Department of Planning and Environment

Our ref: DOC22/1084612
Your ref: SSD-10387

Javier Canon
Senior Policy & Project Officer
Planning and Assessment Group
javier.canon@planning.nsw.gov.au

Dear Javier,

Daroobalgie Solar Farm – Response to Submissions (RTS) report – Revision 1 BDAR

Thank you for your email dated 7 December 2022 to the Biodiversity, Conservation and Science Directorate (BCS) of the Department of Planning and Environment (DPE) inviting comments on the Response to Submissions (RTS) report for the Daroobalgie Solar Farm (the project).

BCS previously provided comments on the exhibited Environmental Impact Statement (EIS). BCS has reviewed the revised Biodiversity Development Assessment Report (BDAR) and would like to acknowledge the revisions made by the accredited assessor to incorporate recommendations from our submission dated 14 April 2022.

However, the BDAR requires further revision to ensure it adequately meets the requirements of the Biodiversity Assessment Method and appropriately calculates the biodiversity credit liability for the project.

The BCS's summary of biodiversity recommendations are provided in **Attachment A.** A review of the recommendations made in our response to the EIS on 14 April 2022 is provided in **Attachment B.** The detailed comments are provided in **Attachment C**.

If you require any further information regarding this matter, please contact me via liz.mazzer@environment.nsw.gov.au or (02) 6883 5325.

Yours sincerely

Liz Mazzer
A/Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorate

3 February 2023

Attachment A – BCS's Summary of Recommendations

Attachment B – BCS's Detailed Comments

Attachment C – Summary of Category 2 – Regulated Land criteria

BCS's recommendations

Daroobalgie Solar Fam – RTS

Acronyms and abbreviations

BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	*Biodiversity Conservation Act 2016*
BCS	Biodiversity, Conservation and Science Directorate
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
ETL	Electricity Transmission Line
LLS Act	*Local Land Services Act 2013*
PCT	Plant Community Type
TEC	Threatened Ecological Community
TBDC	Threatened Biodiversity Data Collection
TS Profile	Threatened Species Profile
VI score	Vegetation Integrity Score

Summary of Recommendations

1.1 Review the scattered tree identification and assessment to:

a) Consider the scattered trees present on aerial imagery within the development footprint currently classified as category 1-exempt land. Unless sufficient evidence is provided to demonstrate the absence of those trees on 1 January 1990, the scattered trees are to be considered category 2 – regulated land.

b) Adjust the discrepancy in Figures 5.1 a-d to ensure scattered trees are classified as category 2-exempt land.

1.2 Ensure that the land categorization assessment in the BDAR includes adequate evidence and justification to identify category 1-exempt land, specifically to determine that the land was cleared of native vegetation as at 1 January 1990 or lawfully cleared between 1 January 1990 and 25 August 2017. Examples of evidence to use are included in Table 3 of the publication '*Determining native vegetation land categorization for application in the Biodiversity Offset Scheme*'.

This will require review of:

a) Areas originally identified as category 2-regulated land that were then changed to category 1-exempt land in the most recent version of shapefiles and the revised BDAR. Clarify the reason for the change in land categories and include adequate evidence and justification to identify the land as category 1-exempt land.

b) Sections classified as category 1-exempt land that include BAM plots with a native understorey are to be identified as category 2-regulated land and assessed in accordance with the BAM unless evidence is provided that they were cleared as at 1 January 1990 or lawfully cleared between 1 January 1990

and 25 August 2017.

c) BCS prefers that the maps in the BDAR of the entire development footprint include an inset to maximize the scale of the road upgrade to clearly view the land categorization details of the native vegetation in the road reserve.

Where there is insufficient evidence of past clearing, the land should be mapped as category 2-regulated land.

1.3 Review the analysis of the spatial datasets in the land categorisation assessment to ensure that adequate evidence is used with the data to prove category 1-exempt land.

1.4 A precautionary approach should be taken. Where information regarding land use or the presence of native vegetation is conflicting or uncertain, category 2-regulated land should be assigned.

2.1 Clearly define, quantify, and map all direct impacts. This includes:

a) Review of the 'DAR_BDAR_ScatteredTrees_GHD_2022103' shapefile to check whether the following scattered trees will be directly impacted by the proposal:

- Four trees along the road upgrade; and
- Two trees on the boundary of the ETL footprint.

b) Inclusion of the minimum requirements for the scattered tree module as required by the BAM streamlined assessment module for scattered trees:

- justification provided of how the scattered trees proposed to be cleared or impacted meet the definition of scattered trees (BAM Appendix B, Section B.1 (a-c),
- description of how the ground cover was assessed,
- description of direct impacts of clearing in the ETL, efforts to avoid and minimize impacts, and identification of measures to mitigate or manage impacts; and
- map of scattered trees proposed to be cleared or impacted on the subject land that includes:
  - areas of category 1 and 2 land on the Native Vegetation Regulatory Map;
  - distances between living trees
  - living trees greater than 20 cm DBH
  - area of native and non-native ground cover

c) Details of the direct impacts associated with clearing, efforts to avoid and minimize impacts, and identification of measures to mitigate or manage impacts for scattered trees along the ETL and road upgrade.

d) Clarification on whether there were sightings of threatened species using the scattered trees and whether the threatened species were assessed in accordance with Chapter 5 of the BAM.

e) Inclusion and description of the patches of planted native vegetation in the solar farm footprint and in the ETL footprint.

f) Information about each of the four patches of planted native vegetation in the ETL, including descriptions of the vegetation and photographs.

g) Justification and evidence for the application of the decision-making key to the areas of planted native vegetation as required by the BAM streamlined assessment module for

planted native vegetation[1].

h) Details of the direct impacts associated with clearing, efforts to avoid and minimize impacts, and identification of measures to mitigate or manage impacts for planted native vegetation.

i) Clarify whether sightings of threatened species within the planted native vegetation were present and whether section 8.4 of the BAM was applied.

j) Inclusion of the revised direct impact area in calculations.

k) Update the GIS shapefiles and mapping on the revised impact of scattered trees and planted native vegetation on which credit calculations are based.

2.2 Address all indirect impacts of the proposal on native vegetation and ensure it meets all requirements of section 8.2 of the BAM. This includes:

a) Consideration of the indirect impacts of the solar farm, road upgrade, and ETL development footprint on native vegetation, threatened entities and their habitat, and include a description of the nature, extent, frequency, duration and timing of short- and long-term impacts during construction, operating, and arising from change in land use patterns, and include the consequence of indirect impacts on biodiversity values; and

b) A description and assessment of the indirect impacts on TECs, PCTs, and/or threatened species and their habitat, beyond the development footprint.

c) Appropriate mitigation of indirect impacts through implementation of mitigation measures.

4.1. Following adequate application of the land categorization assessment and direct impacts of the development footprint, ensure that:

a) the areas of the vegetation zones within the development footprint are updated in the BAM-C,

b) missing plot data for the function attribute for plots 9 and 10 in BOAM Case 00024310/BAAS17031/21/00024316 is included in the BAM-C; and

c) biodiversity credits are recalculated to ensure consistency between the plot data collected and that entered into the BAM-C.

6.1 For targeted surveys:

a) Review each species credit species survey timing, methods, and effort to ensure the surveys are consistent with the Department's taxa-specific guidelines. This includes referring to the:

NSW Survey Guide for Threatened Frogs,

Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide,

Threatened Biodiversity Survey and Assessment Guidelines, and

Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method.

Where there is uncertainty in the adequacy of the survey, such as when it does not align to the Department's taxa-specific guidelines, either provide

[1] DPIE (2022) *Streamlined Assessment Module – Planted Native Vegetation Biodiversity Assessment Method Operational Manual*. Environment, Energy and Science, Parramatta.

justification to demonstrate the suitability of a different approach, conduct additional survey, provide an expert report to confirm the presence or absence, or assume presence of the species.

b) Where species have been excluded from survey without adequate justification, either provide justification and evidence for why the species should be excluded from survey as per section 5.2.2. of the BAM, conduct surveys, provide an expert report, or assume presence of the species.

c) In areas of suitable habitat where there is no evidence of a targeted flora or fauna survey, either provide justification on the adequacy of the survey effort in each species suitable habitat as per the Department's taxa specific guidelines or assume presence of the species.

d) Check for inconsistencies in information on whether surveys were conducted and survey techniques to ensure that the survey data matches in the relevant sections, tables, and figures of the BDAR and represents the data in Tab 6 of the BAM-C.

e) As per table 24 of the BAM:

- Provide field data sheets or descriptions (i.e., via table format) in the BDAR detailing the targeted fauna and flora species surveys including prevailing conditions, time (including day and year), equipment used etc., as required in the Department's taxa-specific guidelines.
- Provide a digital shapefile for suitable habitat identified for survey for each candidate species credit species.

f) Review and amend the following discrepancies in the shapefiles:

- The dates provided in Table 3.1 in the BDAR for targeted threatened flora searches range from 30 September 2018 to 8 December 2020, whereas the dates in the attribute table in the *DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*' shapefile are in June 2022.
- Distinguish between potential pedestrian traverses and traverses conducted in a vehicle while driving between points in the *DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*' shapefile.

g) For each candidate species, where survey was undertaken outside the survey months in the TBDC or the Department's taxa-specific survey guides, provide justification for the timing of the surveys using appropriate published or peer-reviewed references and/or suitable data from reference sites for those species. Otherwise, the assessor must either obtain an expert report for those species or assume presence.

h) For the Eastern Pygmy Possum species polygon either provide justification for the exclusion of Eastern Pygmy Possum from PCT 244 or include this PCT in the species polygon

7.1 Provide all GIS data as required by table 24 of the BAM.

BCS's Review of Updated BDAR (Revision 1)

Daroobalgie Solar Farm – RTS

BCS Recommendation Reference (14 April 2022)	Summary of BCS's Recommendations (14 April 2022)	Adequately addressed in updated BDAR (Revision 1, 22 November 2022)?	BDAR Reference	Comment and Recommendation(s)
1.1	Scattered trees throughout the development footprint are to be classified as Category 2 unless the assessor can provide sufficient evidence to demonstrate the absence of trees on 1 January 1990 as per section 60H of the *Local Land Services Act 2013* (LLS Act).	No	Sections 3.1.4, 4.6.3, 5.6	There is a lack of evidence to demonstrate absence of scattered trees in areas identified as Category 1. Refer to **Attachment C** for further information.
1.2	Areas classified as Category 2 -Regulated Land are to be assessed in accordance with the BAM. Where it cannot be demonstrated that the development footprint contains no native vegetation, in accordance with BAM s 4.1.2(2), then the development footprint must be represented in the BDAR and BAM-C via vegetation zones. Alternatively, the assessor may choose to undertake a land categorisation assessment on rural zoned land to determine whether any parts of the electricity transmission line (ETL) corridor can be demonstrated to meet category 1 – exempt land criteria.	No	Sections 3.1.3, and 4.6.3	There are several locations classified as Category 1 that contain native vegetation, which are to be assessed in accordance with the BAM. The proponent also inadequately applied the land categorisation assessment as defined by section 60H of the LLS Act. Refer to **Attachment C** for further information.
1.3	Areas classified as Category 1 – exempt land are to be supported via multiple pieces of evidence, which includes: a) publicly available data sets on the SEED Portal such as:	No	Sections 3.1.3, 3.2.2.2, and 4.6.3	There are several areas with insufficient and conflicting information to demonstrate that the area is Category 1-excluded land. Refer to **Attachment C** for further information.

BCS Recommendation Reference (14 April 2022)	Summary of BCS's Recommendations (14 April 2022)	Adequately addressed in updated BDAR (Revision 1, 22 November 2022)?	BDAR Reference	Comment and Recommendation(s)
	• *NSW Landuse 2017* • *NSW Native Vegetation Extent 5m Raster v1.2* (2018 woody extent layer) • *State-wide Landcover and Tree Survey (SLATS) woody clearing for NSW* – used to identify detectable clearing events since January 1990. The published *'Native Vegetation Regulatory Map: Method Statement'* should be reviewed to determine how these datasets can be best interrogated to support any identification of Category 1 – Exempt land. b) category 2 - sensitive and category 2 - vulnerable land from the transitional native vegetation regulatory map. c) aerial photography and landholder records of land use (e.g. diaries, photos that show clearing or cropping activities).			
1.4 **1.5**	Explain (e.g. via a simple decision matrix/rule set) how different spatial datasets and other data sources were combined to form the land categorisation map, including explanation of how any conflicting spatial data were assigned precedence allocate a map category. Results should be linked to the specific components of the land category definitions in the *Local Land Services Act 2013* and *Local land Services Regulation 2014*. A precautionary approach should be adopted - where information regarding land use or the presence of native vegetation is conflicting or uncertain, category 2 should be assigned.	No	Section 3.2.1, 4.6.3	Although the proponent provided an explanation on how different spatial datasets were utilized, the mapping does not show that a precautionary approach was taken where information on land use is conflicting or uncertain. Refer to **Attachment C** for further information.

BCS Recommendation Reference (14 April 2022)	Summary of BCS's Recommendations (14 April 2022)	Adequately addressed in updated BDAR (Revision 1, 22 November 2022)?	BDAR Reference	Comment and Recommendation(s)
1.6	To streamline BCS review of land categorisation assessments, BCS encourages referencing of the evidence supporting the classification of each polygon to be included in the attribute table of the shapefile	Yes	--	The land categorisation shapefile has been referenced to identify the evidence for the classification of land categorisation. No further action required.
2.1	Clearly define, quantify and map all direct impacts associated with the construction and ongoing maintenance of the ETL. This should include: a) details of the impacts associated with construction, including justification of the extent of impact areas for the purposes of defining the direct footprint b) the number of ETL poles to be placed within each zone and the area of impact associated with each c) details of the future management of the ETL corridor, including any direct impacts associated with access for ETL maintenance d) A GIS shapefile of the development footprint on which credit calculations are based.	No	Section 9.2 and Table 9.1	The proponent has defined the direct impact associated with construction and maintenance of the development footprint in the BDAR and supplied shapefiles of the ETL poles. However, there is still uncertainty and lack of description about the total direct and indirect impacts of the proposal. Refer to **Attachment C** for further information.
2.2	Clarify the indirect impacts associated with the proposal and ensure all requirements of BAM s. 8.2 are met.	No	Section 9.4 and Table 9.2	The indirect impacts have not been clarified and some of the requirements of section 8.2 of the BAM are missing from the BDAR. Refer to **Attachment C** for further information.
3.1	The future vegetation integrity (VI) score for all native vegetation subject to direct impacts should be set as zero in the BAM-C..	Yes	--	The future VI scores have been set as zero for the solar farm and ETL footprint in the BAM-C. No further action required.

BCS Recommendation Reference (14 April 2022)	Summary of BCS's Recommendations (14 April 2022)	Adequately addressed in updated BDAR (Revision 1, 22 November 2022)?	BDAR Reference	Comment and Recommendation(s)
4.1	Following adequate definition of the development footprint (recommendation 2.1) enter all mapped vegetation zones within the development footprint into the BAM-C. Varying degrees of impact may then be reflected via individual management zones where adequately justified (for example complete clearing associated with construction versus selective clearing for transmission line clearances).	No	Section 1.2	The proponent has now assumed full impact in all vegetation zones in the BAM-C. However, based on the classification of Category 2 land (recommendation 1.1-1.2) and the total direct impact of the development footprint (recommendation 2.1), enter the full impact areas (hectares) within vegetation zones in the BAM-C. Refer to **Attachment C** for further information.
4.2	Provide justification and evidence that only a partial loss in VI will occur for ETL management zones. If adequate justification and evidence cannot be provided to support this assumption, beyond reasonable doubt, assume a total loss in VI for these zones.	Yes	--	The proponent has assumed a total loss in VI for all vegetation zones in the BAM-C. No further action required.
5.1	Provide adequate justification for the exclusion of the eastern pygmy possum and masked owl from consideration across the entirety of the development site (in accordance with BAM subsection 5.2.3 (step 3) and the guidance provided in the BAM 2020 Operational Manual – Stage 1).	Yes	Section 3.4, 6.1.3, 11.1.2.2	The proponent has now added the masked owl as a surveyed candidate fauna species. The eastern pygmy possum was added as a surveyed candidate fauna species and assumed present in the revised BDAR. No further action required.
6.1	For all targeted surveys: a) Ensure that BDAR adequately describes the survey timing, methods and effort employed. b) Specifically identify the survey method and effort for each candidate species credit species. c) Map the locations targeted via each survey method (including the route of traverses) and specify the date of the survey undertaken at each location. As per table 24 of the BAM this should be supplemented	No	Section 3.2.2.4, 6.2.2, Table 3.1-3.2, 3.4-3.7, 5.10, 6.1-6.4, 11.2, and Appendix A and E.	There is a lack of description for the survey effort and methods for targeted threatened species. There is also a lack of justification where the survey method or timing differs from the Department's taxa-specific survey guides. Refer to **Attachment C** for further information.

BCS Recommendation Reference (14 April 2022)	Summary of BCS's Recommendations (14 April 2022)	Adequately addressed in updated BDAR (Revision 1, 22 November 2022)?	BDAR Reference	Comment and Recommendation(s)
	by: • provision of the field data sheets detailing the surveys including prevailing conditions, date, time, equipment used etc. • digital shapefiles of the survey locations, mapped traverses and suitable habitat identified for survey for each candidate species credit species. d) Provide adequate justification of survey method and effort if the approach differs from the Department's taxa-specific survey guides/ Threatened Biodiversity Data Collection (TBDC) or where no relevant guideline has been published (e.g. citation of peer-reviewed literature). e) Where survey was undertaken outside the survey months in the TBDC or the Department's taxa-specific survey guides, provide justification for the timing of the surveys using appropriate published or peer-reviewed references and/or suitable data from reference sites for those species. Otherwise the assessor must either assume presence or obtain an expert report for those species.			
7.1	Provide all GIS data as required by table 24 of the BAM	No	--	The proponent has not included all GIS Data required as listed in Table 24 in the BAM. Refer to **Attachment C** for further information.

BCS's detailed comments

Daroobalgie Solar Farm – RTS report

1. Portions of the development footprint have been omitted from the BAM assessment without adequate justification of category 1- exempt land.

Scattered trees

As per BCS' recommendations to the EIS, the proponent considered most scattered trees within the solar farm footprint as category 2-regulated land. However, there are some scattered trees still identified as category 1-exempt land throughout the development site.

Based on aerial imagery and the woody native vegetation extent dataset, seven scattered trees are present but have not been classified as category 2-regulated land in the '*DAR_BDAR_LandCategory_GHD_2022103*' shapefile nor in Figure 5.2 of BDAR.

These trees are:

- Four within the electricity transmission line (ETL) footprint, and
- Three within the solar farm footprint.

A discrepancy is also present in Figures 5.1 a-d, as the scattered trees within the development footprint are classified as category 1-exempt land.

All scattered paddock trees should be mapped as category 2 – regulated land.

Changes to Category 2-Regulated Land and presence of native vegetation

There are several instances where category 2-regulated land in the original BDAR (February 2022) has now been changed to category 1-exempt land.

These modifications are present in the '*DAR_BDAR_ VegetationZones _GHD_2022103*' shapefile, the '*DAR_BDAR_LandCategory_GHD_2022103*' shapefile, and in figures 3.1, 4.1, 4.2, 5.1 a-d, 5.2, 6.1, and 11.2 in the BDAR.

Examples of areas identified in the original BDAR as category 2-regulated land and converted in the current BDAR to category 1-exempt land include, but are not limited to, the area around Plot 1, and the section starting from south of Plot P8, surrounding Plot 4, and continuing towards Plot P9. Aerial imagery shows these sections as uncropped. They are depicted as 'grazing native vegetation' in the NSW Land Use 2017 mapping, and the BAM plot data sheets show a native understorey composition. There is no justification provided for these changes in land categorisation from category 2 – regulated to category 1-exempt land.

An example of the reduction of category 2-regulated land is provided in Table 1.

Table 1 – Comparison of current (November 2022) land categorization shapefile with original (February 2022) land categorization shapefile.

Image 1 November 2022– Screenshot of current land categorization shapefile - 'DAR_BDAR_LandCategory_GHD_2022103'. *Note - the red polygon represents category 2-regulated land and yellow polygon represents category 1-exempt land.*  	**Image 2** February 2022– Screenshot of original land categorisation shapefile - '2316511_DAR_PCTs_TL_updated_17112021' *Note - the red polygon represents category 2-regulated land and yellow polygon represents category 1-exempt land.* 

PCT 244 was reduced in area from 0.7 hectares in the original BAM Biodiversity Credit Report (16 February 2022) to 0.1 ha in the current report (17 November 2022). In the comparison of the original and current PCT shapefiles, the majority of the original extent of PCT 244 has now changed to category 1-exempt land in the current PCT shapefile without justification.

Several BAM plots in the '*DAR_BDAR_FloraSurveyPlot_GHD_20220707'* shapefile and Appendix C of the BDAR contain a native understorey and have been classified as category 1-exempt land. These plots include, but are not limited to: Plot JP05, P7, JP06, and JP07. There is no evidence provided to justify that these areas were cleared of native vegetation as at 1 January 1990 or lawfully cleared between 1 January 1990 and 25 August 2017.

Melissa Cotterill, an accredited assessor associated with this BDAR, stated during a phone conservation with Erica Baigent of BCS on 5 April 2022 that the entirety of the ETL corridor was assumed to be category 2 – regulated land. This contrasts with the description in the BDAR, land category and vegetation zone shapefiles, and figures (such as figure 4.2), which shows several areas of the ETL classified as category 1 -exempt land.

Road upgrade

In the figures in the BDAR of the development footprint (for example, figures 4.2 and 5.1), the land categorization of the native vegetation in the road reserve (along the road upgrade) is concealed due to the scale of the map. These would benefit from inset maps so that the detail can be seen. There appear to be some trees along Troubalgie Road that may be impacted.

Land categorisation, including usage of spatial data sets

BCS highlighted in the recommendations for the EIS that the proponent must adequately demonstrate that category 1-exempt land meets the criteria as set out in section 60H of the LLS Act.

The proponent included the categorization of the remainder of the proposal in the revised BDAR (November 2022) and an explanation of how the different spatial datasets were utilized. However, the land categorization for category 1-exempt land has insufficient evidence to support this categorisation.

For example, Section 3.1.3 of the revised BDAR states:

[A]ny land that was mapped as 'tree cover' or 'tree cover matrix' on the 2018 woody extent layer were assigned to category 2 - regulated land, to which the BAM applies. These areas were then sanity checked via GIS and aerial photo interpretation, as well as ground truthing where necessary to confirm the presence or absence of trees. Any areas that were mapped as 'candidate native grasslands', 'tree cover' or 'tree cover matrix' but that were found to be cropped or did not support any native vegetation as verified during field surveys were assigned to category 1 land'

This assessment is inadequate as it does not include information on whether the land was cleared of native vegetation as at 1 January 1990 or lawfully cleared between 1 January 1990 and 25 August 2017. Adequate evidence has not been included in the BDAR to support mapping of category 1 – exempt land.

There are also several areas identified by the NSW Land Use 2017 mapping as 'grazing native vegetation' that have been classified as category 1-exempt land in the '*DAR_BDAR_VegetationZones_GHD_20221013*' shapefile. There is no evidence provided in the BDAR to support the classification of these areas as category 1-exempt land.

Comment

A shapefile has now been provided to include the classification of each polygon in the attribute

table as requested by BCS in our recommendations for the EIS.

Recommendations

1.1 Review the scattered tree identification and assessment to:

a) Consider the scattered trees present on aerial imagery within the development footprint currently classified as category 1-exempt land. Unless sufficient evidence is provided to demonstrate the absence of those trees on 1 January 1990, the scattered trees are to be considered category 2 – regulated land.

b) Adjust the discrepancy in Figures 5.1 a-d to ensure scattered trees are classified as category 2-exempt land.

1.2 Ensure that the land categorization assessment in the BDAR includes adequate evidence and justification to identify category 1-exempt land, specifically to determine that the land was cleared of native vegetation as at 1 January 1990 or lawfully cleared between 1 January 1990 and 25 August 2017. Examples of evidence to use are included in Table 3 of the publication '*Determining native vegetation land categorization for application in the Biodiversity Offset Scheme*'.

This will require review of:

a) Areas originally identified as category 2-regulated land that were then changed to category 1-exempt land in the most recent version of shapefiles and the revised BDAR. Clarify the reason for the change in land categories and include adequate evidence and justification to identify the land as category 1-exempt land.

b) Sections classified as category 1-exempt land that include BAM plots with a native understorey are to be identified as category 2-regulated land and assessed in accordance with the BAM unless evidence is provided that they were cleared as at 1 January 1990 or lawfully cleared between 1 January 1990 and 25 August 2017.

c) BCS prefers that the maps in the BDAR of the entire development footprint include an inset to maximize the scale of the road upgrade to clearly view the land categorization details of the native vegetation in the road reserve.

Where there is insufficient evidence of past clearing, the land should be mapped as category 2-regulated land.

1.3 Review the analysis of the spatial datasets in the land categorisation assessment to ensure that adequate evidence is used with the data to prove category 1-exempt land.

1.4 A precautionary approach should be taken. Where information regarding land use or the presence of native vegetation is conflicting or uncertain, category 2-regulated land should be assigned.

2. The extent of the development footprint and nature of impacts assessed is unclear

The revised BDAR includes details of the impacts associated with construction and maintenance of the ETL.

Direct impacts to scattered trees

Uncertainty remains with the extent of direct impact to scattered trees adjacent to the ETL and the road upgrade. Based on aerial imagery, the following scattered trees have not been identified by the 'DAR_BDAR_ScatteredTrees_GHD_2022103' shapefile:

- Four trees along the road upgrade; and
- Two trees on the boundary of the ETL footprint.

The scattered tree assessment in section 9.3 of the BDAR lacks several of the minimum requirements required by the BAM streamlined assessment module for scattered trees.

Appendix B of the BAM states that the proponent must record any sightings (e.g., in hollows) or evidence (e.g., scats) of threatened species (flora or fauna) using the scattered trees.
It is unclear whether there were sightings of threatened species using the scattered trees within the proposal and whether the threatened species were assessed in accordance with Chapter 5 of the BAM.

Direct impacts to planted native vegetation

The planted native vegetation assessment in section 5.2 of the BDAR does not include the justification and evidence required for the application of the planted native vegetation decision-making key (i.e., photos, etc.) as per the minimum requirements in Appendix D of the BAM.

Based on the '*DAR_BDAR_ VegetationZones _GHD_*2022103' shapefile, there are four sections of planted native vegetation in the ETL. The planted native vegetation assessment in the BDAR does not specify which area(s) of plantings in the western section of the ETL have been described. The planted native vegetation assessment does not mention the patches of planted native vegetation in the solar farm footprint that are described in section 4.6.3 of the BDAR.

Table 3.9 in the BDAR states that plot P3 was used as a vegetation integrity survey plot for PCT 76 – planted. However, the native vegetation (referred to as 'windbreaks' in section 4.6.3 of the BDAR) that was directly surveyed by plot P3 in the solar farm site is classified as category 1-exempt land. This is a discrepancy as, if the vegetaton has been assigned to a PCT and assessed under BAM (ie is category 2 – regulated), it cannot also be category 1 - exempt land.

As a PCT has been assigned to the planted native vegetation, these areas should be category 2 – regulated land.

A description of the direct impacts of clearing, the efforts to avoid and minimize direct impacts, and identification of measures to mitigate or manage direct impacts on planted native vegetation is not included in the BDAR as required by chapters 7 and 8 of the BAM.

Appendix D of the BAM states that the proponent must assess the suitability of planted native vegetation for use by threatened species and record any incidental sightings or evidence of threatened species credit species using, inhabiting or being part of the planted native vegetation.

Section 5.2 of the BDAR states the following:

Any opportunistic or incidental sightings of threatened biota within planted native vegetation have been recorded during this assessment, and, where relevant, Section 8.4 of the BAM has been applied and mitigation measures have been recommended for impacts on these species as a result of the project. Species credits have not been calculated for any such impact, in line with the BAM.

It is unclear whether there were sightings of threatened species within the planted native vegetation and whether section 8.4 of the BAM was applied.

Indirect impacts

BCS previously requested that indirect impacts associated with the proposal are to be clarified and meet the requirements of section 8.2 of the BAM. There were no amendments made to the description of indirect impacts in the BDAR. As a result, the BDAR does not include a complete assessment of indirect impacts on vegetation, threatened species, and their habitat with a description of the nature, extent, frequency, duration, and timing of indirect impacts of the proposal.

For example, there is no assessment of the indirect impacts on habitat or vegetation adjacent to the

development site. This includes:

- the indirect impacts on PCT 76 within the excluded area in the center of the solar farm footprint; and
- the indirect impacts on PCT 80 near the northern boundary of the solar farm site.

The BDAR does not include appropriate mitigation measures to address indirect impacts as required by section 8.4.1 of the BAM.

Recommendations

2.1 Clearly define, quantify, and map all direct impacts. This includes:

a) Review of the 'DAR_BDAR_ScatteredTrees_GHD_2022103' shapefile to check whether the following scattered trees will be directly impacted by the proposal:
   - Four trees along the road upgrade; and
   - Two trees on the boundary of the ETL footprint.

b) Inclusion of the minimum requirements for the scattered tree module as required by the BAM streamlined assessment module for scattered trees:
   - justification provided of how the scattered trees proposed to be cleared or impacted meet the definition of scattered trees (BAM Appendix B, Section B.1 (a-c),
   - description of how the ground cover was assessed,
   - description of direct impacts of clearing in the ETL, efforts to avoid and minimize impacts, and identification of measures to mitigate or manage impacts; and
   - map of scattered trees proposed to be cleared or impacted on the subject land that includes:
     - areas of category 1 and 2 land on the Native Vegetation Regulatory Map;
     - distances between living trees
     - living trees greater than 20 cm DBH
     - area of native and non-native ground cover

c) Details of the direct impacts associated with clearing, efforts to avoid and minimize impacts, and identification of measures to mitigate or manage impacts for scattered trees along the ETL and road upgrade.

d) Clarification on whether there were sightings of threatened species using the scattered trees and whether the threatened species were assessed in accordance with Chapter 5 of the BAM.

e) Inclusion and description of the patches of planted native vegetation in the solar farm footprint and in the ETL footprint.

f) Information about each of the four patches of planted native vegetation in the ETL, including descriptions of the vegetation and photographs.

g) Justification and evidence for the application of the decision-making key to the areas of planted native vegetation as required by the BAM streamlined assessment module for planted native vegetation[2].

[2] DPIE (2022) *Streamlined Assessment Module – Planted Native Vegetation Biodiversity Assessment Method Operational Manual*. Environment, Energy and Science, Parramatta.

h) Details of the direct impacts associated with clearing, efforts to avoid and minimize impacts, and identification of measures to mitigate or manage impacts for planted native vegetation.

i) Clarify whether sightings of threatened species within the planted native vegetation were present and whether section 8.4 of the BAM was applied.

j) Inclusion of the revised direct impact area in calculations.

k) Update the GIS shapefiles and mapping on the revised impact of scattered trees and planted native vegetation on which credit calculations are based.

2.2 Address all indirect impacts of the proposal on native vegetation and ensure it meets all requirements of section 8.2 of the BAM. This includes:

a) Consideration of the indirect impacts of the solar farm, road upgrade, and ETL development footprint on native vegetation, threatened entities and their habitat, and include a description of the nature, extent, frequency, duration and timing of short- and long-term impacts during construction, operating, and arising from change in land use patterns, and include the consequence of indirect impacts on biodiversity values; and

b) A description and assessment of the indirect impacts on TECs, PCTs, and/or threatened species and their habitat, beyond the development footprint.

c) Appropriate mitigation of indirect impacts through implementation of mitigation measures.

3. No loss of shrubs or groundcover has been assessed for construction impacts

BCS acknowledges that the future VI scores have been set as zero for the solar farm and ETL footprint in the BAM-C.

There is no further action required.

4. Data should be checked for consistency

BCS acknowledges that the proponent has now assumed full impact in all vegetation zones in the BAM-C.

However, the proponent needs to consider the full extent of impact within vegetation zones based on the classification of category 2-regulated land and the total direct impact of the development footprint.

In the revised BAM-C, BCS has identified missing plot data for the function condition attribute for plots 9 and 10 in BOAM Case 00024310/BAAS17031/21/00024316.

BCS has also identified that the supplied survey results in Appendix B, the field data sheets in Appendix C, and the BAM calculator data in Appendix D in the revised BDAR are inconsistent with the data in the BAM-C.

For example:

- PCT 76_Planted: For plot P3, the structure (percent cover) of the tree growth form is 15% in the BAM calculator data compared to 1 % in the BAM-C.
- PCT26_Good: For plot 2, the shrub composition (i.e., number of native shrub species) in the field data sheets and the survey results are seven compared with five in the BAM-C.

The inconsistencies between the data provided in the BDAR and BAM-C will potentially affect biodiversity credit calculations.

Once land categorization has been reviewed, biodiversity credits will need to be recalculated, ensuring consistency between the plot data collected and that entered into the BAM-C.

Recommendations

4.1 Following adequate application of the land categorization assessment and direct impacts of the development footprint, ensure that:

a) the areas of the vegetation zones within the development footprint are updated in the BAM-C,

b) missing plot data for the function attribute for plots 9 and 10 in BOAM Case 00024310/BAAS17031/21/00024316 is included in the BAM-C; and

c) biodiversity credits are recalculated to ensure consistency between the plot data collected and that entered into the BAM-C.

5. Candidate species credit species selection for the ETL assessment requires further justification for two fauna species.

BCS acknowledges that the proponent has now added the masked owl as a surveyed candidate fauna species. The eastern pygmy possum has also been added as a surveyed candidate fauna species and assumed present in the revised BDAR.

There is no further action required.

6. The BDAR presents insufficient information to demonstrate that the BAM requirements for candidate species credit species surveys have been met.

Targeted survey effort

The survey methods are still unclear for all candidate credit species that were further assessed. The BDAR is required to adequately describe the timing, weather conditions, methods, and survey effort.

The BAM specifies that the assessor must:

- only survey during the time specified for that species in the TBDC, unless there is clear justification to vary the timing and the reasoning is documented in the BDAR
- comply with the Department's published threatened species survey guides
- use best-practice methods that can be replicated for repeat surveys, if the Department has not published any relevant guides (the TBDC may also provide information on appropriate survey methods and effort).

Targeted survey effort for threatened flora

BCS requested in the recommendations to the EIS that the proponent specifically identify the survey method and effort for each candidate species credit species.

However, there is no mention of survey effort (i.e., survey time as approximate person hours) or survey method, such as type and specifications of field survey, for each flora candidate species credit species.

As an example, Section 3.2.2.4 of the BDAR states that:

Searches were undertaken with due consideration of threatened species survey guidelines (DPIE 2020b), by completing meandering traverses within accessible areas of potential habitat within the proposal site. Traverses involved two site staff walking in generally parallel lines along the target area. This survey effort was generally limited to portions of the proposal site that supported native vegetation...'

The statement (above) from section 3.2.2.4 of the BDAR does not include a description of the width, length, and area of the field traverses, including the distance used between the parallel field traverses for the subject land as per the recommended dimensions in the Department's guide for surveying threatened plants[3].

As requested by BCS previously, the proponent is to supply field data sheets or descriptions (i.e., via table format) in the BDAR detailing the targeted threatened species surveys including prevailing conditions, time, equipment used etc. BCS notes that Table 3.7 in the BDAR includes the daily weather observation for field surveys. However, it is uncertain whether the weather conditions were also considered for the targeted species surveys in this table. Table 3.4 of the BDAR includes the months of surveys conducted for candidate flora species, however the full date (i.e., day and year) of survey for each species is unspecified.

In several instances, the '*DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*' shapefile has no field traverses present within the suitable habitats that are associated with the threatened species.

For example, *Lepidium monoplocoides* is associated with PCT 244, however there are no field traverses shown in this PCT, hence there is no evidence that the suitable habitat was surveyed for threatened species.

There are insufficient field traverse lengths for several threatened flora species, as determined when comparing the survey lengths in the '*DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*' shapefile with the recommended traverse length in Table 2 of the Department's guide for surveying threatened plants[4]. This includes, but is not limited to:

- *Amphibromus fluitans*
- *Diuris tricolor*
- *Lepidium aschersonii*
- *Lepidium monoplocoides*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsonsa recta*
- *Swainsonsa sericea*

For example, based on the suitable habitat for *Amphibromus fluitans,* the survey effort should be least two kilometres of parallel field traverse, yet the traverse in the '*DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*' shapefile has a length of fifty meters.

BCS notes that the dates of targeted threatened flora survey were provided, however the shapefile provided to represent the survey tracks, '*DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*', includes dates that do not coincide with the dates provided in Table 3.1 of the BDAR.

For example, Table 3.1 in the BDAR includes dates for 'targeted threatened flora searches' ranging from 30 September 2018 to 8 December 2020. The dates for the traverses in the

3 DPIE (2020) *Surveying threatened plants and their habitats – NSW survey guide for the Biodiversity Assessment Method*. Environment, Energy and Science, Paramatta

4 Ibid.

'*DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*' shapefile take place in June 2022. There is no justification provided to explain the discrepancy.

BCS is having difficulty in determining between potential pedestrian traverses and traverses conducted in a vehicle while driving between points.

There is a lack of justification for areas where the timing of the survey differs from the Department's taxa-specific survey guide.

An example is *Pilularia novae-hollandiae*, whose specific species survey requirements[5] state that survey is to be conducted from October to December in drying mud after inundation. The guidelines state that if conditions are not met, then an expert report is strongly recommended to discount presence or absence. There has been no justification provided on whether this species was surveyed during the optimal time of year, including if the survey was conducted just after an inundation period.

BCS has reviewed the proponent's revised description for the three candidate species credit flora species surveyed outside of the survey window. Our comments are provided in table 2.

Table 2: Flora species credit species surveys outside of TBDC/BAM-C survey window

Flora Species	**BCS comments for BDAR (February 2022) in EIS exhibition**	**BCS Comments for BDAR (November 20220) in Response to Submission**
***Austrostipa metatoris* (a spear grass)** TBDC specifies October-November survey period.	Based on known records for *A. metatoris* the BCS accountable officer for this species has advised that survey in November following rain would be considered optimal and reference to October should be removed from the TBDC. No records are available to BCS to support the suitability of September and December surveys for this species. The BDAR also indicates that flora surveys timed in September were from 2018 – site specific rainfall records are not available to BCS but there are no records of substantial rainfall from the Forbes Airport weather station preceding this specific survey period. The area was drought declared at that time.	BCS notes that the submitted flora survey effort, '*DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707*', does not intersect with PCT 244, which is the only suitable habitat on the proposal site associated with the threatened species. Hence, there is no evidence that the suitable habitat was surveyed for threatened species. As advised by BCS previously, reference to the month October should be removed from the TBDC. The BCS accountable officer advised that there is a lack of records to support the suitability of surveys in September and December, hence the surveys conducted in September and December are considered unsuitable. BCS previously stated that species surveys must be conducted at the optimum time for detection. There has been no justification provided by the proponent, using appropriate published or peer-reviewed literature, that confirms that the survey can take place outside of the survey months as specified in the TBDC. Table 6.3 in the revised BDAR still indicates that flora surveys for this species was suitable due to substantial rainfall prior to surveys. As stated by BCS previously, there are no records of substantial rainfall from the Forbes Airport weather station preceding this specific survey period. The area was drought declared at that time. There are also no records of rainfall listed in the weather observations in Table 3.7 in the BDAR.
***Diuris callitrophilla* (Oaklands Diuris)** TBDC specifies	Whilst the Scientific Committee determination for *D. callitrophila* indicates flowering of this species in November-December, based on current information	BCS notes that the submitted published literature states that *D. callitrophila* flowers in December, however as per discussions with the BCS accountable officer, we are unaware whether the species was flowering at this time as there is no evidence provided that the proponent used a reference population.

[5] DPIE *Flora species with specific survey requirements*. Environment, Energy and Science, Paramatta

November survey period.	available to the BCS accountable officer they advise that there is no evidence that December is a suitable time of year to survey for *D. callitrophilla*, regardless of seasonal conditions.	However, BCS recognises that the species is only known from the Oaklands – Urana region of southern NSW, approximately 260 kilometres south-west of Forbes. Note that this species is currently not included in Tab 6 – *Habitat survey* in the BAM-C, even though surveys were conducted for it.
***Eleocharis obicis* (spike-rush)** TBDC specifies October-November survey period. BAM-C flora species with specific requirements specifies species to be surveyed after soaking rains.	The BCS accountable officer for this species has advised that *E. obicis* records suggest October and November are the optimal survey periods for this species. December may possibly be suitable under the right conditions, however this remains uncertain. No information is available to indicate that September surveys would be suitable. (also see comments above regarding rainfall records from the Forbes Airport weather station for the period preceding the September 2018 flora surveys).	Note that this species is currently not included in Tab 6 – *Habitat survey* in the BAM-C, even though surveys were conducted for it.

Targeted survey effort for threatened fauna

As BCS has previously specified in the recommendation to EIS, there is insufficient information to demonstrate that the survey effort and method have conformed to the Department's survey guidelines, any species-specific survey notes in the TBDC, or are accepted best practice for each target species.

This includes, but is not limited to, the following candidate fauna species:

- Barking Owl
- Bush Stone Curlew
- Glossy Black Cockatoo
- Little Eagle
- Masked Owl
- Sloan's Froglet
- Southern Bell Frog
- Squared-tailed Kite
- Squirrel Glider
- Superb Parrot

Table 3 provides examples of survey effort required for some candidate fauna species credit species.

Table 3: Detailed examples of candidate fauna species credit species with inadequate survey effort

<table>
<tr><th>Fauna Species</th><th>BCS Comments for BDAR (November 20220) in Response to Submission</th></tr>
<tr><td>Barking Owl</td><td>As per Table 5.7 the Threatened Biodiversity Survey and Assessment Guidelines, surveys for nocturnal birds should include a call playback, day habitat search, stag-watching, and spotlighting with a suggested minimum effort of 5 visits per site on different nights.

Table 5.7 Suggested survey methods and effort for nocturnal birds

<table>
<tr><th>Method</th><th>Suggested minimum effort</th><th>Survey period</th></tr>
<tr><td>Call playback</td><td>Sites should be separated by 800 metres – 1km, and each site must have the playback session repeated as follows:
▪ at least 5 visits per site, on different nights are required for the Powerful Owl, Barking Owl and the Grass Owl;
▪ at least 6 visits per site for the Sooty Owl, and 8 visits per site for the Masked Owl are required.
Sites for Bush Stone-curlew surveys should be 2-4km apart and conducted during the breeding season.</td><td>All year</td></tr>
<tr><td>Day habitat search</td><td>Search habitat for pellets, and likely hollows.
Flushing of Bush Stone-curlews by walking through potential habitat.</td><td>All year</td></tr>
<tr><td>Stag-watching</td><td>Observing potential roost hollows for 30mins prior to sunset and 60mins following sunset.</td><td>All year</td></tr>
<tr><td>Spotlighting</td><td>Spotlighting for Plains Wanderer and Bush Stone-curlew by foot or from a vehicle driven in first gear.</td><td>All year</td></tr>
</table>

The nocturnal bird survey consisted of two consecutive nights of call playback sessions for a total of 4 nights and two consecutive nights of spotlighting transect for two hours on the following dates:
• 14-15 August 2019 (2 nights)
• 25-26 August 2020 (2 nights)

The BAM-C specifies that foraging habitat for the species includes PCTs 80, 76, and 244.

There is no call playback shown in PCT 76 and only some areas of PCT 76 had spotlighting in the 'DAR_BDAR_FaunaSurveyEffort _GHD_20220707' shapefile (the shapefile).

PCTs 80 & 244 had no call playback, spotlighting, or active searches shown in the shapefile.

Table 6.1 in the BDAR is missing PCT_80 DNG as a vegetation zone associated with the species.

Given the uncertainty concerning the adequacy of the survey to determine presence or absence due to the insufficient timing and effort, BCS recommends that either justification of survey method and effort (e.g., citation of peer-reviewed literature) be provided to demonstrate the suitability of a different approach, additional survey be conducted, or an expert report be obtained, to confirm the presence or absence of the Barking Owl.</td></tr>
<tr><td>Sloane's Froglet</td><td>Section 3.3 of the NSW Survey Guide for Threatened Frogs includes specific survey requirements for the Sloane's Froglet that includes aural-visual surveys and acoustic recorders with a set number of repeat surveys, effort, and period (i.e., after flooding rains).</td></tr>
</table>

3.3 Sloane's froglet *Crinia sloanei*

Site	500 m transect of suitable breeding habitat		
Survey method	**Survey period**	**Total effort for a 500 m transect**	**Number of repeat surveys**
Aural-visual surveys	July – Aug.	480 minutes	4
Acoustic recorder	July – Aug. after flooding rains	154 recorder days	1 x 14 days

Tables 3.5 and 3.6 in the BDAR 6 in the BDAR state that the survey effort for the species consisted of daytime traverses, spotlighting, and call playback on the following dates:

- 14-15 August 2019 (2 nights)
- 25-26 August 2020 (2 nights)
- 7-8 December 2020 (2 nights)

As the survey effort and methodology stated in the BDAR does not match the Department's taxa-specific survey guides, justification for the adequacy of survey method and effort must be included (e.g., citation of peer-reviewed literature), otherwise additional survey is to be conducted, an expert report is to be obtained, or the species must be assumed present.

Section 2.11 of the *NSW Survey Guide for Threatened Frogs* guidance lists the specific requirements to include in the BAR for the timing, method, and effort (i.e., type, number, and GPS location of all surveys and acoustic recording devices, methods used to assess acoustic recording surveys) of targeted surveys, which have not been provided in the BDAR.

Masked Owl

The nocturnal bird survey consisted of two consecutive nights of call playback sessions for a total of 4 nights:

- 14-15 August 2019 (2 nights)
- 25-26 August 2020 (2 nights)

The *Threatened Biodiversity Survey and Assessment Guidelines* state that "several sampling sessions are required to have even a 50% probability of detecting owl species that were present on a site".

Table 5.6 of the guidelines provide an indicative number of sampling sessions required to obtain a 50% and 90% probability of detecting the owl species.

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

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

Based on the survey effort within the required survey period, the probability of detecting the targeted species is around 50%.

The guidelines recommend that when the required level of effort is not achieved, it cannot be assumed that the species is not present, particularly in areas of potential habitat and/or if there are records from the locality.

	The guidelines further recommend that if no evidence of owls is located, then an evaluation of whether the species are likely to occupy the habitat will need to be made. Given the uncertainty concerning the adequacy of the survey to determine presence or absence due to the insufficient timing and effort, BCS recommends that either justification of survey method and effort (e.g., citation of peer-reviewed literature) be provided to demonstrate the suitability of a different approach, additional survey be conducted, an expert report be obtained to confirm the presence or absence of the species, or to assume presence of the Masked Owl.
Superb Parrot	As per the TBDC, breeding habitat for superb parrots can be identified by the presence of habitat features and observed nest OR by two or more birds seen on site. There are several descriptions in the BDAR that include the presence of superb parrots within the development site. This includes Appendix A and E, Figure 6.1, Table 5.10, and section 6.2.2 of the BDAR. For example, Table 5.10 states, *Superb Parrots (Polytelis swainsonii) were observed traversing the paddocks and open grassland area within the proposal site during multiple site survey periods. Additionally, they were recorded perching and foraging in Western Grey Box trees in woodland adjacent to grassland areas within the proposal site (see Figure 6.1).* Appendix A states, *This species was recorded foraging within the proposal site in Grey Box woodland. Isolated hollow-bearing trees occur within the proposed solar farm site, however as this species typically nests within riparian corridors, the study area is unlikely to contain breeding habitat.* The BCS notes that the TS profile for the species states, *On the Southwest Slopes and Southern Tablelands nest trees can be in open Box-Gum woodland or isolated living or dead paddock trees.* As a result, the proponent should not disregard a study area as potential superb parrot breeding habitat due to the absence of a riparian corridor. The proponent is to either obtain an expert report to confirm the presence or absence of the species or assume presence. If the proponent determines that superb parrots were foraging amongst scattered trees, then the assessor cannot apply the scattered tree module and the assessment of threatened species must be made in accordance with Chapter 5 of the BAM.

The BDAR includes inconsistencies in the survey techniques, as Table 3.1 states that diurnal bird surveys were conducted in the road upgrade, whereas Figure 3.2 does not show any diurnal bird surveys for the road upgrade and instead shows that only spotlighting was done.

Table 3.6 of the BDAR mentions surveys were conducted for the Southern Myotis, however this species is not included in any of the four BAM-C cases.

The BDAR is unclear on whether a survey was conducted for the Squirrel Glider. Table 3.6 explains that spotlighting and call playback were conducted as survey methods for the species, however, Table 6.4 includes the species as excluded from survey due to a lack of suitable habitat.

Threatened fauna

Several species have been excluded from surveys without adequate justification.

For example, table 6.4 in the BDAR states that the Koala was excluded as a candidate species credit

species as there is no suitable breeding habitat.

However, as per the *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide*, suitable habitat is any PCT associated with the koala in the TBDC with a minimum of one koala use tree present for the relevant region. PCTs 76, 26, 80, 244, and 260 are associated with the koala in the TBDC and there is presence of koala use trees within the development site, such as *E. microcarpa* and *E. melliodora*. The presence of a koala use tree in any vegetation zone of a PCT associated with koalas will determine the full extent of that PCT as suitable habitat.

The proponent is to either provide adequate justification on the exclusion of the species as per the koala survey guidelines[6], conduct surveys, obtain an expert report, or assume presence of the koala.

Eastern Pygmy Possum species polygon

The Eastern Pygmy Possum was assumed to occur within the subject site in PCT 80. Section 11.2.2.2 of the BDAR states,

'[*the polygon] was defined by identifying all areas of native woodland and derived scrub vegetation within 200 m of any patch of woodland vegetation that was 5 ha of more in size*'.

The Eastern Pygmy Possum is also associated with PCT 244, which occurs along Troubalgie Road. The species polygon should include all PCTs and vegetation zones that are associated with the Eastern Pygmy Possum in the TBDC.

The BDAR should either provide justification for the exclusion of Eastern Pygmy Possum from PCT 244 or include this PCT in the species polygon.

Recommendations

6.1 For targeted surveys:

a) Review each species credit species survey timing, methods, and effort to ensure the surveys are consistent with the Department's taxa-specific guidelines. This includes referring to the:

NSW Survey Guide for Threatened Frogs,

Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide,

Threatened Biodiversity Survey and Assessment Guidelines, and

Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method.

Where there is uncertainty in the adequacy of the survey, such as when it does not align to the Department's taxa-specific guidelines, either provide justification to demonstrate the suitability of a different approach, conduct additional survey, provide an expert report to confirm the presence or absence, or assume presence of the species.

b) Where species have been excluded from survey without adequate justification, either provide justification and evidence for why the species should be excluded from survey as per section 5.2.2. of the BAM, conduct surveys, provide an expert report, or assume presence of the species.

c) In areas of suitable habitat where there is no evidence of a targeted flora or fauna survey, either provide justification on the adequacy of the survey effort in each species

[6] DPIE (2022) *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide.* Environment, Energy and Science, Paramatta.

suitable habitat as per the Department's taxa specific guidelines or assume presence of the species.

d) Check for inconsistencies in information on whether surveys were conducted and survey techniques to ensure that the survey data matches in the relevant sections, tables, and figures of the BDAR and represents the data in Tab 6 of the BAM-C.

e) As per table 24 of the BAM:

- Provide field data sheets or descriptions (i.e., via table format) in the BDAR detailing the targeted fauna and flora species surveys including prevailing conditions, time (including day and year), equipment used etc., as required in the Department's taxa-specific guidelines.
- Provide a digital shapefile for suitable habitat identified for survey for each candidate species credit species.

f) Review and amend the following discrepancies in the shapefiles:

- The dates provided in Table 3.1 in the BDAR for targeted threatened flora searches range from 30 September 2018 to 8 December 2020, whereas the dates in the attribute table in the *DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707* shapefile are in June 2022.
- Distinguish between potential pedestrian traverses and traverses conducted in a vehicle while driving between points in the *DAR_BDAR_FloraSurvey_GPSTracks_GHD_20220707* shapefile.

g) For each candidate species, where survey was undertaken outside the survey months in the TBDC or the Department's taxa-specific survey guides, provide justification for the timing of the surveys using appropriate published or peer-reviewed references and/or suitable data from reference sites for those species. Otherwise, the assessor must either obtain an expert report for those species or assume presence.

h) For the Eastern Pygmy Possum species polygon either provide justification for the exclusion of Eastern Pygmy Possum from PCT 244 or include this PCT in the species polygon

7. All required GIS data must be supplied.

As BCS has stated in the recommendations to the EIS, the proponent is to submit all GIS data required in Appendix K (Table 24) of the BAM. There are some shapefiles still missing, such as:

- assessment area with 1500 m buffer area boundary,
- cadastral boundary,
- landscape features (i.e. IBRA regions and subregions),
- suitable habitat identified for survey for each candidate species credit species,
- alternate proposal footprint; and
- direct and indirect impact zones.

Recommendations

7.1 Provide all GIS data as required by table 24 of the BAM.