Department of Planning and Environment

Our ref: DOC22/1017874

Your ref: SSD-41743746

Kurtis Wathen
4 Parramatta Square
Department of Planning and Environment

Via Major Projects Portal: PAE-50918218

22 December 2022

Dear Mr Wathen

Subject: **Environmental Impact Statement – Yanco Delta Wind Farm (SSD 41743746)**

Thank you for your email dated 17 November 2022 about Yanco Delta Wind Farm (SSD 41743746) seeking comments from the Biodiversity and Conservation Division (BCD) of the Department of Planning and Environment (the Department) about the Environmental Impact Statement (EIS) exhibited 18 November 2022.

We have reviewed the EIS exhibited on the Major Projects Portal at: https://www.planningportal.nsw.gov.au/major-projects/projects/yanco-delta-wind-farm against the Secretary's Environmental Assessment Requirements (SEARs) provided by the Department to the proponent on 27 May 2022.

BCD considers that the EIS does meet the Secretary's requirements for flooding. However, BCD considers that it does not meet the Secretary's requirements for biodiversity.

In relation to biodiversity, BCD have identified numerous instances where the Biodiversity Assessment Method (BAM) has been incorrectly applied or where the assessment is inadequate. These matters will need to be rectified to ensure the final biodiversity credit obligation can be calculated correctly.

The key issues involving the incorrect application of BAM and assessment inadequacies include:

- not including or assessing all ancillary facilities and other direct impacts within the disturbance footprint, which may underestimate the credit liability for the project
- bird and bat utilisation assessment requires revision to enable interpretation of prescribed impacts
- inadequate assessment and identification of indirect and prescribed impacts
- not providing the bird and bat adaptive management plan
- mitigation measures lacking documentation
- insufficient assessment of matters of national environmental significance.

A summary of our issues and recommended actions on biodiversity is provided in **Attachment A**, while our detailed comments and advice is provided in **Attachment B**. Additionally, the Bilateral assessment information and data requirements is provided in **Attachment C**.

All plans required as a Condition of Approval that relate to biodiversity or flooding should be developed in consultation and to the satisfaction of BCD, to ensure that issues identified in this submission are adequately addressed.

If you have any questions about this advice, please contact Simon Maffei, Senior Project Officer, via rog.southwest@environment.nsw.gov.au or 02 6983 4923.

Yours sincerely

Andrew Fisher
Senior Team Leader Planning
South West Branch
Biodiversity and Conservation Division
Department of Planning and Environment

ATTACHMENT A – BCD assessment summary for Yanco Delta Wind Farm Environmental Impact Statement (SSD 41743746)
ATTACHMENT B – Detailed comments for Yanco Delta Wind Farm Environmental Impact Statement (SSD 41743746)
ATTACHMENT C - Bilateral assessment information and data requirements

ATTACHMENT A BCD assessment summary for biodiversity - Yanco Delta Wind Farm Environmental Impact Statement (SSD 41743746)

BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BBAMP	Bird and Bat Adaptive Management Plan
BBUS	Bird and Bat Utilisation Survey
BC Act	*Biodiversity Conservation Act 2016*
BC Regulation	Biodiversity Conservation Regulation 2017
BCD	Biodiversity Conservation Division of the Department
BCF	Biodiversity Conservation Fund
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
CEEC	Critically Endangered Ecological Community
EIS	Environmental Impact Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
MNES	Matters of National Environmental Significance
PCT	Plant Community Type
RTS	Response to Submissions
SAII	Serious and Irreversible Impacts
TEC	Threatened Ecological Community
WTG	Wind Turbine Generator
VI score	Vegetation Integrity Score

Summary of issues and recommendations to be addressed **prior to determination**

1. Not all ancillary facilities and other direct impacts have been included in the disturbance footprint, so the direct impact credit liability may be underestimated
    - 1.1 Update vegetation zone mapping to include native vegetation associated with all ancillary facilities including, but not limited to, proposed borrow pit sites and any new access tracks required to access these sites.
    - 1.2 Update the BDAR to include any impacts to native vegetation associated with the construction and operation of the powerline easement from the site to Dinawan substation and other internal powerlines. The powerline assessment must include, at a minimum, impact of vegetation removal for hazard requirements, laydown of cables for stringing, and access for construction vehicles/machinery.

2. Prescribed impacts require review to detail bird and bat use of the site
    - 2.1 Provide a list of species that may use the proposed wind farm development site as a flyway or migration route.
    - 2.2 Provide maps in section 6.1.4 that clearly show the 46 fixed seasonal survey points.
    - 2.3 Provide maps that show the flight paths that were observed during the bird utilisation surveys and any predicted habitual flight paths for nomadic and migratory species likely to fly over the subject land.
    - 2.4 Provide information to support the claims in Table 6-1 that the project is not anticipated to considerably impact the lifecycle of threatened species due to movement constraints.

2.5 Discuss the impacts to all migratory species likely to be impacted by the project, not just threatened species.

3. Bird utilisation data presentation requires review to enable interpretation of potential impacts

3.1 Provide a map of the bird and bat utilisation survey locations differentiated from diurnal bird surveys so the adequacy of BBUS surveys can be reviewed.

3.2 Update section 6.1.4 of the BDAR to include seasonal assessment of bird guilds at heights.

3.3 Update section 6.1.4 to include identification of high-risk locations for bird and bat strike and use this information to further avoid and minimise potential prescribed impacts. The assessment needs to propose potential high-risk locations where future monitoring is required.

3.4 Update Table 5-8 to include timing of fledging for microbats and demonstrate that survey timing has adequately captured bat movements.

3.5 Update Appendix H to list counts within the height zones, not just presence - absence.

3.6 Include a table like Table 5-10 for all birds that use stick nests, not just threatened species.

4. Prescribed impacts for wind turbine strikes should be offset and a BBAMP is required before project approval

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

5. Mitigation measures require revision and additional documentation

5.1 Identify measures to mitigate or manage measures for which there is risk of failure and evaluate the risk and consequence of any residual impacts.

5.2 Identify measures for mitigating impacts to displaced resident fauna.

5.3 Update Table 10-9 to include detailed descriptions of all mitigation measures and adaptive management plans to ensure the BMP authors know exactly what is required for the measures to be successful. For example, what maps are being referred to in BIO1, what fencing will be used in BIO7, specify the breeding times for hollow dependant fauna for which clearing will need to be avoided in BIO8, include preventative measures and the methods in BIO16, etc.

5.4 Commit to undertaking preventative pest control measures to reduce the impacts on Plains-wanderer, such as baiting and ground shooting of foxes and feral cats across the life of the project.

6. Additional surveys required during RTS for assumed presence flora surveys

6.1 Complete targeted surveys for assumed presence species credit species during the RTS period.

6.2 Contact the BCT to obtain a Charge Quote through the BCF Charge System to assist with determining and credit payments into the BCF for ecosystem and species credit species.

7. Areas not surveyed require clarification

7.1 Update section 5.2.3 of the BDAR to address all survey limitations and include how these limitations were overcome in the assessment in accordance with sections 5.2, 8.2, 8.3 and Appendix K of the BAM.

8. Justification of avoidance and minimisation methods requires revision

    8.1 Provide a discussion on the modes or technologies that could be used to avoid or minimise impacts on biodiversity values.

    8.2 Detail the measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints).

9. Assignment of vegetation zone condition classes to grasslands requires clarification and revision to ensure all TECs have been identified

    9.1 Provide a definition for vegetation zone condition classes and revise their application to PCTs 44, 45 and 46.

    9.2 Review the application of Low to Moderate condition class in relation to the identification of the Natural Grasslands of the Murray Valley Plains CEEC.

10. SAII assessment requires review

    10.1 Undertake a review of the SAII assessment after completing the targeted seasonal surveys for the assumed SAII species as per recommended action 6.1.

    10.2 Using the mitigation review outcomes from recommended action 5.4 provide further assessment of the increased risk of predation to Plains-wanderer and how this will be mitigated.

11. MNES assessment requires review and amendments

    11.1 Address requirements set out in Attachment C for MNES.

12. Landscape assessment requires review

    12.1 Update landscape assessment buffers to include both site based and linear buffers as appropriate and review percent native vegetation categories at completion.

    12.2 Update the BAM-C case to be a site based rather than a linear based assessment.

13. Key waterway and wetland mapping not completed in accordance with the BAM

    13.1 Complete key waterway mapping in accordance with section 3.1.3 4(b) and Appendix E of the BAM.

    13.2 Review the occurrence of local wetlands and Irrigation areas and the impacts and risks associated with waterbird movement across the subject land including prescribed impacts.

14. Assessment of patch size to inform BAM-C habitat survey not documented

    14.1 Update Table 4-13 to include the calculated patch size for each vegetation zone in the BAM-C.

15. Impact summary requires additional information

    15.1 Include a table that provides the following information:

    – current vegetation integrity score for each vegetation zone within the subject land
    – future vegetation integrity score for each vegetation zone within the subject land
    – change in vegetation integrity score for each vegetation zone within the subject land

    15.2 Include a table that provides the following information:

    – number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land by vegetation zone
    – number of required species credits for each candidate threatened species that is directly impacted on by the proposal by vegetation zone

ATTACHMENT B Detailed comments for biodiversity - Yanco Delta Wind Farm Environmental Impact Statement (SSD 41743746)

The BDAR at Appendix G.1 and G.2 requires revision to meet the Secretary's requirements for biodiversity. Specific comments on the BDAR and related sections in the EIS are detailed below.

1. Not all ancillary facilities and other direct impacts have been included in the disturbance footprint, so the direct impact credit liability may be underestimated

Wind Turbine Generators (WTGs), substations, BESS sites, access tracks and temporary disturbance areas such as accommodation camps have all been included in the spatial data for the 'Biodiversity_PCT_V13_Disturbance_Footprint_27Oct2022_V1_OffsetsRequired'. BCD note that the potential gravel borrow pit sites mentioned in section 2.2 of the BDAR and section 3.1 of the EIS have not been included on any maps or assessed anywhere else in the BDAR or EIS.

We also note that the disturbance footprint associated with the powerline from the project site to the Dinawan substation and internal powerlines in the subject land only includes disturbance at the pole locations. Parts of the easement occur in woodland areas and the BDAR does not address how construction will impact native vegetation within the easement of the powerline and how trees within the powerline easement may be impacted during construction and operation. Figure 4-1 indicates that no VI plots were sampled on the powerline route. Vegetation zones within the subject land along the powerline route must encompass all impacts and vegetation integrity sampling must represent variation throughout the subject land.

Recommended action:

1.1 Update vegetation zone mapping to include native vegetation associated with all ancillary facilities including, but not limited to, proposed borrow pit sites and any new access tracks required to access these sites.

1.2 Update the BDAR to include any impacts to native vegetation associated with the construction and operation of the powerline easement from the site to Dinawan substation and other internal powerlines. The powerline assessment must include, at a minimum, impact of vegetation removal for hazard requirements, laydown of cables for stringing, and access for construction vehicles/machinery.

2. Prescribed impacts require review to detail bird and bat use of the site

Seasonal bird utilisation surveys were conducted at 46 fixed points in the subject land over the four seasonal periods. While the number of surveys points appears reasonable, the BDAR contains no map showing where these fixed points were located. The survey maps in Figure 5-3 show bird survey sites in February and November 2021 but do not indicate if these are the survey points used for the bird and bat utilisation surveys or general diurnal bird surveys. Without additional information BCD cannot assess whether the sampling locations used to inform the bird and bat utilisation surveys were adequate.

Similarly, section 6.1.4 of the BDAR does not specify which species use the site as a flyway or migration route, nor does it make any assessment of any flight paths based on the observations from the bird utilisation surveys. Any assessment of flight paths must also rely on landscape scale assessments of connectivity, wetlands and movement of birds though the landscape on a seasonal basis.

Recommended action:

2.1 Provide a list of species that may use the proposed wind farm development site as a flyway or migration route.

2.2 Provide maps in section 6.1.4 that clearly show the 46 fixed seasonal survey points.

2.3 Provide maps that show the flight paths that were observed during the bird utilisation surveys and any predicted habitual flight paths for nomadic and migratory species likely to fly over the subject land.

2.4 Provide information to support the claims in Table 6-1 that the project is not anticipated to considerably impact the lifecycle of threatened species due to movement constraints.

2.5 Discuss the impacts to all migratory species likely to be impacted by the project, not just threatened species.

3. Bird utilisation data presentation requires review to enable interpretation of potential impacts

Section 6.1.4 and Appendix H of the BDAR outlines the four seasonal survey months of the bird utilisation surveys. The comparison of flight heights in Figure 6-3 and 6-4 and associated data requires further background information to be useful in the context of interpretation. The spread of bird guilds over seasons and flight heights is not presented in the data. The collection of data from all four seasons should be included to assist in the analysis of which guilds are more common across seasons and heights.

In addition, the background literature review in section 6.1.1 of the BDAR highlights some of the species that are known to be more at risk from turbine strike, including but not limited to Wedge-tailed Eagles, Black Falcons and Gould's Wattled Bat. However, the assessment of data collected from the BBUS surveys and stick nest surveys (section 5.2.2.3 of BDAR), make no assessment of the locations of the stick nests, or analysis of observations of these higher risk species during the BBUS relative to turbine locations. Assessment of this data is essential in establishing the foundation for the identification of potential high risk collision locations for bird and bat strike avoidance, as well as to establish baseline data for ongoing monitoring and adaptive management as proposed in Table 10-9.

Seasonal surveys must be timed to capture the expected movements and consider life histories of at-risk species. For example, Table 5-8 needs to include fledging times for microbats to demonstrate that the surveys were conducted when bats are likely to be moving through the landscape.

The data also lacks detail that has been provided for threatened fauna in Table 5-10, such as nest tree sizes and the associated candidate species.

Recommended action:

3.1 Provide a map of the bird and bat utilisation survey locations differentiated from diurnal bird surveys so the adequacy of BBUS surveys can be reviewed.

3.2 Update section 6.1.4 of the BDAR to include seasonal assessment of bird guilds at heights.

3.3 Update section 6.1.4 to include identification of high-risk locations for bird and bat strike and use this information to further avoid and minimise potential prescribed impacts. The assessment needs to propose potential high-risk locations where future monitoring is required.

3.4 Update Table 5-8 to include timing of fledging for microbats and demonstrate that survey timing has adequately captured bat movements.

3.5 Update Appendix H to list counts within the height zones, not just presence - absence.

3.6 Include a table like Table 5-10 for all birds that use stick nests, not just threatened species.

4. Prescribed impacts for wind turbine strikes should be offset and a BBAMP is required before project approval

Section 10.3 and 10.4 of the BDAR identifies that wind turbine strikes on protected and threatened species is likely to impact high and moderate risk level species as a result of the proposed project. Whilst the assessment of prescribed impacts does not result in the generation of biodiversity credits, the consent authority has the discretion to increase the number of biodiversity credits to be retired due to environmental, social and economic impacts of the proposed development, including for prescribed impacts. If mitigation measures or adaptive management do not adequately address the potential impacts and unavoidable residual prescribed impacts will occur i.e., bird and bat strikes, this should be offset via additional biodiversity credits (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 BC Regulation.

A bird and bat adaptive management plan (BBAMP) is to be prepared and appended to the BDAR before project approval to help mitigate prescribed impacts. As the impact from turbine strike is uncertain, the BBAMP is necessary to manage impacts that may not have been predicted. BCD recommends that the proponent should consult with BCD before preparing the BBAMP for the project. The BBAMP should include:

- A proposed monitoring methodology (for example, BCD recommends monitoring areas that contain multiple large stick nests near turbines, such as those in Figure 5-4 (map 2 of 4)).
- Offset quanta for each threatened bird and bat collision, fatality, or injury, calculated annually over the operational life of the windfarm. The proposed credit quantum should be reviewed and fully justified. Credit quanta should be calculated according to the conservation status of individual species that may be struck and based upon extrapolations from carcass monitoring data, for example:
    - For a vulnerable species – a one-off retirement of 10 credits for each individual struck.
    - For an endangered species – a one-off retirement 15 credits for each individual struck.
    - For a critically endangered species – a one-off retirement of 20 credits for each individual struck.
- For protected (non-threatened) species, the impact to the protected species should be offset where:
    - There are no effective and scientifically validated mitigation measures available to reduce the likelihood of future strikes of a protected (non-threatened) species; and
    - Continued turbine strike impacts are likely to have consequences for the local persistence of populations
- A trigger, action, response plan (TARP) with specific and measurable triggers. Triggers for corrective actions should be based on strike rate extrapolations when assessed annually.
- Trials of alternative deterrent technologies such as curtailment
- Mitigation implementation protocols (e.g. shutting down turbines during migration events)

Section 10.3 of the BDAR provides some detail of the BBAMP framework provided, however the detail has been limited to a row in Table 10-9.

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. BCD 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.

Recommended action:

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

5. Mitigation measures require revision and additional documentation

The mitigation measures listed in section 7 of the BDAR do not identify which measures are at risk of failure and the consequences of any such failure. Without identifying measures at risk of failure, and their subsequent impacts, there is no scope to address such risks through adaptive management strategies.

Mitigation measures in Table 10-9 need to specifically detail the measures that will be implemented in the BMP. Such detail is required to ensure the measures will be effective in mitigating impacts and that specific measures are carried through to the BMP.

The BDAR states that the BBAMP will be prepared as part of the BMP but section 2.7 of the BAM Operational Manual Stage 2 requires the BBAMP be provided as an appendix to the BDAR.

Additionally, BIO16 outlines that a feral animal monitoring program will be developed and implemented based on performance triggers for adaptive management, but there is no commitment to implement preventative pest control measures. Preventative measures will be essential in ensuring impacts from predators on Plains-wanderer are minimised upfront.

Recommended action:

5.1 Identify measures to mitigate or manage measures for which there is risk of failure and evaluate the risk and consequence of any residual impacts.

5.2 Identify measures for mitigating impacts to displaced resident fauna.

5.3 Update Table 10-9 to include detailed descriptions of all mitigation measures and adaptive management plans to ensure the BMP authors know exactly what is required for the measures to be successful. For example, what maps are being referred to in BIO1, what fencing will be used in BIO7, specify the breeding times for hollow dependant fauna for which clearing will need to be avoided in BIO8, include preventative measures and the methods in BIO16, etc.

5.4 Commit to undertaking preventative pest control measures to reduce the impacts on Plains-wanderer, such as baiting and ground shooting of foxes and feral cats across the life of the project.

6. Additional surveys required during RTS for assumed presence flora surveys

In the absence of targeted surveys in associated PCTs, BCD agree with the approach to assume presence for threatened flora unable to be surveyed due to general limitations as outlined in section 5.2.1 of the BDAR. We note that there are 14 flora species with assumed presence including two species with surveyed direct impact on the subject land (*Swainsona murrayana* and *Swainsona sericea*). BCD recommend targeted seasonal surveys in associated PCTs for the species currently assumed be completed during the RTS period to assist with avoiding actual impacts to threatened flora and potentially reducing the species credit obligation associated with assumed presence flora species.

We note that in section 14 of the BDAR, the proponent is likely to pay into the Biodiversity Conservation Fund (BCF) to meet at least some of their credit obligation. BCD suggest the proponent contact the Biodiversity Conservation Trust (BCT) to request a Charge Quote through the BCF Charge System as previous credit prices prior to the implementation of the BCF Charge System in October 2022 are unlikely to be comparable to previous credit prices.

Recommended action:

6.1 Complete targeted surveys for assumed presence species credit species during the RTS period.

6.2 Contact the BCT to obtain a Charge Quote through the BCF Charge System to assist with determining and credit payments into the BCF for ecosystem and species credit species.

7. Areas not surveyed require clarification

While the BDAR assumes presence for some species credit species based on seasonal access constraints, the areas not accessed and why is unclear in the BDAR. Section 3.12 refers to properties with no access. Section 5.2.3 outlines general survey limitations but provides no summary table or map of the subject land outlining areas with no access, reasons for no access and how this may have impacted the assessment.

Recommended action:

7.1 Update section 5.2.3 of the BDAR to address all survey limitations and include how these limitations were overcome in the assessment in accordance with sections 5.2, 8.2, 8.3 and Appendix K of the BAM.

8. Justification of avoidance and minimisation methods requires revision

Section 9 of the BDAR and sections 1.5 and 3.10 of the EIS detail the measures undertaken by the proponent to avoid impacts to biodiversity values. BCD note the large areas of avoidance of important mapped areas for the Plains-wanderer. However, there has not been a discussion on the modes or technologies that could be used to avoid or minimise impacts on biodiversity values including other potentially impacted species. Nor has there been a discussion of options that were considered but not implemented as they were unfeasible.

BCD expect to see consideration of avoidance measures such as optimising project layout and design elements that minimise interactions with all threatened entities, not just the Plains-wanderer, as specified in BAM s7.2.1(1d) and BAM s7.2.2(1b)(i). For example:

a) 100 metre turbine-free buffers around features that attract and support aerial species - for the project site that would include stags and trees suitable for stick nests, hollow-bearing trees, wetland areas and riparian corridors.
b) turbine-free corridors in zones of regular movement for species of concern to avoid a barrier effect.
c) measures include designing turbines to dissuade perching and minimise the diameter of the rotor swept area.

Recommended action:

8.1 Provide a discussion on the modes or technologies that could be used to avoid or minimise impacts on biodiversity values.

8.2 Detail the measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints).

9. Assignment of vegetation zone condition classes to grasslands requires clarification and revision to ensure all TECs have been identified

It is unclear what thresholds or criteria have been used to classify the condition of vegetation zones in the assessment. There appears to be inconsistency in applying condition classes to PCTs and vegetation zones.

Section 4.7.2.1 states that all grassland PCTs (44, 45 and 46) assigned to 'Moderate to Good' condition have been precautionarily considered to meet the key diagnostic characteristics for listing of the Natural Grasslands of the Murray Valley Plains CEEC (EPBC Act). However, some grassland vegetation zones assigned to the 'Low to Moderate' condition class in Table 4-13 have relatively high vegetation integrity scores (VZ12 = 84.5, VZ18 = 83.3, VZ14 = 64.7).

The area of CEEC impacted by the proposal may be underestimated if vegetation zones condition classes have not been appropriately applied.

Recommended action:

9.1 Provide a definition for vegetation zone condition classes and revise their application to PCTs 44, 45 and 46.

9.2 Review the application of Low to Moderate condition class in relation to the identification of the Natural Grasslands of the Murray Valley Plains CEEC.

10. SAII assessment requires review

The assessment of SAII in section 11 of the BDAR includes *Brachyscome muelleroides, Caladenia arenaria,* and *Convolvulus tedmoorei*, all of which have been assumed present.

BCD recommends that targeted seasonal surveys be completed for these assumed species during the RTS period to enable an accurate assessment of SAII.

The SAII assessment for the Plains-wanderer outlines mitigation measures under criteria 1 including a number of management plans that have not yet been developed. The impacts of the project on the species under criteria 4 also outlines expected increases due to vehicle strike during construction and possible increases in predation. However, the impacts of increased predation in relation to Plains-wanderer has not been examined, including as a result of increased predator activity resulting from edge effect.

These potential impacts have not been addressed or mitigated within the BDAR for this species. Without additional detail around this mitigation, the impacts to this entity under criteria 4 potentially indicate impacts that are serious and irreversible.

Recommended action:

10.1 Undertake a review of the SAII assessment after completing the targeted seasonal surveys for the assumed SAII species as per recommended action 6.1.

10.2 Using the mitigation review outcomes from recommended action 5.4 provide further assessment of the increased risk of predation to Plains-wanderer and how this will be mitigated.

11. MNES assessment requires review and amendments

The BDAR lacks the necessary information required for BCD to undertake the MNES bilateral assessment, including:

- how project planning and design has led to avoidance of impacts to MNES (including maps where different routes or locations are discussed in relation to MNES)
- steps to be taken to minimise impacts to MNES
- consideration of direct, indirect and prescribed impacts to MNES
- discussion of proposed mitigation measures for MNES
- identification of residual impacts likely to occur to each MNES after avoid/mitigate measures (including adequate justification and evidence for the predicted level of impact)

- appropriate mapping of all EPBC Act listed species and communities in accordance with relevant Commonwealth Listing Advice
- a table showing the impacts to MNES (including nature, duration, consequence, etc)
- a table showing the BAM offsets that meet the like-for-like requirements of the EPBC Act.

Recommended action:

11.1 Address requirements set out in Attachment C for MNES.

12. Landscape assessment requires review

Section 3.12 of the BDAR states that the project is linear and that a 500 metre buffer has been applied to all project components and the project has been entered as a linear project in the BAM-C. The project occurs in only one bioregion and subregion and includes project components that are both site-based and linear in nature. The application of the linear 500 metre buffer to all project components does not accurately reflect the native vegetation cover for the site based components of the project including WTGs, substations, construction stockpiles and accommodation areas. Most of these ancillary facilities are not linear in nature and a 1500 metre site-based buffer for the landscape assessment should be applied to these facilities. The site-based calculations should be included as part of the total percentage native vegetation for the BAM-C case. For those parts of the project that are linear based such as access tracks, and transmission lines, the 500 metre should be applied but the site based assessment should be retained as one case in the BAM-C (rather than a linear case).

Recommended action:

12.1 Update landscape assessment buffers to include both site based and linear buffers as appropriate and review percent native vegetation categories at completion.

12.2 Update the BAM-C case to be a site based rather than a linear based assessment.

13. Key waterway and wetland mapping not completed in accordance with the BAM

Section 3.4 and Figure 3-1 of the BDAR outlines the rivers and streams in the project area. The classification of these rivers and streams has not been assessed in accordance with section 3.1.3 4(b) and Appendix E of the BAM.

While section 3.5 of the BDAR identifies international and nationally recognised wetlands it makes no assessment of the importance of local wetlands and waterways including Coleambally Irrigation Area to the north of the project site and the movement of waterbirds between this area and other local wetlands. There is no assessment of the potential connectivity between the wetlands, rivers or creeks for waterbirds. The BDAR needs to use the landscape information to predict how threatened biodiversity relates to the landscape (e.g. waterbirds flying between rivers and lakes), which should then be used to inform the impact assessment including prescribed impacts.

The assessment should also make us of information available in the Bitterns in Rice Project (http://www.bitternsinrice.com.au/) and document how these birds have been tracked dispersing from rice fields in the Coleambally Irrigation Area to other wetlands and habitats that include flight paths within the Riverina region.

Recommended action:

13.1 Complete key waterway mapping in accordance with section 3.1.3 4(b) and Appendix E of the BAM.

13.2 Review the occurrence of local wetlands and Irrigation areas and the impacts and risks associated with waterbird movement across the subject land including prescribed impacts.

14. Assessment of patch size to inform BAM-C habitat survey not documented

While section 4.6 of the BDAR outlines how patch size is assessed and assigned to vegetation zones in the BAM-C, the patch size for each vegetation zone has not been documented and mapped in accordance with section 4.3.2 of the BAM.

Recommended action:

14.1 Update Table 4-13 to include the calculated patch size for each vegetation zone in the BAM-C.

15. Impact summary requires additional information

While the BDAR lists the current VI scores in Table 4-13 and the VI score loss in Table 10-1 and 13-1, the current VI score, future VI score and change in VI score for each vegetation zone within the subject land are not displayed in a single table.

Recommended action:

15.1 Include a table that provides the following information:

- current vegetation integrity score for each vegetation zone within the subject land
- future vegetation integrity score for each vegetation zone within the subject land
- change in vegetation integrity score for each vegetation zone within the subject land

15.2 Include a table that provides the following information:

- number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land by vegetation zone
- number of required species credits for each candidate threatened species that is directly impacted on by the proposal by vegetation zone

ATTACHMENT C Bilateral assessment information and data requirements

For BCD 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 must 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 must include the following:

1. Demonstration that field-based survey effort meets BCD 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 must 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 must 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 taken into account.
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 must 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 must 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.