Your ref: SSD-40138508
Our ref: DOC24/661152

Kurtis Wathen
Senior Environmental Assessment Officer
Department of Planning, Housing and Infrastructure

Via Major Projects Portal: PAE-74714485

Dear Kurtis

Subject: **Baldon Wind Farm (SSD-40138508) – Environmental Impact Statement**

Thank you for your email dated 13 August 2024 seeking advice from the Biodiversity, Conservation and Science Group (BCS) of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) about the Environmental Impact Statement (EIS).

We note that the proponent did not submit the complete spatial data package for the project to BCS until 30 August 2024. BCS cannot start its detailed BDAR review until all the required data has been provided which means we were not able to meet the statutory agency response deadline. BCS has reviewed the exhibited EIS against the Secretary's Environmental Assessment Requirements (SEARs) issued on 4 July 2022, BCS SEARs input dated 28 June 2022 and the Supplementary SEARs – MNES (Baldon Wind Farm (EPBC 2024/09772)). The EIS is not consistent with the Secretary's requirements for flooding or biodiversity.

BCS has identified that the EIS has not quantitatively assessed the impact of flood events on the site or demonstrated the impact of the proposed development on flood behaviour.

BCS has identified that the Biodiversity Development Assessment Report (BDAR) is not currently consistent with the Biodiversity Assessment Method (BAM). There are several matters that the proponent will need to amend in a revised BDAR to meet the SEARs for biodiversity. Until the revised BDAR is complete, the biodiversity credit liability may not be correct.

BCS is available to meet with the applicant and their BAM accredited assessor during the Response to Submission stage to help them address the recommendations identified in Attachment A and to help ensure a revised BDAR is consistent with the BAM and SEARs.

In summary, the key issues are:

- The EIS has not quantitatively assessed the impact of flood events on the site and does not demonstrate the impact of the proposed development on flood behaviour.
- Bird and bat surveys are not complete, with only 12 months of survey completed across part of the site. For the proponent to demonstrate an understanding of how avifauna at risk of turbine strike use the site, it is best practice to conduct at least 24 consecutive months of baseline bird and bat survey, including at height data. The proponent also needs to conduct the surveys across a greater proportion of the site.
- There is no Bird and Bat Adaptive Management Plan (BBAMP), nor a detailed BBAMP framework to demonstrate how impacts to birds and bats will be mitigated and managed.
- The proponent has not demonstrated how biodiversity impacts have been avoided, including impacts to species at risk of Serious and Irreversible Impacts (SAII) such as the endangered Plains-wanderer which was recorded 21 times across the subject land.

- It is also not clear the extent of the impacts to SAII entities due to assumed presence for some species.
- The impact to Matters of National Environmental Significance (MNES) is unclear. The BDAR does not provide enough information for BCS to complete the Bilateral Assessment in accordance with the SEARs.
- The proposed mitigation measures lack detail and the proponent has stated these would be deferred to post approval plans. The proponent needs to provide additional and more specific detail, and use binding terms, to allow BCS to assess if the proposed mitigation measures will be effective in managing residual impacts, as required by the BAM.

A summary of the recommendations is provided in **Attachment A** and detailed comments are provided in **Attachment B**.

The project has been determined as a controlled action under the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and impacts to EPBC Act-listed entities will be assessed under the Assessment Bilateral Policy. This response includes comments and recommendations related to the assessment of impacts to MNES to ensure that the assessment report that BCS prepares contains all relevant information. **Attachment C** details the information and data required for this assessment.

All plans required as a Condition of Approval that relate to flood risk management or biodiversity should be developed in consultation with BCS, so key issues are adequately addressed.

If you have any questions about this advice, please contact Simon Maffei, Senior Project Officer Planning, via planning.southwest@environment.nsw.gov.au or 02 6022 0646.

Yours sincerely

Adam Vey
04 October 2024
Director South West
Biodiversity, Conservation and Science Group
NSW Department of Climate Change, Energy, the Environment and Water

ATTACHMENT A – BCS Assessment Summary for Baldon Wind Farm Environmental Impact Statement (SSD-40138508)
ATTACHMENT B – BCS detailed advice for Baldon Wind Farm EIS
ATTACHMENT C – BCS Bilateral Assessment information and data requirements

ATTACHMENT A BCS Assessment Summary for Baldon Wind Farm Environmental Impact Statement (SSD-40138508)

In preparing this advice BCS have reviewed the following documents:

- Baldon Wind Farm Environmental Impact Statement prepared by NGH Pty Ltd for Baldon Wind Farm Pty Ltd, dated July 2024
- Baldon Wind Farm Biodiversity Development Assessment Report (BDAR) prepared by NGH Pty Ltd for Baldon Wind Farm Pty Ltd, dated 17 July 2024 as Appendix F1
- Baldon Wind Farm Traffic Impact Assessment prepared by Amber Traffic & Transportation Direction for Baldon Wind Farm Pty Ltd, dated 15 July 2024 as Appendix 5

Key Assessment Issues

BCS requests the following issues and recommendations be resolved prior to determination, or unless otherwise specified.

Flood Risk Management

1. The EIS does not include a quantitative assessment of flooding. The impact of flood events on the site and the impact of the proposed development on flood behaviour have not been demonstrated.

1.1. The EIS needs to map the following features relevant to flooding as described in the Flood Risk Management Manual 2023 (DPE 2023) including:

a) Flood Prone Land.

b) Flood Planning area, the area below the flood planning level.

c) Hydraulic categorisation (floodways and flood storages).

d) Flood hazard.

1.2. The EIS needs to describe flood assessment and modelling completed to determine the design flood levels for events. This needs to include a minimum of the 5% Annual Exceedance Probability (AEP), 1% AEP flood levels and the probable maximum flood, or an equivalent extreme event.

1.3. The EIS needs to model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios:

a) Current flood behaviour for a range of design events. This includes the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.

1.4. Modelling in the EIS needs to consider and document:

a) Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies.

b) The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood.

c) Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories.

d) Related provisions of the NSW Flood Risk Management Manual (DPE 2023).

1.5. The EIS needs to assess the impacts on the proposed development on flood behaviour, including:

a) Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.

b) Consistency with Council Flood/Floodplain Risk Management Plans.

c) Consistency with any Rural Floodplain Management Plans.

d) Compatibility with the flood hazard of the land.

e) Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.

f) Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.

g) Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses.

h) Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the State Emergency Services (SES) and Council.

i) Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council.

j) Emergency management, evacuation and access, and contingency measures for the development considering the full range or flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and hae the support of Council and the SES.

k) Any impacts the development may have on the social and economic costs to the community as consequence of flooding.

Biodiversity

A Bird and Bat Adaptive Management Plan (BBAMP) based on sufficient survey data and documenting commitments to monitor, mitigate and offset residual impacts to avifauna needs to be provided.

2.1. Provide a BBAMP as an Appendix to the BDAR as is required by section 2.7 of the BAM Operational Manual Stage 2.

3.1. Establish a BBUS survey program with sufficient coverage of the site.

3.2. Complete a further 12 months of bird and bat utilisation surveys including at height data as part of the BBUS program.

3.3. Include all seasons of bat utilisation survey results in a revised BDAR.

The BDAR requires additional information to demonstrate that impacts have been avoided and minimised, including to SAII entities.

4.1. Update section 7 of the BDAR to specifically detail of how impacts to biodiversity have been avoided, including a table showing the impacts on biodiversity and how impacts have been avoided/reduced throughout the assessment process.

4.2. Update Figure 7-1 to map biodiversity values.

4.3. Update section 7.1.2 to discuss how the chosen wind turbine generators will avoid or minimise impacts on biodiversity values, and why these turbines were chosen over others.

4.4. Explore options to avoid and minimise impacts to biodiversity and document them in the BDAR.

4.5. Provide meaningful buffers between turbines and stick nests to avoid and minimise impacts to resident raptors, with the buffers chosen based on evidence from literature,.

4.6. Where applicable, detail the measures or options considered but not implemented because they are not feasible and/or practical.

5.1. Review the project design to avoid known Plains-wanderer habitat. This should include through using existing access tracks wherever possible (see also issue 19)

6.1. Review the SAII assessment after completing targeted seasonal surveys for the assumed SAII flora species.

PCT, Threatened Ecological Communities (TEC), and vegetation zone identification and mapping need to be revised and the biodiversity credit calculation updated.

7.1. Revise the PCT mapping to more accurately reflect vegetation and edaphic patterns evident on aerial imagery including wetlands and gilgai.

7.2. Sample additional VI plots to capture wetland and gilgai habitats and to demonstrate that the PCT allocation and vegetation condition across the subject land has been adequately sampled and mapped.

8.1. Update each BAM-C child case for each stage to only include VI plots collected for that stage.

8.2. Where VI plots from another stage are required to make up for a shortfall in the required VI plots, provide justification in the BDAR for each plot on why it is suitable to use in the vegetation zone.

8.3. Collect additional VI plots where plots are not within the vegetation zone for each stage of the development footprint.

New BioNet records for threatened flora, including SAII species, should be included in the assessment to guide avoidance and mitigation measures.

9.1. Review BioNet records for threatened flora identified as present on the subject land and consider these as part of revising the species polygons, and the avoid and minimise and mitigation measures in the RTS.

9.2. Submit specimens of *Eleocharis obicis* recorded in VI plots to a recognised herbarium. If confirmed to be present, revise the BDAR to assess impacts to *Eleocharis obicis*, include measures to avoid and minimise impacts, identify locations and specific mitigation measures, and prepare a species polygon to offset any residual impacts.

9.3. Add *Eleocharis obicis* as a candidate species to the BAM-C and complete surveys in suitable potential wetland and gilgai habitats.

Targeted survey methods and preparation of species polygons need to be correctly applied to ensure the credit calculation is accurate.

10.1. Use existing and revised PCT mapping (issue 7) and existing records (issue 9) to inform surveys in suitable microhabitats for *Pilularia novae-hollandiae*.

11.1. Ensure survey effort for the Koala meets requirements of relevant guidelines and the TBDC.

12.1. Provide justifications for species polygons buffers. In areas where there are small gaps between species polygons in the same associated PCT, review the extent of suitable habitat in the species polygon.

12.2. Revise the *Pilularia novae-hollandiae* species polygon to incorporate PCTs and habitats associated with PEC East records for the species in the subject land.

12.3. Complete additional targeted surveys before the RTS report is submitted for assumed presence flora species, and update species polygons subject to outcomes of survey results.

Some direct, indirect and prescribed impacts need to be appropriately assessed.

13.1. Update the BDAR to include all impacts to native vegetation and threatened species associated with the haul route(s).

14.1. Update Table 8-6 of the BDAR to consider noise impacts caused by wind turbine operation.

14.2. Update Table 8-6 of the BDAR to provide additional information to support the predicted severity of indirect impacts in accordance with section 8.2 (1) (c) of the BAM.

14.3. Review and update Table 8-6 to ensure all impacts and consequences are documented.

15.1. Prepare an adaptive management plan to address impacts that are infrequent or difficult to measure such as vehicle strike impacts to the Southern Bell Frog.

15.2. Remaining residual impacts should be offset via additional biodiversity credits if residual prescribed impacts cannot be adequately avoided or mitigated.

16.1. Assess the risk of sedimentation (from construction and operation) on threatened species habitat for individual species during and after high rainfall events when water is moving through the landscape.

16.2. Assess the impact of the new network of access tracks on habitat connectivity for threatened entities.

16.3. Assess the impact of altered hydrology due to clearing for turbines and location of new or upgraded tracks on microhabitat for threatened flora associated with localised wetlands or gilgai.

16.4. Update section 2.5 and 8.2.3 to include a discussion of connectivity features for avifauna and aquatic fauna. Section 8.3.2 should specifically discuss the impact of the project on avifauna connectivity such as flyways.

16.5. Assess vehicle strike impacts for all roads and tracks constructed or used for the project, including those used for the haulage route.

16.6. Detail the nature and extent of night vehicle movement.

16.7. Revise the assessment to include all additional species at risk of vehicle strike.

17.1. Update Figure 6-3 to include migratory flight paths and other predicted landscape scale flight paths.

17.2. Revise the collision risk ratings in Table 8-7.

Mitigation measures need to include more detail to demonstrate that impacts will be successfully managed.

18.1. Update Section 9 of the BDAR (including Table 9-1) to detail auditable mitigation and management measures that follow the SMART principles.

Matters of National Environmental Significance

19.1. Conduct a review of project design to avoid known Plains-wanderer habitat. This should include use of existing access tracks wherever possible.

19.2. Apply MNES Significant impact guidelines to the Plains-wanderer to determine the potential significance of impacts.

19.3. Review the specific project risks from the EPBC project assessment notes and consider any additional measures and/or offsets that may be suitable impacts to Plains-wanderer breeding habitat outside the important mapped areas.

20.1. Revise the step 1 and 2 of the assessment criteria for the Natural Grasslands of the Murray Valley Plains TEC at the patch scale rather than at the plot level.

20.2. If required, recalculate impacts to the Murray Valley Plains TEC and reassess impacts.

21.1. Apply significant impact guidelines to MNES known or likely to occur to determine the potential significance of impacts.

21.2. Revise the BDAR to specifically address prescribed impacts to MNES.

21.3. Amend section 5, 8.6 and Appendix B of the BDAR and specifically address each of the bilateral assessment requirements as detailed in Attachment C to this response.

Other administrative matters

22.1. Provide verification of all threatened flora from a herbarium.

ATTACHMENT B BCS detailed advice for Baldon Wind Farm EIS

Flood Risk Management

BCS has reviewed the Hydrology component in Section 6.6 of the EIS.

The EIS does not address the Secretary's requirements for flooding.

1. The EIS does not include a quantitative assessment of flooding. The impact of flood events on the site and the impact of the proposed development on flood behaviour have not been demonstrated.

A revised EIS needs to include a robust flood impact and risk assessment (FIRA) and address the Secretary's requirements for flooding. The FIRA needs to detail the preparation of hydrologic and hydraulic modelling to inform a quantitative assessment of the impact of flood events on the site and demonstrate the impact of the proposed development on flood behaviour. This assessment is to include consideration of flooding originating from local overland flows as well as from breakouts from the Murrumbidgee River and Yanco Creek in major events. Previous flood assessments completed within the REZ have found that this later flooding mechanism to be relevant in this area.

Recommendations:

1.1. The EIS needs to map the following features relevant to flooding as described in the Flood Risk Management Manual 2023 (DPE 2023) including:

a) Flood Prone Land.

b) Flood Planning area, the area below the flood planning level.

c) Hydraulic categorisation (floodways and flood storages).

d) Flood hazard.

1.2. The EIS needs to describe flood assessment and modelling completed to determine the design flood levels for events. This needs to include a minimum of the 5% Annual Exceedance Probability (AEP), 1% AEP flood levels and the probable maximum flood, or an equivalent extreme event.

1.3. The EIS needs to model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios:

a) Current flood behaviour for a range of design events. This includes the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.

1.4. Modelling in the EIS needs to consider and document:

a) Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies.

b) The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood.

c) Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories.

d) Related provisions of the NSW Flood Risk Management Manual (DPE 2023).

1.5. The EIS needs to assess the impacts on the proposed development on flood behaviour, including:

a) Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.

b) Consistency with Council Flood/Floodplain Risk Management Plans.

c) Consistency with any Rural Floodplain Management Plans.

d) Compatibility with the flood hazard of the land.

e) Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.

f) Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.

g) Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses.

h) Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the State Emergency Services (SES) and Council.

i) Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council.

j) Emergency management, evacuation and access, and contingency measures for the development considering the full range or flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the SES.

k) Any impacts the development may have on the social and economic costs to the community as consequence of flooding.

Biodiversity

The Biodiversity Development Assessment Report (BDAR) at Appendix F1 does not meet the Secretary's requirements for biodiversity.

Specific advice on the BDAR and related sections in the EIS is as follows:

A Bird and Bat Adaptive Management Plan (BBAMP) based on sufficient survey data and documenting commitments to monitor, mitigate and offset residual impacts to avifauna needs to be provided.

2. A draft Bird and Bat Adaptive Management Plan needs to be prepared.

A draft BBAMP is to be prepared and appended to the BDAR before project approval to demonstrate that the proponent has identified, and can effectively manage and mitigate, prescribed impacts. As the impact from turbine strike is uncertain, the BBAMP is necessary to manage impacts during operation that may not have been predicted in the BDAR. BCS recommends that the proponent consult with BCS before preparing the BBAMP for the project.

Section 9.1.4 of the BDAR outlines some information that will be contained in the BBAMP, however there is no specific detail. The reports and information in Appendix J should be used to inform the draft BBMAP.

The BBAMP is an important tool for monitoring, mitigating and offsetting residual prescribed impacts resulting from turbine strikes and is required as an Appendix to the BDAR under section 2.7 of the BAM Operational Manual Stage 2. BCS can provide guidance regarding acceptable methods for monitoring, mitigation methods and for offsetting strikes based on experience with other similar development types in western NSW.

Recommendation:

2.1. Provide a BBAMP as an Appendix to the BDAR as is required by section 2.7 of the BAM Operational Manual Stage 2.

3. Additional Bird and Bat Utilisation Survey (BBUS) effort is required so that the BBUS can be used to reliably inform the draft BBAMP.

It is best practice to conduct at least 24 consecutive months of baseline bird and bat survey and so BCS requests this analysis be presented in the BDAR. Table 4-18 of the BDAR states bird utilisation surveys were completed in February (summer), April (autumn), August (winter), and October (spring) of 2023 and bat utilisation surveys completed in July (winter) 2022, February (summer), April (autumn), August (winter), and October (spring) of 2023 (section 4.1.3 of the BDAR). BCS requests seasonal surveys be repeated in 2024 to capture the a 24 month period of survey data (albeit non-consecutive). Additionally, Appendix J of the BDAR only includes data and analysis from the winter bat utilisation survey. The BDAR needs to include data and analysis of the summer, autumn and spring surveys.

Only nine bird utilisation survey locations and six bat utilisation survey locations were targeted for BBUS. This coverage needs to be expanded so that it is appropriate for the proposed construction and operation of 180 wind turbines. BBUS sites should be focused on proposed turbine locations, with all survey sites ideally occurring ≤ 200 metres of a proposed turbine. BCS recommends placing a 3 km x 3 km grid over the proposed development site using GIS and establish a BBUS survey site within 80 per cent of quadrants which contain proposed turbines.

Recommendations:

3.1. Establish a BBUS survey program with sufficient coverage of the site.

3.2. Complete a further 12 months of bird and bat utilisation surveys including at height data as part of the BBUS program.

3.3. Include all seasons of bat utilisation survey results in a revised BDAR.

The BDAR requires additional information to demonstrate that impacts have been avoided and minimised, including to SAII entities.

4. The BDAR needs to include more detail to demonstrate that biodiversity impacts have been avoided or minimised.

Section 7 of the BDAR outlines the constraints approach but does not detail any measures to avoid impacts to biodiversity. There is no table that details how biodiversity has been avoided and what area (ha) of biodiversity has been avoided as part of an iterative design process of biodiversity avoidance. It is not clear in Figure 7-1 what biodiversity values are being avoided/impacted in the areas removed/added. The mapped areas in Figure 7-1 of the avoidance section of the BDAR are based solely on changes to the development footprint due to Tier 1 heritage constraints. It does not demonstrate how any biodiversity impacts have been avoided.

When reviewing the threatened entities at risk of SAII in Figure 10-1, it does not appear that the proponent has made efforts to avoid impacts to Plains-wanderer records or potential habitat (see issue 5). As the Project EnergyConnect East records for *Pilularia novae-hollandiae* are not yet included, there are also no specific measures to avoid locations where the species is known to occur (see issue 9).

While section 7.1.2 broadly discusses alternative renewable energy technologies, it does not discuss how the chosen technology avoids or minimises impacts on biodiversity values, or the justification for selecting the specific turbines. Also, there has been no discussion of technologies that could be implemented to avoid or minimise on biodiversity (e.g. smart curtailment).

Efforts to avoid and minimise impacts are primarily Tier 1 avoidance which is just related to heritage matters. Approaches to avoiding impact to biodiversity are discussed in section 7.1.3, which lists all biodiversity matters under Tier 2 which is 'Avoid if possible' and includes species at risk of SAII. This is not consistent with Stage 2 of the BAM and does not demonstrate that the hierarchy of avoid, minimise and offset has been applied. Also, some of the proposed minimisation efforts need to be revised to ensure they are adequate, such as the 100-metre buffer from turbines to known Little Eagle nests.

It is unclear whether any avoid or minimise measures or options were considered but not implemented because they were not feasible and/or practical.

Recommendations:

4.1. Update section 7 of the BDAR to specifically detail of how impacts to biodiversity have been avoided, including a table showing the impacts on biodiversity and how impacts have been avoided/reduced throughout the assessment process.

4.2. Update Figure 7-1 to map biodiversity values.

4.3. Update section 7.1.2 to discuss how the chosen wind turbine generators will avoid or minimise impacts on biodiversity values, and why these turbines were chosen over others.

4.4. Explore options to avoid and minimise impacts to biodiversity and document them in the BDAR.

4.5. Provide meaningful buffers between turbines and stick nests to avoid and minimise impacts to resident raptors, with the buffers chosen based on evidence from literature,.

4.6. Where applicable, detail the measures or options considered but not implemented because they are not feasible and/or practical.

5. Impacts to Plains-wanderer habitat and recorded locations need to be avoided.

There is no evidence in section 7.1.3 of the BDAR that Plains-wanderer habitat has been avoided. Plains-wanderer is nationally critically endangered and a SAII entity, so BCS expects the proponent to avoid known habitat. The avoidance measures in the BDAR for this species are restricted to avoiding active nests through a preclearing protocol to "identify higher risk times (such as breeding season) and locations and implement preclearing inspections ahead of the construction front." These actions are not ways to avoid impacts but rather are mitigation measures to reduce impacts.

BCS acknowledges that there are no important mapped areas in the project site as this mapping currently does not extend as far west as the project site. However, 21 individual birds, including four chicks, were observed during targeted surveys. No evidence has been provided to show that any of these locations, including associated PCTs, have been avoided or impacts minimised.

Figure 1 is an example of a known location of three Plains-wanderer records from targeted surveys. The development footprint including wind turbine generators (WTGs), and access tracks runs through areas of native vegetation and known habitat for the species. There is an existing access track to the south within 30 metres, which has not been used in project design to avoid impacts to this species and native vegetation. There are similar scenarios throughout the subject land where access tracks have not been designed to avoid and minimise impacts by using existing access tracks.

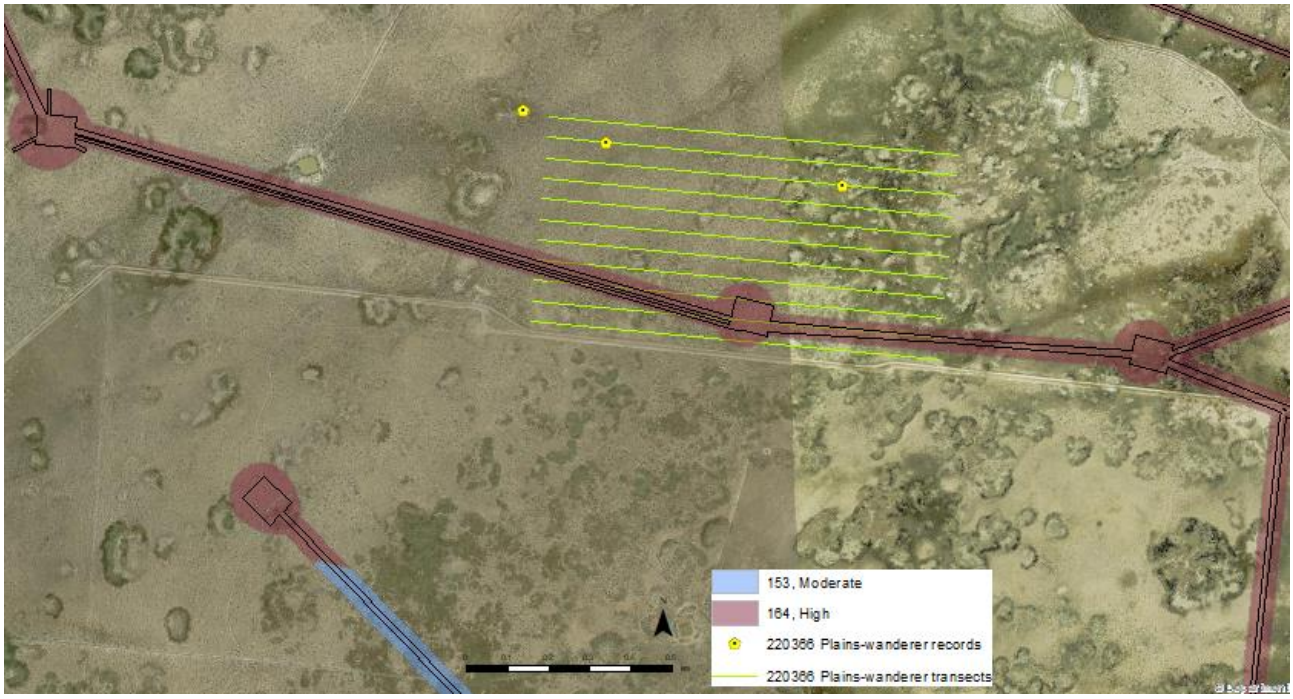

Figure 1: Example of location where avoidance of Plains-wanderer known habitat has not occurred. A new access track has been placed in native vegetation and the proponent has not used the nearby existing farm access track (to the south).

Recommendation:

5.1. Review the project design to avoid known Plains-wanderer habitat. This should include through using existing access tracks wherever possible (see also issue 19)

6. Potential SAII are unknown as flora species are assumed to be present.

The SAII assessment in section 10 of the BDAR includes *Convolvulus tedmoorei* and *Pilularia novae-hollandiae* which have been assumed present. There is an assumption in the BDAR that impacts to these species is 'unlikely' as surveys will be conducted prior to construction and where the species are recorded, they will be avoided where possible. The wording 'where possible' does not provide a commitment to avoid impacts to potential SAII species. BCS recommends that targeted seasonal surveys be completed for these assumed species including microhabitats for *Pilularia novae-hollandiae* (see issue 10) during the RTS period to inform avoidance and enable an accurate assessment of SAII.

Recommendation:

6.1. Review the SAII assessment after completing targeted seasonal surveys for the assumed SAII flora species.

PCT, Threatened Ecological Communities (TEC), and vegetation zone identification and mapping need to be revised and the biodiversity credit calculation updated.

7. Variability across PCT 164 does not account for wetland areas and gilgai habitats.

The BDAR has mapped about 2,188 hectares of PCT 164 in the development footprint in two vegetation zone conditions (high and moderate). A review of these vegetation zones on recent aerial imagery shows apparent changes in vegetation with clearly visible smaller wetlands and gilgais (see Figure 2).

For example, Figure 3-19 and Appendix L.1 shows the soil and vegetation patterns that have all been mapped as PCT 164 in high condition state. The accredited assessor has not captured the differences in soils and vegetation that support ephemeral wetlands and gilgai in the stratification of BAM plots and vegetation zones.

BCS notes that adjoining major projects have mapped PCT 164 with smaller wetland areas of other PCTs and specifically mapped gilgai habitats. These gilgai habitats have recent records of the threatened *Pilularia novae-hollandiae* and in some cases *Eleocharis obicis*. In addition, EnergyConnect East also identified *Pilularia novae-hollandiae* in drying mud of gilgai habitats in the Baldon site between WTG 66 and 67 (see issue 9).

Because some of these smaller wetland habitats have not been identified in PCT and vegetation zone mapping, associated candidate species have not been included in potential survey effort, e.g. *Eleocharis obicis*.

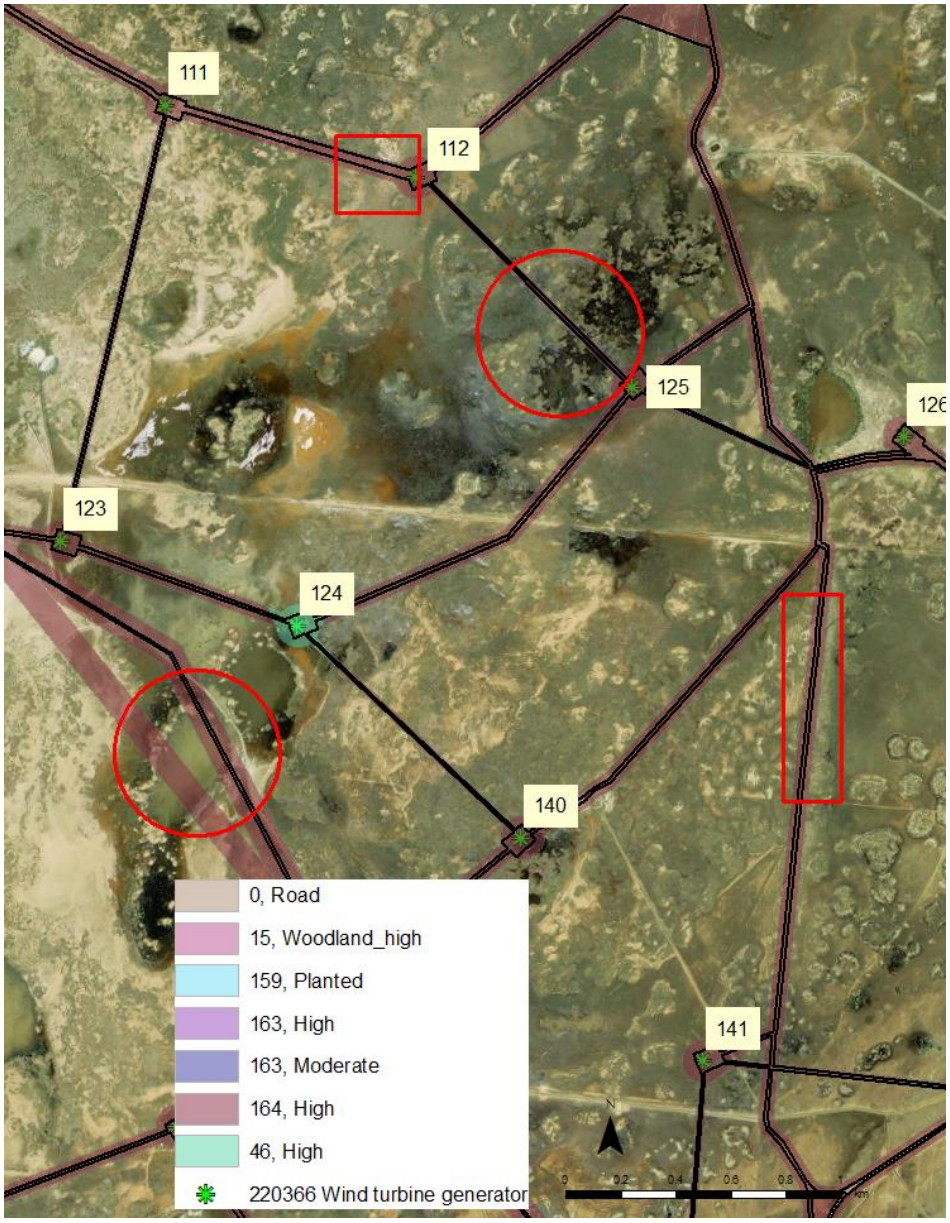

Figure 2: Example of areas in red outline, within vegetation zone 'PCT 164 high' where changes in PCT and/or vegetation zones supporting microhabitats may have been misidentified.

Recommendations:

7.1. Revise the PCT mapping to more accurately reflect vegetation and edaphic patterns evident on aerial imagery including wetlands and gilgai.

7.2. Sample additional VI plots to capture wetland and gilgai habitats and to demonstrate that the PCT allocation and vegetation condition across the subject land has been adequately sampled and mapped.

8. Vegetation integrity (VI) scores need to be revised for each project Stage.

Stage 1 and stage 2 of the proposed development have different impact areas for each vegetation zone and some different PCTs. The VI plots entered in the BAM Calculator (BAM-C) for each stage have used the same VI plot data for each vegetation zone regardless of area and location of VI plots in the stage 1 or stage 2. This means the VI score for vegetation zones in each stage are the same.

Where there is a shortfall in the number of VI plots for a vegetation zone, the BDAR should justify including VI plots from a different stage. Similarly, where the area of the vegetation zone for a stage has enough plots within the stage, VI plots from the other stage should not be used. This will ensure the VI score is most accurately reflected within the vegetation zone in each stage.

BCS recommends that the accredited assessor review the plot placement and provide justification for the placement. Where the accredited assessor does not include any plots in a vegetation zone within a stage, they need to collect additional VI plots to reflect actual conditions within the impact area or provide suitable justification for use of nearby plots.

Recommendations:

8.1. Update each BAM-C child case for each stage to only include VI plots collected for that stage.

8.2. Where VI plots from another stage are required to make up for a shortfall in the required VI plots, provide justification in the BDAR for each plot on why it is suitable to use in the vegetation zone.

8.3. Collect additional VI plots where plots are not within the vegetation zone for each stage of the development footprint.

New BioNet records for threatened flora, including SAII species, should be included in the assessment to guide avoidance and mitigation measures.

9. Threatened flora recorded for Project EnergyConnect and on adjacent proposed wind farms should be included in the revised BDAR.

BioNet has recently been updated to include threatened species records from September 2022 (post-approval) for Project EnergyConnect Eastern (PEC East) and September 2023 from the Tchelery Wind Farm proposal immediately east of Baldon Wind Farm. The records include *Pilularia novae-hollandiae, Maireana cheelii, Brachyscome papillosa* and *Eleocharis obicis* on the subject land, as shown in Figures 3, 4 and 5 below. We acknowledge the time-lag for record availability via BioNet, however as part of revising the BDAR, these records should be included and the proponent should make appropriate efforts to avoid, minimise or mitigate impacts to associated habitats and locations. BCS can provide these locations as a shapefile if required.

While it does not appear to have been predicted by the BAM-C, *Eleocharis obicis* occurs in similar habitats to *Pilularia novae-hollandiae* and is identified as occurring in VI plots 5, 6 and 7 (BDAR Appendix A Vegetation integrity plot data). If it has not already occurred, BCS recommends verifying the species identification of *Eleocharis obicis* specimens (and the unidentified *Eleocharis* in plot 125) by a recognised herbarium (see issue 22).

Eleocharis obicis records from the recent major projects in the region are temporarily in quarantine in BioNet pending confirmation, however BCS is aware that the Tchelery Wind Farm records have been verified.

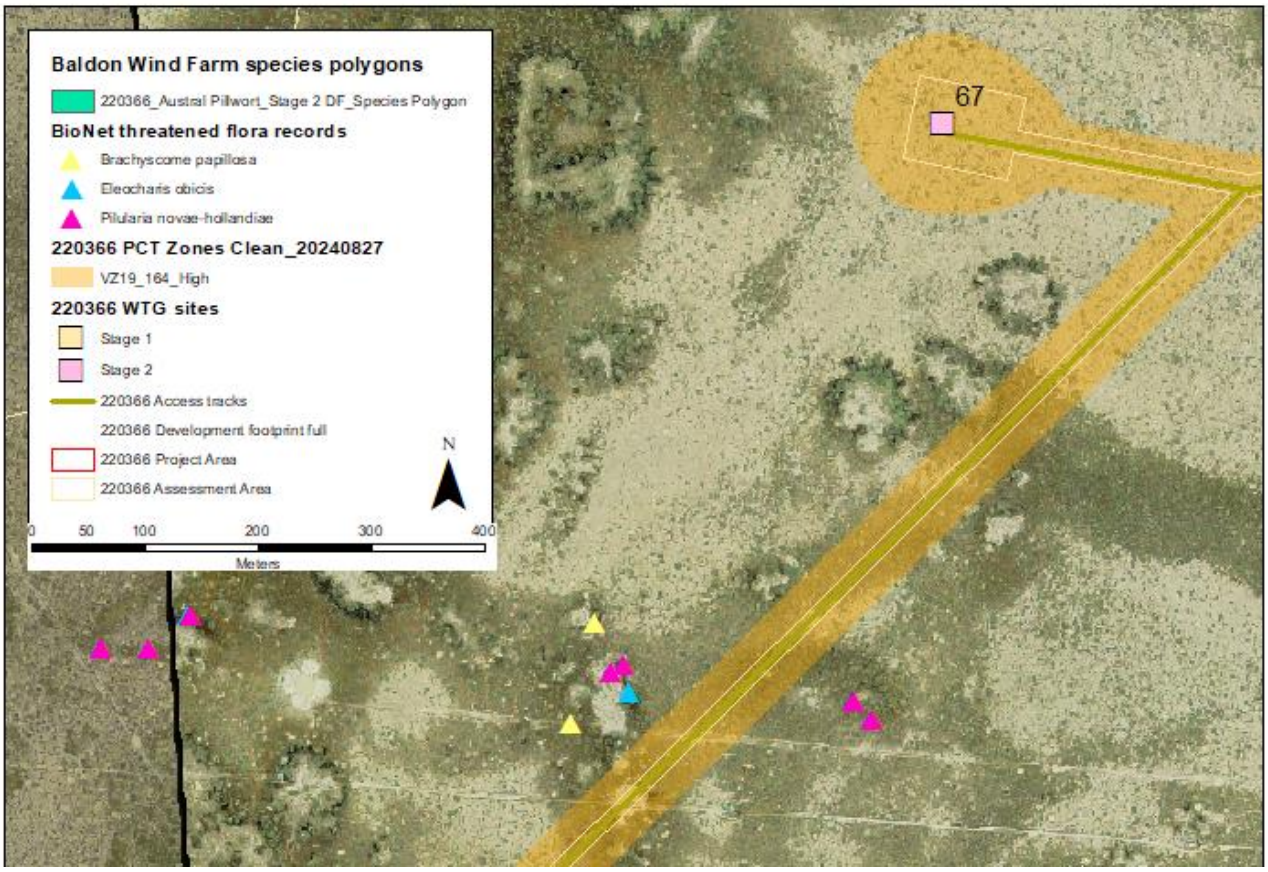

Figure 3: Example of *Pilularia novae-hollandiae* records from PEC East that are in BioNet, which should be used to inform assumed presence species polygons (see also issue 10).

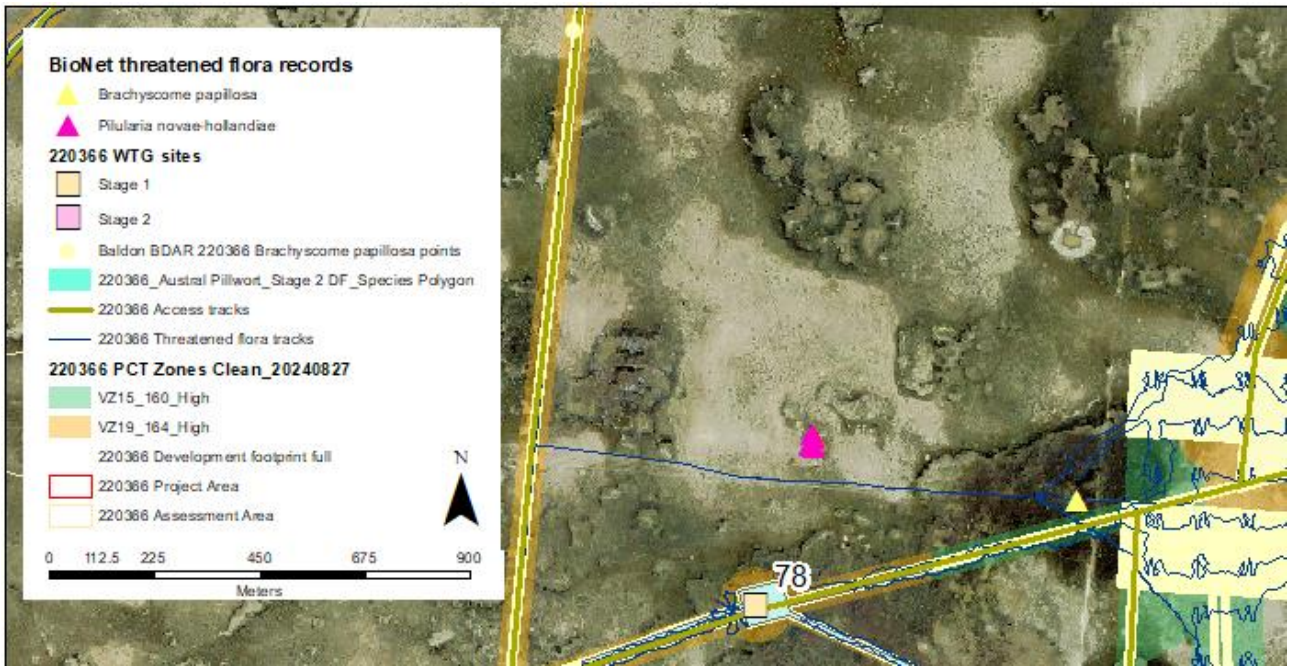

Figure 4: BioNet records for *Pilularia novae-hollandiae* present on the subject land near Turbine 78 that should be considered in the RTS to revise species polygons, along with avoid and minimise and mitigation measures.

Figure 5: BioNet records for *Maireana cheelii* and *Pilularia novae-hollandiae* present on the subject land near Turbine 91 to be considered in the RTS to revise species polygons, along with avoid and minimise and mitigation measures.

Recommendations:

9.1. Review BioNet records for threatened flora identified as present on the subject land and consider these as part of revising the species polygons, and the avoid and minimise and mitigation measures in the RTS.

9.2. Submit specimens of *Eleocharis obicis* recorded in VI plots to a recognised herbarium. If confirmed to be present, revise the BDAR to assess impacts to *Eleocharis obicis*, include measures to avoid and minimise impacts, identify locations and specific mitigation measures, and prepare a species polygon to offset any residual impacts.

9.3. Add *Eleocharis obicis* as a candidate species to the BAM-C and complete surveys in suitable potential wetland and gilgai habitats.

Targeted survey methods and preparation of species polygons need to be correctly applied to ensure the credit calculation is accurate.

10. Microhabitats and survey effort for *Pilularia novae-hollandiae* need to be approproiately estimated.

Pilularia novae-hollandiae has been appropriately maintained as a candidate species, however surveys have not been completed in all appropriate microhabitats in the development footprint.

As identified in issue 7, there are large areas of microhabitats of gilgai and shallow depressions that have not been mapped as appropriate PCTs or microhabitats. Consequently, known gilgai habitats for *Pilularia novae-hollandiae* are likely under-surveyed. This is because areas of wetland and gilgai seem to have been identified as PCT 164, which is not an associated PCT for this species, resulting in targeted surveys not being completed.

This species has been recorded within 100 metres of the development footprint for PEC East and the proposed neighbouring Tchelery Wind Farm (see issue 9).

Recommendation:

10.1. Use existing and revised PCT mapping (issue 7) and existing records (issue 9) to inform surveys in suitable microhabitats for *Pilularia novae-hollandiae*.

11. Ensure survey effort meets threatened species survey requirements.

Threatened species surveys need to be conducted as per section 5.3 of the BAM, which requires surveys to comply with the Department's threatened species survey guides and the Threatened Biodiversity Data Collection (TBDC). Table 4-20 states that spotlighting and no additional survey method were completed due to the 'limited amount of habitat, including lack of connectivity between woodland habitat, small woodland patch sizes and limited Koala records'.

As PCTs associated with the species and koala feed trees have been identified on site, further justification is required to show how section 3.2 of the Koala (*Phascolarctos cinereus*): Biodiversity Assessment Method Survey Guide has been met.

Recommendation:

11.1. Ensure survey effort for the Koala meets requirements of relevant guidelines and the TBDC.

12. Species polygons need to be consistent with section 5.2.5 and Box 2 of the BAM.

Species polygon buffers for observed 'area' threatened flora species need to be prepared in accordance with section 5.2.5 and Box 2 of the BAM. Justification needs to be provided for using a 50-metre buffer for *Maireana cheelii* and 100 metre buffer for *Brachyscome.* It is also not clear why small gaps of suitable habitat in associated PCTs between species polygons have been excluded (see Figure 6).

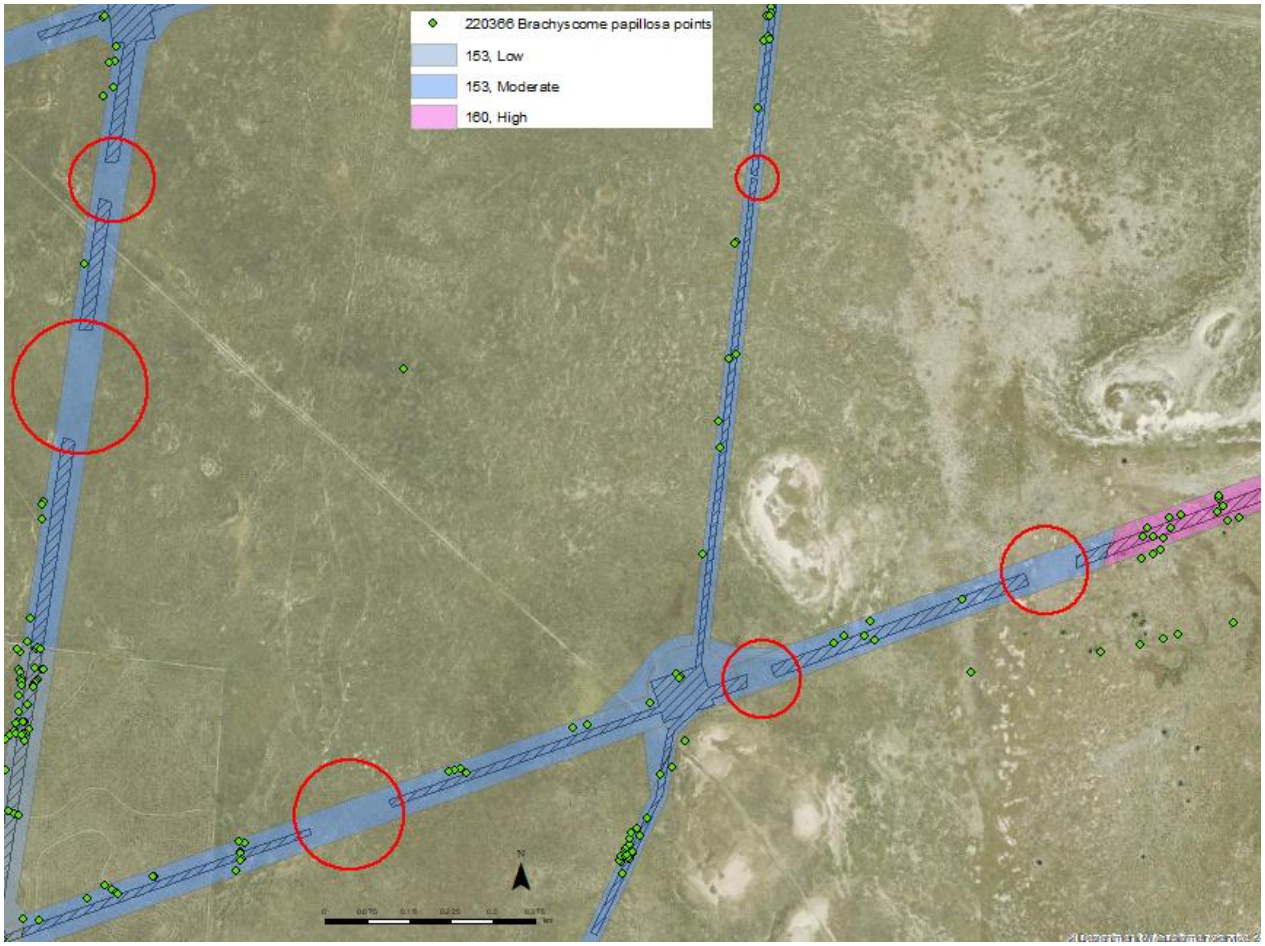

Figure 6: Example of species polygon buffers and approach for *Brachyscome papillosa*. Red circles represent gaps between observed records and species polygons in associated PCTs.

The species polygon for *Pilularia novae-hollandiae* should be revised to address the BioNet records that are present on the PEC East alignment, as identified in issue 9. The polygon should be extended to include any additional associated habitats due to the location of these records.

BCS agrees with the precautionary approach for assumed presence flora species polygons where surveys have not been completed in survey seasons mostly due to changes in the development footprint. Targeted surveys should be completed for all assumed presence flora species in the RTS period to reduce assumed presence as much as possible.

Recommendations:

12.1. Provide justifications for species polygons buffers. In areas where there are small gaps between species polygons in the same associated PCT, review the extent of suitable habitat in the species polygon.

12.2. Revise the *Pilularia novae-hollandiae* species polygon to incorporate PCTs and habitats associated with PEC East records for the species in the subject land.

12.3. Complete additional targeted surveys before the RTS report is submitted for assumed presence flora species, and update species polygons subject to outcomes of survey results.

Some direct, indirect and prescribed impacts need to be appropriately assessed.

13. The direct impact assessment needs to include impacts associated with the haul route.

Table 8-1 does not include any impacts for clearing of native vegetation along the haul route. The Traffic Impact Assessment at Appendix F5 states that vegetation clearing will be required for haul routes 1, 3 and 4 from Port Adelaide, and haul routes 1 and 2 from the Port of Newcastle, however no impacts have been assessed.

Recommendation:

13.1. Update the BDAR to include all impacts to native vegetation and threatened species associated with the haul route(s).

14. The indirect impact assessment should include turbine noise and loss of fauna habitat.

Table 8-6 of the BDAR states that reduced viability of adjacent habitat due to increased noise would be 'rare'. However, wind turbine noise has been found by Teff-Seker et al. (2022) to alter the natural acoustic environment by introducing airborne load broadband sound which is within the hearing range of a variety of fauna, including most bird species. It has been shown that noise pollution affects species demography and may lead to habitat avoidance. Table 8-6 should consider the noise thresholds for the threatened species known to inhabit the subject land.

Table 8-6 of the BDAR states that an increased risk of starvation, exposure and loss of shelter and shade is minor for Southern Bell Frog, Plains-wanderer and White-fronted Chat though there is minimal justification for these claims. The Southern Bell Frog requires a network of various waterbodies, but the BDAR does not acknowledge this niche requirement, and also does not comment on the impacts to the local populations.

Plains-wanderer is a SAII species due to its limited distribution. As noted in issue 19, the project will impact areas of habitat considered by the Australian Government to be "*critical to the survival of the Plains-wanderer*". Further justifications are required to support the finding of minor impacts.

Additionally, the list is incomplete and should include the other species known or likely to use the project area (as noted in Table 4-10 of the BDAR). All species using the site should be considered.

Table 8-6 does not detail the consequences of all indirect impacts, or the consequences on all species likely to be affected. For example, rubbish dumping could lead to increased predator/pest animal populations through additional food sources, which could in turn affect Plains-wanderer and other fauna at risk of predation.

Construction impacts such as trenching need to be considered as there is a risk that open trenches could inadvertently trap animals. For example, it is not clear how long the trenches will be open and what the consequences are of animals falling into them.

Recommendations:

14.1. Update Table 8-6 of the BDAR to consider noise impacts caused by wind turbine operation.

14.2. Update Table 8-6 of the BDAR to provide additional information to support the predicted severity of indirect impacts in accordance with section 8.2 (1) (c) of the BAM.

14.3. Review and update Table 8-6 to ensure all impacts and consequences are documented.

15. The prescribed impact assessment and proposed mitigation measures need to adequately address impacts of vehicle strike on Southern Bell Frog.

Vehicle strike is a listed threat for Southern Bell Frog. Due to the high number of individuals and locations of Southern Bell Frog records, BCS considers vehicle strike impacts highly likely. BCS considers that the BDAR does not adequately mitigate the threat of vehicle strike.

Section 8.3.5 of the BDAR states that:

> *"a study of vertebrate mortalities in Indiana (USA) calculated 6.7 kills/km surveyed for herpetofauna between March 2005-July 2006 (Glista, DeVault & DeWoody, 2008), this is compared to 0.24 kills/km surveyed for mammals. The applicability of these number to Southern Bell Frog, a large, mobile species is unclear, particularly in the absence of relevant transport data*".

The BDAR (page 200) then states that *'Vehicle speed protocols will be developed to address higher risk periods at night and during/following wet weather'* but does not detail what the vehicle speed protocol would consist of, where it would be implemented and how the protocol would be successful in mitigating the vehicle strike threat to Southern Bell Frog. In accordance with section 8.4.2 (2) (c) of the BAM, the proponent should consider the risk that the measure may not be successful.

The proponent should use an adaptive management plan to address impacts that are infrequent or difficult to measure. Alternatively, if the proponent cannot adequately avoid or mitigate residual prescribed impacts, they should offset the remaining residual impacts via additional biodiversity credit (above the credit requirement generated by BAM-C for direct impacts) and/or other listed conservation measures in accordance with section 6.1.2 (b) of the Biodiversity Conservation Regulation 2017.

Recommendations:

15.1. Prepare an adaptive management plan to address impacts that are infrequent or difficult to measure such as vehicle strike impacts to the Southern Bell Frog.

15.2. Remaining residual impacts should be offset via additional biodiversity credits if residual prescribed impacts cannot be adequately avoided or mitigated.

16. Prescribed impacts need to be assessed for each impacted entity.

The prescribed impact assessment identifies general impacts to some flora and fauna. Section 8.3.3 discusses the impacts of development on water quality, water bodies and hydrological process for species such as Southern Bell Frog. This section should be revised to ensure impacts to threatened flora associated with localised wetlands or gilgai, including *Pilularia novae-hollandiae* and *Eleocharis obicis*, are adequately considered along with impacts such as sedimentation. With the suite of earthworks required for the proposed developments, including for tracks and tower pads, it is highly likely that sediment will be mobilised in high rainfall events which could lead to sedimentation of aquatic and wetland habitats.

The TBDC lists drainage of swamps as the primary threat to *Pilularia novae-hollandiae*. Ground disturbance in proximity to any population has the potential to change localised landforms that contribute to watering gilgai habitats, overland flows, wetland hydrology, runoff and sedimentation, and disruptions in connectivity between these habitats during high rainfall.

Section 2.5 and 8.3.2 broadly discuss the impacts to connectivity but do not address these impacts for all species potentially impacted. We anticipate that connectivity for fauna species such as Plains-wanderer and Southern Bell Frog is likely to be impacted as existing habitat will become fragmented by the proposed development. The proponent needs to assess how the new network of access tracks throughout the site alters/reduces habitat connectivity, particularly for ground-dwelling threatened fauna including Plains-wanderer.

Also, while the proponent has identified some species at risk of prescribed impacts such as turbine strike and vehicle strike, the proponent has not listed any species have for other prescribed impacts such as human made structures and habitat connectivity. As the route for transporting turbine components and blades was not included in the BDAR, there is no consideration of the impact of vehicle strike along this route, including the implications of travel timing. The proponent needs to complete further assessment for transporting over-size/over-mass items from Port Adelaide and the Port of Newcastle and consider whether this transport will be restricted to night hours. The vehicle strike assessment needs to include all threatened fauna at risk across all roads and access tracks being used for the project, including the impacts from transporting turbine components and blades.

Recommendations:

16.1. Assess the risk of sedimentation (from construction and operation) on threatened species habitat for individual species during and after high rainfall events when water is moving through the landscape.

16.2. Assess the impact of the new network of access tracks on habitat connectivity for threatened entities.

16.3. Assess the impact of altered hydrology due to clearing for turbines and location of new or upgraded tracks on microhabitat for threatened flora associated with localised wetlands or gilgai.

16.4. Update section 2.5 and 8.2.3 to include a discussion of connectivity features for avifauna and aquatic fauna. Section 8.3.2 should specifically discuss the impact of the project on avifauna connectivity such as flyways.

16.5. Assess vehicle strike impacts for all roads and tracks constructed or used for the project, including those used for the haulage route.

16.6. Detail the nature and extent of night vehicle movement.

16.7. Revise the assessment to include all additional species at risk of vehicle strike.

17. The assessment of flight paths and collision risk needs to be revised.

While Figure 6-3 of the BDAR shows the habitual flight paths for nomadic and migratory species within the project area, it does not map any landscape scale or migratory flight paths over the subject land. BCS expects to see maps showing flight paths of relevant migratory species that may fly over the site during migration events and flight paths of waterbirds that may fly between areas such as Gayini and the Edward Wakool system.

The risk ratings assigned in Table 8-7 appear to be underestimated for several species. For example, raptors are listed as low risk of collision as they are considered “widespread and common”, even though some of the raptors are threatened species under the *Biodiversity Conservation Act 2016* (BC Act). BCS considers that it is generally accepted that raptors are at risk of turbine strike, in contrast to the BDAR which states they have a low collision risk.

Recommendations:

17.1. Update Figure 6-3 to include migratory flight paths and other predicted landscape scale flight paths.

17.2. Revise the collision risk ratings in Table 8-7.

Mitigation measures need to include more detail to demonstrate that impacts will be successfully managed.

18. Mitigation measures should be detailed in the BDAR to demonstrate effective management of impacts and to give confidence that the offset liability is adequate.

BAM section 8.4 requires that all measures to mitigate and manage impacts are documented in detail in the BDAR. Table 9-1 states that the Biodiversity Management Plan (BMP) will include measures for:

- Fauna management
- Vegetation management
- Restoration and rehabilitation
- Weed, pest and pathogen management, and
- Specific mitigation measures for prescribed impacts.

However, Table 9-1 and the BDAR lacks specific detail for some proposed mitigation and management measures and includes language that does not include clear commitments. For example, for areas of assumed presence for *Convolvulus tedmoorei* and *Pilularia novae-hollandiae*, Table 9-1 states that pre-construction surveys will be completed, and the plants would be avoided if detected, where possible. Avoidance 'where possible' is not a binding commitment and Table 9-1 does not demonstrate how construction methods, locations or ancillary works would feasibly be modified based on locating these species.

All mitigation measures should follow the SMART principles (specific, measurable, achievable, relevant, and time-bound) and be detailed in the BDAR. The proponent should detail measures according to BAM section 8.4 up front, not defer this step until they prepare post-approval management plans (such as the BMP). Table 9-1 needs to demonstrate how each proposed measure will be effective and provide evidence of successful implementation in similar environments.

Measures need to be given unique identifiers for auditing purposes and to ensure each measure is tracked through the consent and post-approval processes. This also applies to measures in the EIS.

Recommendation:

18.1. Update Section 9 of the BDAR (including Table 9-1) to detail auditable mitigation and management measures that follow the SMART principles.

Matters of National Environmental Significance

19. Impacts to Plains-wanderer to address the specific project risks is unclear.

The project assessment notes for the EPBC referral (2024-09772) highlight the project as being a specific risk to the Plains-wanderer:

> *'From data provided by NGH, the Plains-wanderer has been identified multiple times in sparse, low chenopod shrubland inside the project area during the day. Based on the Plains-wanderer Recovery Plan, this vegetation is considered atypical for the species with the chenopod shrubland covering approximately 83% of the total project area. With this recent survey data the department considers the entire project area to be habitat critical to the Plains-wanderer'.*

The BDAR needs to include avoid and minimise measures applying to habitat in associated PCTs and PCTs where the species has been atypically recorded. Sections 5 and 8.6 and Appendix B of the BDAR address potential MNES, however the proponent has not applied the MNES Significant impact guidelines 1.1 (DoE 2013) to any EPBC listed species known or likely to occur from Appendix B2.

For BCS and the Australian Government to assess the potential impacts to MNES, the significant impact guidelines need to be applied, and potential significant impacts to species and communities identified.

In accordance with the bilateral agreement, biodiversity offsets for Plains-wanderer at this site are outside the important mapped areas and no breeding species credits are created. Table 13-1 of Appendix B-4 identifies 25,410 ecosystem credits of suitable foraging habitat for the Plains-wanderer. This includes PCT 46 and the non-associated PCTs 163 and 164.

Despite the subject land being outside the important mapped areas for Plains-wanderer, targeted surveys have identified that breeding is occurring on the site. The proponent has not identified ways they will avoid breeding habitat and has only included pre-clearing surveys and operational management (e.g. reduced vehicle speeds and predator control) as mitigation measures.

Appendix B.4 of the BDAR specifically states that:

> *"The Plains-wanderer is at risk of injury or death within breeding sites if nests go undetected during habitat disturbance activities. Additionally, vehicle strikes pose a significant threat to both the plains wanderer and the southern bell frog. All residual impacts will be offset in accordance with the NSW BOS and are outlined in Table 13-1."*

The proponent has not offset residual impacts to breeding habitat for the Plains-wanderer as they are outside the important mapped areas. Pending the outcomes of applying the significant impact guidelines, additional offsets or other measures may be required to offset impacts to breeding habitat of the Plains-wanderer outside the important mapped areas.

Recommendations:

19.1. Conduct a review of project design to avoid known Plains-wanderer habitat. This should include use of existing access tracks wherever possible.

19.2. Apply MNES Significant impact guidelines to the Plains-wanderer to determine the potential significance of impacts.

19.3. Review the specific project risks from the EPBC project assessment notes and consider any additional measures and/or offsets that may be suitable impacts to Plains-wanderer breeding habitat outside the important mapped areas.

20. The area of EPBC-listed Natural Grasslands of the Murray Valley Plains Threatened Ecological Community needs to be assessed at the patch scale.

The proponent has appropriately assessed the natural grasslands against the Australian Government listing advice (Table 5-1). However, the listing advice criteria specifically refers to assessment at the 'patch' scale. Vegetation zone '46 high' occurs as discontinuous patches across the subject land. The assessor has completed the assessment in Table 5-1 against the criteria on a plot-by-plot scale regardless of whether each plot occurs in the same patch (see example in Figure 7). By limiting the criteria assessment to plots, this also does not account for the variability within the patch. While using plots to inform the assessment is appropriate, it should be supported by additional assessment across the entire connected patch.

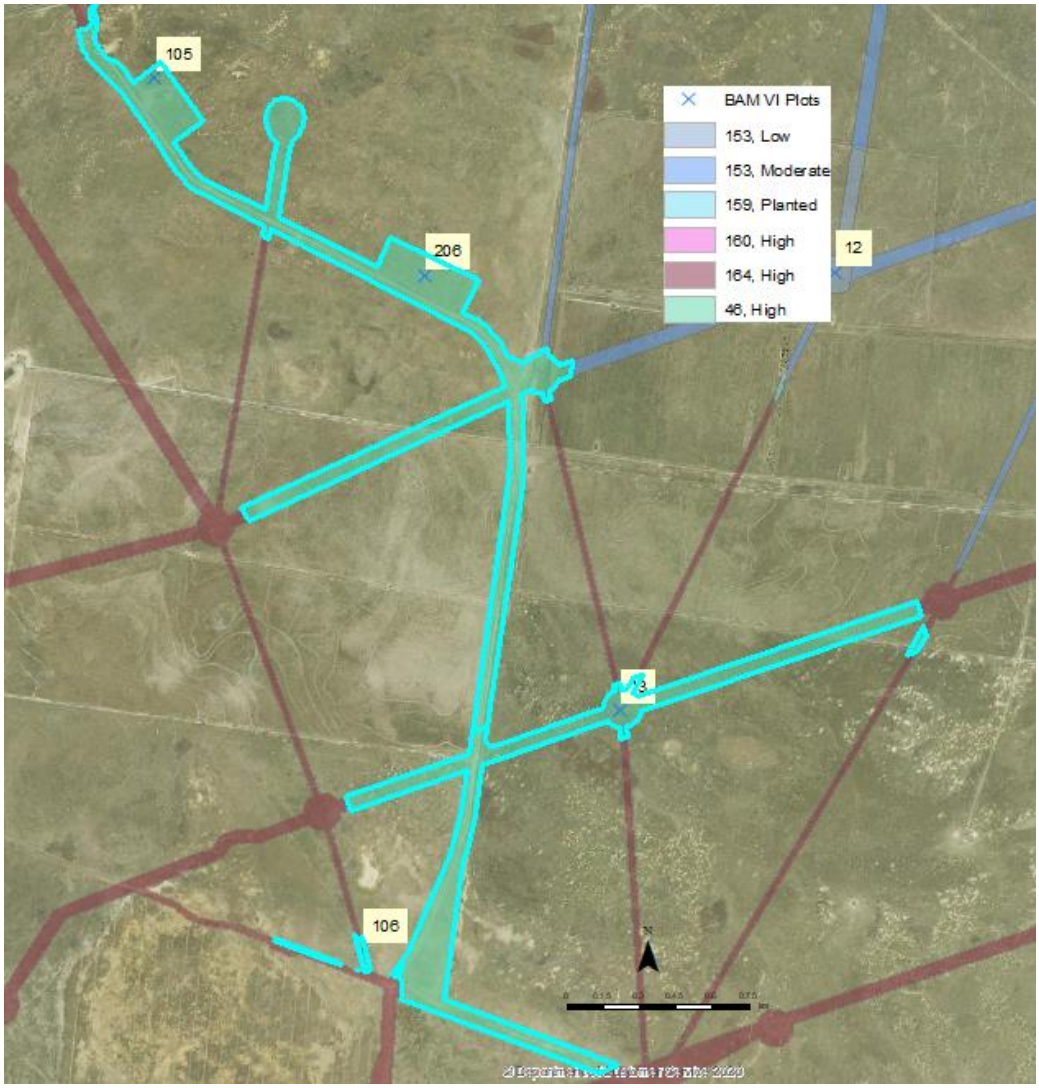

Figure 7: Connected patch of PCT 46 'high' (highlighted in blue) that has been assessed plot by plot.

Recommendations:

20.1. Revise the step 1 and 2 of the assessment criteria for the Natural Grasslands of the Murray Valley Plains TEC at the patch scale rather than at the plot level.

20.2. If required, recalculate impacts to the Murray Valley Plains TEC and reassess impacts.

21. A complete MNES assessment should be provided to address the Assessment Bilateral.

As identified in issue 19, significant impact guidelines should be applied to species and communities known and likely to occur.

The impact to MNES entities is unclear. The BDAR currently does not demonstrate that Australian Government assessment requirements for impacts to all MNES have been adequately addressed. The required MNES information under the Australian Government DCCEEW Bilateral Assessment (provided in Attachment C to this response) is not complete.

While section 8.6 and Table 8-9 identify the MNES where direct and indirect impacts are likely, the BDAR includes limited assessment of prescribed impacts to MNES. Some species are identified as possible collision risk species, but minimal other assessment is provided of prescribed impacts to MNES. The BDAR does not adequately address prescribed impacts such as human-made structures, connectivity, waterbodies, and vehicle strike for MNES species. The BDAR should be amended to specifically address prescribed impacts to MNES and specific project risks.

Recommendations:

21.1. Apply significant impact guidelines to MNES known or likely to occur to determine the potential significance of impacts.

21.2. Revise the BDAR to specifically address prescribed impacts to MNES.

21.3. Amend section 5, 8.6 and Appendix B of the BDAR and specifically address each of the bilateral assessment requirements as detailed in Attachment C to this response.

Other administrative matters

22. Any threatened flora records should be verified by a herbarium.

BCS notes that two species (*Brachyscome papillosa* and a *Convolvulus* species) were sent to a herbarium for identification. A copy of the herbarium verification has been provided in Appendix I of the BDAR. Any other threatened flora species identified during surveys should also be sent to a herbarium for identification (e.g. *Maireana cheelii*) and the verification included in Appendix I.

Recommendation:

22.1. Provide verification of all threatened flora from a herbarium.

ATTACHMENT C BCS Bilateral Assessment information and data requirements

For BCS to complete the assessment of EPBC Act-listed threatened species and communities, the following information is required in the BDAR.

1. Background and description of action

The EIS / BDAR needs to include:

1. Descriptions and maps of the operational and construction footprints of the project that relate to MNES.
2. Descriptions and maps of staging and timing of the action that may impact on MNES.
3. Maps of the subject land boundary showing the final proposal and disturbance footprint with regards to MNES.

Submit GIS shapefiles of all maps that relate to MNES.

2. Landscape context of the MNES

Ensure that the 'Establishing the site context' of BAM 2020 (Section 3) have been fully met in the BDAR in relation to MNES.

3. EPBC Act listed threatened species and communities

The EIS / BDAR needs to include the following:

1. Demonstration that field-based survey effort meets BCS survey guidelines and, where available, Commonwealth survey guidelines.
2. Demonstration of access and use of supporting databases (e.g. NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results).
3. Demonstration of access and use of published peer-reviewed literature.
4. Demonstration of access and use of local data (if relevant).
5. Demonstration of appropriate mapping of all EPBC Act-listed threatened species and communities in accordance with the relevant Commonwealth listing advice.
6. Demonstration of consideration of important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans.
7. A list of all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity (including species that are 'ecosystem credits' in BAM).
8. A discussion, with data and analysis where any species and communities identified by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) referral documents have been ruled out as occurring on or near the subject site.

4. Avoidance, minimisation, mitigation, and management

The EIS / BDAR needs to include:

1. The demonstration of all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect, and prescribed impacts) including an analysis of alternative:
    a. designs and engineering solutions
    b. modes or technologies
    c. routes and locations of facilities
    d. sites within the subject site

e. the identification of any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc).

2. A discussion and justification of all feasible measures to avoid, mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect, and prescribed impacts) including:
    a. techniques, timing, frequency, and responsibility
    b. identify measures for which there is risk of failure
    c. evaluate the risk and consequence of any residual impacts
    d. any adaptive management strategy proposed to monitor and respond to impacts.

5. Impact assessment

The EIS / BDAR needs to include the following:

1. Identification of the residual adverse impacts likely to occur to each EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are considered.
2. Justification and evidence for the predicted level of impact, with reference to the Commonwealth's 'Significant Impact Guidelines 1.1 - Matters of National Environmental Significance'[1] and DPIE's 'Guidance to Assist a Decision- Maker to Determine a Serious and Irreversible Impact'[2].
3. Provide a summary table with the following information:

Name of EPBC Act listed entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)

4. Provide data and justification where any EPBC Act-listed threatened species or communities to be considered in the BDAR are considered to be at low risk of impact during the assessment.

6. Offsets

The EIS / BDAR needs to include the following:

1. The identification of any MNES that have not been offset using the BAM.
2. Details of how impacts requiring offset correlate to the MNES impacts.
3. Details of the PCTs that require offsetting and the number and type of ecosystem credits required for impacts to MNES.

[1] https://www.dcceew.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance#:~:text=This%20Significant%20impact%20guidelines%20provide,and%20Biodiversity%20Conservation%20Act%201999.

[2] https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/guidance-decision-makers-determine-serious-irreversible-impact-190511.pdf

4. Details of threatened species requiring offset and the number of species credits required for impacts to MNES.
5. A demonstration of the correct uses the BAM (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity.
6. Any details of ecological rehabilitation and/or biodiversity conservation actions proposed for offsetting.
7. The identification of any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures.
8. Provide a summary table with the following information:

Threatened Species / Community listed under EPBC Act	PCTs associated with the ecosystem credit species / ecological community (if applicable)	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS/BDAR)
TOTAL					

7. Other considerations

The EIS / BDAR needs to include the following:

1. Consideration of all relevant Commonwealth guidelines and policy statements that are appliable to the action and listed threatened species and/or communities, including but not limited to:
    a. International environmental obligations
    b. Recovery Plans
    c. Approved Conservation Advice
    d. Threat Abatement Plans
2. An assessment for each EPBC Act listed threatened species and/or community, that has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the proposed action and threatening processes or recommended conservation actions outlined in Commonwealth policies and plans.