

Tatsiana Bandaruk
Senior Environmental Assessment Officer,
4 Parramatta Square,
Sydney, NSW, 2150,
01 June 2020

Our ref:DOC20/401187

Your ref: SSD6686

Dear Ms Bandaruk,

Subject: Rye Park Windfarm Modification – SSD 6693

We refer to the request for advice on the Rye Park Windfarm Modification Report which the Biodiversity Conservation Division (BCD) received through the Major Projects portal on 5 May 2020. We have provided comments on both the Biodiversity assessment report and the Aboriginal cultural heritage assessment. Please refer to our detail comments in the attachments.

Aboriginal cultural heritage

Consultation with the Aboriginal community had not been completed for the Aboriginal Cultural Heritage Assessment at the time of submission. Consultation is a key component of the Aboriginal cultural heritage assessment and should be finalised prior to approval. We note that some areas of the proposed modification remain unsurveyed and test excavations are needed to identify constraints and help inform the proposed footprint design. Detailed comments are outlined in **Attachment 1**.

Review of the BDAR

BCD's overall impression is that it is a scientifically robust assessment. We have highlighted several specific features of the BDAR which have been particularly well addressed in the modification. We have outlined **nine key concerns**. We have raised questions and suggested methods to address those concerns in **Attachment 2**, which relate to the following –

- BAM plot location and the number of rapid survey points
- Species polygons for Golden Sun Moth (GSM) and other species credit species
- Avoidance of Squirrel Glider Habitat
- Partial direct impacts calculation for the transmission line.
- Calculation in the Biodiversity Assessment Method Calculator (BAMC)
- Serious and Irreversible Impact Assessment (SAII)
- Prescribed impacts from turbine strikes and removal of non-native vegetation supporting GSM
- Provide further information on the Large Bentwing-Bat survey
- Commit to a rigorous monitoring protocol and clear and species-specific mitigation measures for each of the species identified to be at higher risk of turbine strike.
- Undertake a prescribed impacts assessment for the removal of non-native vegetation supporting Golden Sun Moth in accordance with Section 9.2.1.4 of the BAM.
- Provide more detail about mitigation in accordance with Section 9.3.1.2 of the BAM



BCD suggests scheduling a teleconference to clarify some of our questions raised in Attachment 2. We would also be interested in undertaking a site visit to inspect some of Umwelt's BAM plots, vegetation mapping and habitat mapping.

Yours sincerely,

Michael Saxon
Director
South East, Biodiversity Conservation Division

Enclosure: Attachment 1 Aboriginal Heritage Issues. Attachment 2 Detailed review of the BDAR. Attachment 3 Plot distributions table

Attachment 1 – BCD comments on Aboriginal Cultural Heritage Assessment for Rye Park Wind Farm Modification Application (April 2020)

We have reviewed the Aboriginal Cultural Heritage Assessment (ACHA) for the modification application and provide the following comments:

Aboriginal consultation

We note the ACHA is marked draft and consultation with the Aboriginal community had not been completed at the time of submission. The results of Aboriginal consultation need to be considered with any comments and necessary revisions incorporated.

Test excavations

The ACHA states that a number of the proposed internal access tracks have been moved from the higher crests to the lower lying valleys to reduce the amount of vegetation clearing required and for greater ease of construction. This has essentially pushed the development into the areas previously assessed to contain higher densities of artefacts and higher archaeological sensitivity. As a result, additional Aboriginal sites and areas of potential archaeological deposit (PAD) have now been recorded and will be impacted by the project. Given the time since the surveys were undertaken - testing excavations could have been undertaken during this time to identify constraints and help inform the proposed footprint design. As the test excavations are to occur post approval, we recommend that the proponent clarify what commitment there is for development activities to be redesigned if significant objects and values are located during testing investigations. The ACHA itself identifies that the value of the PADs may change depending on the results of the subsurface archaeological testing.

Additional survey required

Some areas of the proposed modification remain unsurveyed. Figure 5-1 in the ACHA identifies one section where access was unavailable at the time of the survey for the proposed modification. While the management measure for this section is to undertake additional survey prior to construction, we recommend a commitment also be given for redesign if the results of the survey locate significant objects and values. We note the ACHA states that twenty-five sections of the surrounding roadways and transport routes were also not surveyed because they were considered highly disturbed. The ACHA should describe how the category of 'highly disturbed' was measured and whether there was any ground truthing to support the description. As every survey unit has not been described individually or adequately mapped within the ACHA, it is difficult to assess and consider the effective survey coverage undertaken to date.

Management measures for Aboriginal cultural heritage

The management measures outlined for those Aboriginal sites to be impacted include avoidance, test excavations and salvage actions. We recommend a commitment be given for redesign of the project footprint if the results of additional survey and test excavations locate significant objects and values.

We note there is an updated recommendation for under-boring the site SU17/L1 to a depth of below 1m. Previously this site was to be avoided under the project approval. Further justification regarding how under-boring of this site to a depth of below 1m will avoid impacts, without any prior test excavations to determine the site depth, is required.

We recommend that all Aboriginal sites to be avoided by the development should be included within the Aboriginal Heritage Items table and maps to ensure they are protected from development construction and ongoing operational activities.

Attachment 2- Review of the BDAR.

BCD commends the applicant for several aspects of their Biodiversity Development Assessment Report which have been completed to a particularly high standard. These include -

- The large amount of flora and fauna survey undertaken at the appropriate times
- The quantitative analysis undertaken on plot data to determine PCT allocation
- The rigorous analysis of plot data against the benchmarks for Endangered Ecological Communities.
- The method for drawing species polygons for:
 - Superb Parrot
 - Striped Legless Lizard
 - Southern Myotis
 - Squirrel Glider
- Targeting the additional impacts to areas of non-native vegetation
- The effort made to avoid and reduce impacts by avoiding high value ecological entities such as -
 - Endangered Ecological Communities,
 - Superb Parrot habitat and Hollow bearing trees.
 - Striped Legless Lizard
- The clear presentation of data for inclusion the Operational Bird and Bat Risk Assessment

However there are nine key matters that need to be addressed before the BDAR can be considered complete. These are discussed below.

BAM plot location

The BDAR states in Section 2.2.2 on page 79 that –

‘Every attempt was made to complete the BAM plots within the Indicative Development Footprints in the first instance and Development Corridor in the second. However, in some circumstances, BAM plots are situated outside of the Indicative Development Footprints, either in the Development Corridor or wider area (refer to Figure 2.1). This occurred where avoidance and minimisation measures have been employed’.

While we commend the Applicant for avoidance of ecological impacts, proximal placement of plots to the development footprint is fundamental in ensuring that the credit obligation arising out of direct disturbance is accurately calculated, as stated in the BAM Stage 2 Operational Manual –

‘It is important the assessor ensures that the location of their VI survey plots in the vegetation zone are representative of the condition state of the vegetation.’

Generally, the closer the plot is to the disturbance footprint, the more representative the results will be of the ecological values being disturbed within the development footprint.

BCD undertook analysis of the BAM plot placement in relation to the disturbance footprint (summarised in Table 1) and found that 65% of plots are situated outside of the disturbance footprint. While many of these plots are only marginally outside of the development footprint (i.e. <

20m), there are a considerable proportion which are >100 m distance. The mean distance from the footprint is 301 m. Unless site visits demonstrate considerable homogeneity, BCD is of the view that this is too far from the development footprint to be representative of the impacted land.

Attachment 3, Table 1 shows the number of plots in and out of the disturbance footprint for each zone and the mean and median distance from the footprint where they are situated outside it. Only two of the vegetation zones (including non-native vegetation as a zone) are compliant with Table 4 in Section 5.3.4.8 of the BAM. It is a requirement of the BAM that plots are placed within the development footprint, pursuant to section 5.2.1.7 which states –

‘The assessor must undertake a plot-based vegetation survey of the subject land’.

‘Subject land’ is defined in the BAM as –

‘land to which the BAM is applied in Stage 1 to assess the biodiversity values of the land. It includes land that may be a development site, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement.’

Furthermore, plots are required to be in zones (Section 5.3.4.2 of the BAM), and ‘vegetation zones’ are defined in as –

*‘an area of native vegetation on the **subject land** that have the same PCT and has a similar broad condition state.’* (Section 5.3.2 of the BAM, author’s emphasis added)

We are particularly concerned about Vegetation Zones 3 and 4 which comprise State and Federal EECs. Both zones have a low proportion of plots within the development footprint and many of those plots are a considerable distance from the development footprint.

However, the work undertaken by the Applicant on plots outside the development footprint is nonetheless valuable and to a high standard and the assessor has advised BCD that the vegetation condition in the area is fairly consistent it. BCD therefore recommends at a minimum additional BAM plots be undertaken within the development footprint for the higher value communities including Vegetation Zones 3, 4 and 5, such that they meet the requirements of Table 4 in the BAM. All other non-complying vegetation zones should be subject to increased rapid vegetation survey to ensure that PCT boundaries are accurate.

Species polygons for Golden Sun Moth (GSM) and other species credit species

GSM appears to have been detected at every location where GSM survey was undertaken (based on analysis of the shapefiles ‘Golden Sun Moth Transect Meanders’ and ‘4107 SpeciesCreditSpeciesRecords MGA55’). We note that many of the survey locations were a considerable distance from the disturbance footprint as they ran east-west (as opposed to north-south along the development corridor).

We are unable to find reference to where the 200 m radius method was previously recommended by NGH and endorsed by BCD (formerly Office of Environment and Heritage). On the contrary, Appendix C of NGH’s Rye Park Windfarm Biodiversity Assessment from January 2014 states -

‘as the species was detected on site in variable quality habitat, it is likely it could occur elsewhere not assessed during the November 2013 survey. Therefore, as a precautionary measure, the habitat in which the species was located, and all contiguous habitat of similar structure and condition has been delineated as potential habitat. This includes box gum woodland, derived native grassland and native pasture habitats across the project area’

Therefore, it appears as though the previous assessment used the entirety of derived native grassland (DNG) and Box Gum Woodland to delineate the boundary of suitable GSM habitat.

Furthermore, BCD's GSM expert, Rod Pietsch, disagrees with the method of circumscribing the species polygon with a 200 m radius based on his knowledge of the species behaviour. Given (a) the species' ability to disperse further than 200 m by wind, and (b) the tight association between GSM and DNG, demonstrated clearly by the Umwelt's survey data, it is BCD's view that the polygon boundaries for this species should adhere to areas of DNG within the development footprint. We believe that this approach is justified because:

- a. GSM are SAI
- b. There are several areas of non-native vegetation which may be suitable GSM habitat but cannot generate a credit because of a low VI score, these areas should be addressed as a prescribed impact and the equations in the BAM used to calculate the offset.

There are substantial areas of DNG which were not surveyed. How much of Vegetation Zone 3 was subject to GSM survey either by NGH or Umwelt needs to be clarified.

BCD also notes that the Applicant has included 'A radius of 15 kilometres west of Binalong and eastwards to the subregion's eastern-most boundary; and in a radius of 15 kilometres from Tumut as a habitat constraint. This habitat constraint for GSM is not listed in the Threatened Biodiversity Data Collection (TBDC) so it should not be used to limit survey.

With regard to other species; an explanation is required as to why Little Eagle credits have not been calculated given that:

- a. Two individuals were detected, within and near the development footprint. Little Eagle is considered a high risk species and there are multiple records of Little eagles being hit by turbines.
- b. The only habitat listed in the TBDC 'Nest trees - live (occasionally dead) large old trees within vegetation this habitat exists onsite.'

Appendix B states in relation to Little Eagle the –

'Bird utilisation and raptor vantage surveys involved a visual assessment of the species and habit (e.g. feeding, perching, flying) of all observed bird species from a high vantage point in the landscape.'

The BDAR needs to include information on what, if any, areas within the development footprint were subject to targeted survey for stick nest sites.

Similarly, Table 3.1 of Appendix E in the updated Operational Bird and Bat Impact Assessment, detected White-throated Needletail in the Project Area which is a species credit species. However, this detection did not generate a species credit obligation. Either the obligation needs to be included in the BDAR or an explanation given.

Finally, we note that while Crimson Spider Orchid was not detected, there were only two surveys (September 2017 and 2019) which occurred within the required timeframe indicated by the TBDC. Previous surveys undertaken by NGH were outside the narrow flowering window for this species., Unfortunately, both September surveys were during drought conditions when flowering events for this species were down state-wide. Additional targeted survey for Crimson Spider Orchid should occur in the coming flowering season to inform the Applicant's species credit obligation.

Impacts on Squirrel Glider Habitat

The modified project results in an 'additional' impact to 106.19 ha of direct impacts to Squirrel Glider habitat, generating 3,436 species credits. BCD acknowledges that this increased impact has resulted from a differential in survey effort/quality between consulting firms rather than from design modification. BCD commends the Applicant for their detection of the species and their broad classification of Squirrel Glider habitat in generating the species polygons.

BCD encourages micro-siting turbines out of remnant vegetation. Where avoidance is not possible, mitigation measures in accordance with section 8.1.2.1 should be undertaken. This would include installing connectivity structures/ rehabilitation to connect areas of vegetation/ fence areas.

Partial direct impacts calculation for the transmission line

The 40 m clearing width for the 132-kV transmission line and the 20 m clearing width for the 33 kV would apply to all vegetation that currently is more than 4 m high or has the potential to grow more than 4 m (Section 5.1.1.2 on page 256). While some proportion of the biodiversity would remain (such as ground and shrub species), BCD is of the opinion that its ecological function would be dramatically reduced because of the removal of hollows, coarse woody debris, litter and the predictable loss of native groundcover associated with the ongoing indirect impacts to easements from weed infestation.

BCD's view is that the credit obligation should be re-calculated such that the future scores for structure and function are reduced to zero. This would reflect a near complete loss of ecological function from the direct and indirect impacts of the transmission line.

Biodiversity Assessment Method Calculator (BAMC)

The plot data for non-native vegetation needs to be entered into the BAMC to allow confirmation that their VI score is below the offsetting threshold.

The number of Hollow Bearing Trees (HBTs) entered into the BAM-C for Zone 3 was based on the number observed during the BAM plot surveys. However, the targeted HBT survey in Zone 3 revealed a much higher number of HBTs in this zone – an estimated 893 in total and an average of 15.7 per hectare across 17 assessment sites. It is best practice to use the data from the most accurate and reliable method. In this instance, the results from the targeted HBT survey in Vegetation Zone 3 are the more representative of the actual number of HBTs to be removed. BCD therefore recommends updating the functional scores for HBTs in the BAM-C to reflect this. BCD is willing to engage with the Applicant about the most appropriate method – either using the mean or the actual number from proximal sites.

BCD notes that predicted threatened species (ecosystem credits) have been deselected in the habitat suitability tab of the credit calculator. It is permissible to remove species from the list of predicted threatened species, however deselection normally requires –

- targeted survey,
- an assessment of any habitat constraints (if habitat constraints are listed in the TBDC), and,
- documented justification for their removal

otherwise presence must be assumed. Adequate justification is important because removal of species has the potential to influence credit obligations, particularly those with a high-risk weighting.

Therefore, the Applicant needs to provide adequate justification for the deselection of the following species (or alternatively reselect them in the calculator) -

- Regent Honeyeater (foraging) in 350_DNG
- Gang Gang Cockatoo (foraging) in 350_DNG and 351_DNG
- Speckled warbler in 350_DNG and 351_DNG
- Brown Treecreeper in 350_DNG and 351_DNG
- Varied Sittella in 350_DNG and 351_DNG
- Little Lorikeet in 350_DNG
- Swift parrot (foraging) in 350_DNG
- Hooded Robin in 350_DNG
- Black-chinned honeyeater in 350_DNG
- Scarlet Robin in 350_DNG and 351_DNG
- Flame Robin in 350_DNG and 351_DNG
- Koala in 350_DNG, 351_DNG, 351_ModerateGood_Acacia and 351_Sifton
- Grey-crowned Babbler in 350_DNG
- Grey-headed Flying Fox in 351_DNG, 351_ModerateGood_Acacia and 351_Sifton

Serious and Irreversible Impact Assessment (SAIL)

Section 5.4 on page 269 of the BDAR states –

‘As the Project has been deemed a State Significant Development, assessments against these nominated SAILs are not required and therefore have not been prepared.’

This is an incorrect interpretation of section 10.2 of the BAM, which must be interpreted with reference to the guidance document *Guidance to assist a decision-maker to determine a serious and irreversible impact*, pursuant to Section 10.2.1.2 of the BAM.

Section 3.3.5 on page 7 of the guidance material states:

‘For proposals that are state significant development/state significant infrastructure, Part 5 activities or biodiversity certification applications that are approved and considered likely to result in a serious and irreversible impact, the consent authority can include conditions in the approval that further minimise the impact. The consent authority should use information in the BAR that addresses section 10.2 or section 10.3 of the BAM to identify additional measures that will minimise impacts.’

As detailed in Table 1 of the guidance material, SAIL must be taken into consideration by the decision maker so that they can determine if there are any additional and appropriate measures that will minimise the impact if consent or approval is granted.

BCD recommends undertaking an SAIL assessment for all potential SAIL entities that were detected during the survey period (Section 10.2.1.3 of the BAM). This SAIL assessment should consider prescribed impacts from turbine strikes where applicable (Section 10.2.3 of the BAM).

Prescribed impacts from turbine strikes - birds and bats

For both birds and bats, the revised BDAR must include the following assessment of the impacts of wind turbine strikes on threatened species (Section 9.2.1.8 of the BAM):

- (a) predict the likelihood of impact on aerial species resident in, or likely to fly over, the project area including but not limited to bat/bird strike and barotrauma
- (b) predict the rate of impact per turbine per year for species likely to be affected
- (c) justify predictions of likelihood of impact and rates of impact, with reference to relevant literature and other published sources of information
- (d) predict the consequences of impacts for the persistence of bioregional populations, with reference to relevant literature and other published sources of information
- (e) predict the cumulative impacts of the project together with existing wind farms on aerial species mortality and provide justification for these predictions
- (f) predict and map the likely zone of disturbance around wind turbines for aerial species resident in, or likely to fly over, the project area, with reference to relevant literature and other published sources of information
- (g) map significant landscape and habitat features within the zone of disturbance for species likely to be affected, including but not limited to hollow bearing trees and important habitat for migratory species
- (h) predict the likelihood and describe the nature of indirect impacts on aerial species resident in, or likely to fly over, the project area including but not limited to barriers to migratory pathways and breeding, feeding and resting resources
- (i) for migratory species, predict the impact of avoidance behaviour relative to migration distances and the availability of suitable habitat for breeding, feeding and resting over the migration route, with reference to relevant literature and other sources of published information
- (j) justify predictions of likelihood and nature of impact, with reference to relevant literature and other published sources of information
- (k) predict the cumulative impacts of the project together with existing wind farms with respect to movement patterns and use of adjacent habitat and provide justification for these predictions.

The mitigation measures for prescribed impacts should be in line with Sections 2.6 and 2.7 of the BAM Stage 2 Operational Manual. If mitigation measures or adaptive management are not applicable, the Applicant should offset for prescribed impacts in accordance with Section 2.5.4 BAM Stage 2 Operational Manual.

The Operational Bird and Bat Assessment presents the results of a robust pre-construction survey effort in a very clear and logical format. However, we disagree with several of the conclusions:

BCD is of the opinion that the increased impacts resulting from large increases in total Rotor Sweep Area (RSA) are not necessarily compensated for by the reduction in turbines. For example, BCD disagrees with the conclusion that the difference in risk to Scarlet Robin, Flame Robin, Painted Honeyeater and Varied Sittella will be negligible due to the reduced number of turbines. This conclusion would be more accurate if Scarlet Robin, Flame Robin, Painted Honeyeater and Varied Sittella were only recorded from the turbines removed. We also seek clarification regarding

the distance between the maximum canopy height and minimum rotor sweep height at all turbines which are to be located within intact woody native vegetation as this is relevant to the impact on the woodland bird species.

BCD are particularly concerned about the impact of the modifications on the threatened taxa shown to fly within RSA such as White-throated Needletail, White-fronted chat, Superb Parrot, Dusky Wood swallow and raptors such as Black Falcon, Little Eagle, and the non-threatened Wedge-tailed Eagle. We agree with the conclusion that there will be an increased risk of blade strike to these species. However, we disagree with the Test of Significance in Table 3.6 which states that the proposed modification is unlikely to increase the level of risk, as many of the conclusions are assumed and it is not clear what evidence the Applicant relied upon to draw the conclusions.

Due to the clear increase in the risk of turbine strike to several threatened bird species, the Applicant should commit to a very rigorous monitoring and mitigation protocol containing species-specific mitigation measures for each of the species identified to be at higher risk of turbine strike. These mitigation measures for prescribed impacts should be in line with Sections 2.6 and 2.7 of the BAM Stage 2 Operational Manual. If mitigation measures or adaptive management are not applicable, the Applicant should offset for prescribed impacts in accordance with Section 2.5.4 BAM Stage 2 Operational Manual.

Prescribed impacts from turbine strikes - microbats

BCD commends the Applicant for the large number of sites surveyed both at ground level and elevation for microbats. However, there are a large number of 'possible' Large Bent-winged Bat calls in shown in Tables 4.3 and 4.4, relative to the number of 'definite' and 'probable' calls. This is a trigger for further and more detailed investigation. It is recommended that the following information is provided:

- Description on the method used to classify calls into 'definite' 'probably' and 'possible' categories.
- Information on the temporal distribution of the possible calls in terms of mean number of calls per hour and per day including whether there any noticeable spikes in activity or were these calls a consistent 'background' noise.
- Information on whether there a similar level of uncertainty about the number of calls detected for Eastern False Pipistrelle, Yellow-bellied Sheath-tail bat and Southern Myotis.

It is recommended that further data is collected for the Large-Bentwing Bat migration in Spring 2020 and Autumn 2021, the survey period was too short. BCD recommends liaising with Dr Doug Mills about survey timing.

BCD does not agree with the conclusion from the data presented that -

'the difference in the level or risk of blade strike to Large Bent-winged Bat under the existing design versus the proposed modification is uncertain.'

This is based on an artificial partitioning of bat activity into vertical space. According to EES's microbat expert, Dr Doug Mills, there is no reliable evidence that bats partition in vertical space above and below rotor sweep height. For instance, the lower detection rate observed at the 45 m AGL instruments may just be a function of a smaller detection radius at elevation due to higher windspeeds – i.e. a false negative result. Defining risk in such narrow terms without correcting for

differences in detectability among instruments risks understating it. For instance, it may not be clear how frequently Large Bent-winged Bats fly within RSA, however it is certain that they do, and therefore increasing the total RSA by almost 50% certainly elevates the risk of turbine strike to this species as well to Yellow-bellied Sheath-tail bat.

The survey data demonstrates, at the very least, that the risk of turbine strike is elevated for Large Bent-wing Bat and Yellow-bellied Sheath-tail Bat. We disagree with the Test of Significance in Table 4.5 which states that the proposed modification is unlikely to increase the level of risk. Many of the conclusions are assumed and it is not clear what evidence the Applicant relied upon to arrive at the conclusions.

Due to the clear elevation of risk to threatened microbats from turbine strikes, the Applicant should commit to a very rigorous monitoring and mitigation protocol containing species-specific mitigation measures for each of the species identified to be at higher risk of turbine strike. These mitigation measures for prescribed impacts should be in line with Sections 2.6 and 2.7 of the BAM Stage 2 Operational Manual. If mitigation measures or adaptive management are not applicable, the Applicant should offset for prescribed impacts in accordance with Section 2.5.4 BAM Stage 2 Operational Manual.

BCD would like to engage early with the Applicant about what this monitoring protocol would entail. Furthermore, as detailed in our comments above on SAI, an SAI assessment is required for Large Bent-winged Bat.

This information can also be used to inform the bird and Bat adaptive management plan

Prescribed impacts from removal of non-native vegetation supporting GSM

Section 9.2.1.4 of the BAM requires that non-native vegetation supporting threatened species - such as GSM - must undergo an assessment of prescribed impacts which -

- (a) identifies the areas of non-native vegetation which forms habitat for the species
- (b) describes the nature, extent and duration of short and long-term impacts
- (c) describes, with reference to relevant literature and other reliable published sources of information, the importance within the bioregion of the habitat to these species,
- (d) predicts the consequences of the impacts for the local and bioregional persistence of the threatened species and communities likely to use these areas as habitat, with reference to relevant literature and other published sources of information.

The BDAR needs to be updated in accordance with Section 9.2.1.4 of the BAM to include a prescribed impacts assessment for the removal of non-native vegetation which might support GSM. The mitigation measures for prescribed impacts should be in line with Sections 2.6 and 2.7 of the BAM Stage 2 Operational Manual. If mitigation measures or adaptive management are not applicable, the Applicant should offset for prescribed impacts in accordance with Section 2.5.4 BAM Stage 2 Operational Manual.

Mitigation and minimisation measures

Section 9.3.1.1 of the BAM mandates that –

‘The proponent must identify measures to mitigate or manage impacts in accordance with the guidelines for mitigating and managing impacts on biodiversity values at Subsection 9.3.2 and Subsection 9.3.3.’

The BDAR states in Section 4.3 on page 244 that mitigation measures will be described in detail in the Biodiversity Management Plan and Bird and Bat Adaptive Management Plan. However, the Section 9.3.1.2 of the BAM requires more detail at the BDAR stage by documenting –

- a. the proposed techniques, timing, frequency and responsibility for implementing each measure
- b. identify measures which have a risk of failure
- c. evaluate the risk and consequence of any residual impacts likely to remain after mitigation measures are applied
- d. document any adaptive management strategy proposed

The Biodiversity Management Plan (BMP) requires clear commitments to species specific mitigation measures, for instance by mitigating the disruption to connections between suitable habitat for foraging, installing predator-proof fencing around remnant Squirrel Glider habitat and implementing an integrated feral animal monitoring and control program targeting cats and foxes. BCD is willing to provide input into the BMP.

Attachment 3, Table 1 – BCD plot analysis. Cells highlighted bright yellow indicate Vegetation Zones with insufficient plots according to a strict reading of Table 4 in Section 5.3.4.8 of the BAM.

| Umwelt plot data | | | | BCD analysis of plot data | | | | | | | | |
|-------------------|-----------------|------|-----------|---------------------------------|-----------------------------|------|------------------|----------------|----------|---------------|-------------------|---------------------|
| PCT | Condition class | Zone | Plot Name | In/out of development footprint | Distance from footprint (m) | Area | Plots undertaken | Plots required | Plots in | Percentage in | Mean distance out | Median Distance out |
| Vegetation Zone 1 | | | | | | | | | | | | |
| 289 | ModerateGood | VZ1 | 4107Jan03 | in | | 1.1 | 1 | 1 | 1 | 100% | | |
| Vegetation Zone 2 | | | | | | | | | | | | |
| 335 | ModerateGood | VZ2 | 33 | out | 223 | 9.2 | 3 | 2 | 1 | 33% | 113 | 113 |
| 335 | ModerateGood | VZ2 | 35 | in | | | | | | | | |
| 335 | ModerateGood | VZ2 | 4107Feb02 | out | 2* | | | | | | | |
| Vegetation Zone 4 | | | | | | | | | | | | |
| 350 | DNG | VZ4 | 11 | in | | 19.7 | 5 | 3 | 2 | 40% | 475 | 513 |
| 350 | DNG | VZ4 | 32 | out | 911 | | | | | | | |
| 350 | DNG | VZ4 | 4107Feb03 | in | | | | | | | | |
| 350 | DNG | VZ4 | 4107Jan02 | out | 0.3 | | | | | | | |
| 350 | DNG | VZ4 | DMRP3 | out | 513 | | | | | | | |
| Vegetation Zone 3 | | | | | | | | | | | | |
| 350 | Moderate | VZ3 | 1 | in | | 19.4 | 7 | 3 | 1 | 14% | 212 | 92 |
| 350 | Moderate | VZ3 | 15 | out | 650 | | | | | | | |
| 350 | Moderate | VZ3 | 31 | out | 7 | | | | | | | |
| 350 | Moderate | VZ3 | 43 | out | 164 | | | | | | | |
| 350 | Moderate | VZ3 | 6 | out | 19 | | | | | | | |
| 350 | Moderate | VZ3 | DMRP1 | out | 17 | | | | | | | |
| 350 | Moderate | VZ3 | P03 | out | 413 | | | | | | | |
| Vegetation Zone 9 | | | | | | | | | | | | |
| 351 | Argyle | VZ9 | 4107Jan01 | out | 696 | 0.6 | 2 | 1 | 0 | 0% | 361 | 361 |
| 351 | Argyle | VZ9 | 9 | out | 26 | | | | | | | |

| PCT | Condition class | Zone | Plot Name | In/out of development footprint | Distance from footprint (m) | Area | Plots undertaken | Plots required | Plots in | Percentage in | Mean distance out | Median Distance out |
|-------------------|-----------------|------------|-----------|---------------------------------|-----------------------------|-------|------------------|----------------|----------|---------------|-------------------|---------------------|
| Vegetation Zone 6 | | | | | | | | | | | | |
| 351 | DNG | VZ6 | 12 | in | | 180.2 | 6 | 6 | 5 | 83% | 93 | 93 |
| 351 | DNG | VZ6 | 14 | in | | | | | | | | |
| 351 | DNG | VZ6 | 21 | out | 93 | | | | | | | |
| 351 | DNG | VZ6 | 30 | in | | | | | | | | |
| 351 | DNG | VZ6 | 4107Feb04 | in | | | | | | | | |
| 351 | DNG | VZ6 | DMRP2 | in | | | | | | | | |
| Non-native | | | | | | | | | | | | |
| 351 | Exotic | Non-native | 5 | out | 189 | 164.5 | 5 | 6 | 1 | 20% | 647 | 615 |
| 351 | Exotic | Non-native | 7 | in | | | | | | | | |
| 351 | Exotic | Non-native | P01 | out | 1353 | | | | | | | |
| 351 | Exotic | Non-native | P02 | out | 4.5 | | | | | | | |
| 351 | Exotic | Non-native | P04 | out | 1040 | | | | | | | |
| Vegetation Zone 7 | | | | | | | | | | | | |
| 351 | Acacia | VZ7 | 10 | out | 1 | 6.8 | 3 | 2 | 0 | 0% | 6 | 4 |
| 351 | Acacia | VZ7 | 24 | out | 13 | | | | | | | |
| 351 | Acacia | VZ7 | 36 | out | 4 | | | | | | | |
| Vegetation Zone 5 | | | | | | | | | | | | |
| 351 | Remnant | VZ5 | 13 | out | 80 | 85.2 | 7 | 5 | 1 | 14% | 330 | 80 |
| 351 | Remnant | VZ5 | 16 | out | 359 | | | | | | | |
| 351 | Remnant | VZ5 | 20 | out | 1144 | | | | | | | |
| 351 | Remnant | VZ5 | 23 | in | | | | | | | | |
| 351 | Remnant | VZ5 | 26 | out | >288 km** | | | | | | | |
| 351 | Remnant | VZ5 | 42 | out | 42 | | | | | | | |

| PCT | Condition class | Zone | Plot Name | In/out of development footprint | Distance from footprint (m) | Area | Plots undertaken | Plots required | Plots in | Percentage in | Mean distance out | Median Distance out |
|-------------------|-----------------|------|-----------|---------------------------------|-----------------------------|------|------------------|----------------|----------|---------------|-------------------|---------------------|
| 351 | Remnant | VZ5 | 8 | out | 26 | | | | | | | |
| Vegetation Zone 8 | | | | | | | | | | | | |
| 351 | Sifton | VZ8 | 18 | out | 480 | 87.6 | 5 | 5 | 2 | 40 | 242 | 229 |
| 351 | Sifton | VZ8 | 28 | in | | | | | | | | |
| 351 | Sifton | VZ8 | 29 | out | 17 | | | | | | | |
| 351 | Sifton | VZ8 | 34 | out | 229 | | | | | | | |
| 351 | Sifton | VZ8 | 4107Feb01 | in | | | | | | | | |

*BCD acknowledges that plots <20 m from disturbance footprint may be within the margin of error of GIS instrumentation used to collect points.

**BCD acknowledges that this figure is most likely an instrument error.