below*”. These being:

- White Box-Yellow Box-Black's Red Gum Grassy TEC Woodland and Derived Native Grassland (critically endangered).
- Booroolong Frog *Litoria booroolongensis* (Endangered).
- Large-eared Pied Bat *Chalinolobus dwyeri* (Vulnerable)
- Spotted-tailed Quoll *Dasyurus maculatus* (Endangered).
- Greater Glider *Petauroides volans* (Vulnerable).
- Koala *Phascolarctos cinereus* (Vulnerable).

Section 8.8 of the updated BDAR states “*The following sections describe the significant impact assessment for all MNES species known or considered likely to occur in the development footprint*” and addresses the six entities listed above. The BDAR provides no detail as to why impacts on other entities listed by the Commonwealth were not considered significant. Justification for why species have been ruled out is required.

The residual adverse impact likely to occur for each EPBC Act threatened entity must be identified. Credit requirements have been calculated for those species also listed in the BC Act however no offset requirements have been presented for those species listed only in the EPBC Act. A credit requirement for the Greater Glider should be calculated under advice from the Commonwealth Department of Agriculture, Water and the Environment.

Recommendation

- 18.1 The BDAR should address all Matters of National Environmental Significance with clear justification as to why any species have been ruled out.
- 18.2 A credit requirement for the Greater Glider should be calculated under advice from the Commonwealth Department of Agriculture, Water and the Environment.

Hills of Gold Windfarm proposal
-- NPWS reply to updated BDAR and Bushfire Risk Assessment and proponent's Response to Submissions



1) BDAR & environmental considerations:

Reference ¹	Issue	Source/s	Remaining comments/concerns
NPWS_1 & 9, EES_8 & 9a	Potential for blade-strike impacts on avifauna.	s5.4.2, 7.2, 8.3.1, 8.3.2,	<p>The removal of two turbines adjacent to national park estate is welcomed, but the remaining adjacent turbines remain of concern, given that the Ben Halls Gap Nature Reserve (BHGNR) comprises significant habitat, especially for species reliant on tree hollows and higher quality habitat.</p> <p>Seven of the eight threatened bat species and four bird species (two threatened) are described as likely to suffer moderate impact from the proposal, including at the local population level.</p> <p>28 turbines are described as posing a “Moderate Risk” to local threatened bird and bat species.</p> <p>This needs further mitigation as it is unknown how the proposed adaptive management will mitigate impacts once the turbines are constructed. What options are there for the proposed adaptive management measures once the turbines are in place?</p> <p>A key question is whether a moderate level of risk to threatened species acceptable adjacent to high quality habitat on national park? For these reasons and for potential impacts on NPWS operations, NPWS recommends the removal from the proposal of all turbines adjacent to Ben Halls Gap Nature Reserve.</p>
	temporal extent of impacts	8.3.1, 8.3.2	BDAR Tables 56 & 59 regarding potential impacts of blade-strike on local populations of several species, lists the risk as moderate but describes impacts as short term. Given that the potential risks of collision will exist for the duration of the project's operation, the impacts are likely to be ongoing and hardly short term.
as above	Adaptive management proposed	as above	Proposed ongoing monitoring of impacts and adaptive management is commended. However it's difficult to understand how adaptive management can be implemented once the turbines are constructed -- there is little indication of what this might comprise “after the event” and after its impact.

¹ From NPWS & BCD Submission Responses

Reference ¹	Issue	Source/s	Remaining comments/concerns
as above	Appropriate setbacks from NP boundaries	s8.9	BDAR's mitigation measures include "appropriate setbacks" required from NP estate " <i>where practical</i> ", which have not been clearly identified and do not appear to be in place for the turbines immediately adjacent to BHGMR. Also the 30m "minimum safe distance" from nearest vegetation canopy to mitigate blade-strike risks to protected fauna appears inadequate, and inconsistent with the above and other considerations including precedents set for other other windfarms which involved more extensive set-backs.
NPWS_2	Impacts on NPWS aerial operations	Aviation Impact Assessment, 3.7	<p>Impacts on fire management operations are outlined below.</p> <p>As discussed with the proponent, NPWS also uses both fixed wing and helicopter operations for aerial baiting of wild dogs and foxes. These operations provide significant benefits to a range of fauna species due to release from predation pressures. Wild dog predation on nearby livestock is also a serious concern of local landholders.</p> <p>Unlike potential impacts on fire operations, impacts on helicopter based baiting programs are not likely to be significant, and are able to be modified. However fixed wing aircraft are increasingly being used due to lower cost and efficiency of delivery. Our baiting transects may require modification or reduction due to the presence of turbines. It was discussed during meetings that the proponent would be willing to consider a contribution to wild dog/fox baiting programs if required, and this is both welcomed and recommended.</p>
Other	Ben Halls Gap Sphagnum Moss Cool Temperate Rainforest TEC – new info.	s4.3.3, s6	<p>Commonwealth now considering listing this TEC under EPBC Act.</p> <p>Inappropriate fire regimes are regarded as a key threatening process, which has implications for turbines' potential to impact NPWS and other aerial fire management operations.</p> <p>NPWS previous concerns focussed on sediment and erosion control risks to this TEC; latest considerations now include fire management due to Commonwealth assessment now in progress.</p> <p>See further info below.</p>
other	Reduction in turbine numbers	7.1	Reduction in turbine numbers generally is welcomed. However only one has been removed from adjacent to the BHGMR. Further reduction along this boundary recommended as above.

2) Bushfire Risk Assessment (BRA) & Aviation Impact Assessment:

Reference	Issue	Source/s	Remaining comments/concerns
General	BRA Key Responses/Actions		<p>BRA and recommended actions are generally welcomed by NPWS. Cooperative bushfire risk management with national park neighbours and RFS is encouraged and will continue.</p> <p>However, the issues below remain unresolved.</p>
NPWS_2	Impacts on NPWS aerial operations	BRA Table 2.2, Aviation Impact Assessment, 3.7	<p>As previously advised, NPWS uses aircraft to support hazard reduction burning, firefighting and for aerial baiting of feral predators. The western boundary of the BHGMR, and access/fire trails immediately adjoining this boundary – the access trail between WP37 to WP46, and in fact continuing north – comprise a strategically and tactically important north-south fire control line. During fire operations, support of ground crews by water bombing aircraft, particularly rounding up any spot-over fires along the control line, is often critical to fire operations. This can make the difference between controlling a fire or losing control of it.</p> <p>Section 5.1 of the BRA acknowledges the strategic value of fire control lines on the ridgelines here. Turbines WP40 - 43 are of particular concern, being immediately on potential control lines adjacent to the park. While turbines will not directly impinge on BHGMR airspace:</p> <ul style="list-style-type: none"> a) it is the airspace along the ridgetop and trails/fire control lines immediately adjacent to the park which is of strategic value and which will be impacted to a certain degree. b) BHGMR airspace will be indirectly affected by the suggested safe buffer space between aircraft and turbines, as per below. <p>The removal of WP1 is welcomed for both avifauna and aerial operations impact. Agreed that fire operations for Crawney Pass NR are unlikely to be affected, however impacts to operations adjacent to BHGMR remain our key concern.</p> <p>The quoted aviation buffers from turbines of 600 m for fixed wing, and 300 m for helicopters have significant potential to impact the range of NPWS aerial operations, and particularly on the needs outlined above.</p> <p>Until impacts on aerial operations are clear and fully mitigated, as above NPWS recommends the removal from the proposal of all turbines adjacent to Ben Halls Gap Nature Reserve.</p>
		Response to Submissions	<p>The Response to Submissions quotes RFS as having no comment on the development in the AIA and suggesting that “<i>windfarms will be treated as any other potential hazard to aircraft operations</i>”. We can only assume that this view is one based on a landscape-wide general</p>

Reference	Issue	Source/s	Remaining comments/concerns
			perspective. It both contrasts with other RFS input and information in the BRA, and neglects the strategic role these ridgeline trails have and site-specific potential impacts.
	Site Access	BRA 3.1, 5.1	Constructing and maintaining access roads to RFS fire trail standards is welcomed. Reference also made to installing RFS-standard fire trail signs to assist emergency services (including NPWS) navigation on-site, as per BRA Appendix B.
		6.4	Note that NPWS is a fire authority under the Rural Fires Act and alongside RFS may be actively involved in assisting firefighting in the area, not necessarily limited to the national park estate. While acting as incident (fire) controller, NPWS should be also included in the proposed protocols identifying authorities that have the right to request turbine shut down during aerial bushfire operations. Ongoing access and site familiarisation/induction for emergency services including NPWS (BRA 5.1) is welcomed.
	Ignition sources	5.2 6.7	The recognition of plant and equipment as ignition risks is welcomed. Proponent should adopt protocols to curtail various operations (especially grinding, welding, slashing) at appropriate bushfire danger rating thresholds and not just on TOBAN days.
	Potential EMR impacts on existing agency operational radio communications	5.4	The potential for EMR impacts on NPWS and other VHF radio communications in this remote area remains unknown. This is important since there are no other effective operational communications available for emergency services and NPWS WHS considerations in this landscape. It's not yet understood how any interference to VHF radio comm's that might eventuate would be "considered in the planning stages" and "manageable". If EMR interference from the turbines becomes an issue, it may be difficult to fix in retrospect. Creating ineffective radio comm's in this area is not an option if we are to ensure public, environmental and staff safety.
	Fire regimes as a threat to TEC.		As above, fire management has recently been identified as increasingly important to the BHG Sphagnum Moss Cool Temperate Rainforest TEC. See BDAR response above and the info below for context.
	Windfarm's full time personnel	6.	The proponent should be encouraged to have staff trained in basic firefighting (e.g. as RFS volunteers) if possible and provide onsite resources to help with bushfire management as well as structural fires. This would be of benefit to the development, environment and neighbours.

3) Ben Halls Gap Sphagnum Moss Cool Temperate Rainforest TEC – latest updates:

Previous concerns raised in relation to this TEC focussed on the importance of sedimentation and erosion control. However recent assessments by Australian Government agencies are considering listing this community also at a Commonwealth level, with inappropriate fire regimes now also seen as a key threat.

Hence, any development activity that restricts the ability for NPWS, or others, to respond quickly and effectively to wildfires within Ben Halls Gap Nature Reserve and surrounds, should be avoided to reduce the threat to the Ben Halls Gap Threatened Ecological Community. Any restrictions on our ability to suppress wildfires via the use of aircraft, either via helicopters or fixed wing aircraft should be very carefully considered in the Hills of Gold Wind Farm proposal.

The protection of the Ben Halls Gap Nature Reserve Sphagnum Moss Cool Temperate Rainforest from any fire is critical, as impacts from inappropriate fire regimes including fire frequency, intensity, seasonality, and scale is listed as a key threat to the community (see [here](#)). Approximately 50% of the ecological community was burnt in December 2019 – January 2020 with the remainder of the extent likely to have been affected (e.g., through increased sedimentation and solar radiation) by burning of adjacent and nearby vegetation communities in the Ben Halls Gap area.

The 2019/20 bushfires had catastrophic impacts on Australia’s wildlife and ecological communities. Many ecological communities which were not listed as threatened prior to the bushfires may now be eligible for inclusion on the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) list of threatened ecological communities.

In response to this, the Australian Government Minister for the Environment included several fire-affected ecological communities on the Finalised Priority Assessment List, including the Ben Halls Gap Sphagnum Moss Cool Temperate Rainforest. The Commonwealth Threatened Species Scientific Committee is undertaking assessments of these nominated ecological communities to determine their eligibility for listing and preparing Conservation Advice for each ecological community. They are due to provide their recommendations on the first seven of these to the Minister by 30 April 2022 (see [here](#)).

The Draft (Commonwealth) Conservation [Advice](#), lists Inappropriate fire regimes (including fires which cause decline in biota) as an ongoing, extreme threat to the whole extent of the rainforest community at Ben Halls Gap.