GUIDELINES FOR THE CONTENT OF A DRAFT PUBLIC ENVIRONMENT REPORT

Environment Protection and Biodiversity Conservation Act 1999

Marmadua Energy Park
CUBICO SUSTAINABLE INVESTMENTS AUSTRALIA PTY LTD

Date: 29 May 2025

EPBC 2024/09998

Contents

PREAMBLE

Cubico Sustainable Investments Australia Pty Ltd (the Proponent) proposes to construct, operate, and decommission a 792-megawatt (MW) wind farm, comprising of up to 110 wind turbine generators (WTGs), a battery energy storage system, and other ancillary infrastructure at 17945 Surat Development Road, Weranga, Queensland. Associated ancillary infrastructure includes:

- Foundations, crane placement, laydown areas and hardstand areas associated with the WTGs.
- Construction and upgrades to unsealed access tracks and main roads, including a width clearance if 50 metres (m).
- Construction of multiple watercourse crossings along unsealed access tracks and main roads, including a width clearance of 75 m.
- Underground 33 kilovolts (kV) reticulation network, buried alongside the access tracks.
- A substation/battery energy storage system (BESS), a collector substation with overhead transmission lines and a switching station comprising approximately 15.5 hectare (ha) footprint.
- Up to four construction compounds and three laydown and stockpile areas.
- Fencing with grids and gates.
- A workforce accommodation facility (approximately 12.3 ha footprint).
- Operation and maintenance facilities (approximately 0.65 ha).

The action was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to the Minister for the Environment and Water and a valid referral was received on 6 January 2025.

The delegate for the Minister determined on 31 January 2025 that approval is required as the action has the potential to have a significant impact on the following matters of national environmental significance (MNES) that are protected under Part 3 of the EPBC Act:

- Listed threatened species and communities (section 18 and 18A).
- Listed migratory species (sections 20 and 20A).

Following the provision of preliminary information contained in the referral, the delegate of the Minister determined on 31 January 2025, that the proposed activity be assessed by a Public Environment Report (**PER**).

Information about the action and its relevant impacts, as outlined below, is to be provided in the PER. This information should be sufficient to allow the Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision

1. GENERAL ADVICE ON GUIDELINES

1.1. General Content

The PER must be written so that any conclusions reached can be independently assessed and must:

a. Contain sufficient information to allow the Minister (or delegate) to make an informed decision on whether to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision.

b. Contain sufficient information to enable interested stakeholders to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES).

c. Ensure all work and conclusions:
   i. Are presented clearly, unambiguously, succinctly and objectively.
   ii. Are evidence based, and the evidence is provided.
   iii. Are supported by peer reviewed literature, with references provided, or expert opinion.
   iv. Use scientifically robust methodologies appropriate to the purpose, including a justification of why the methodology/s was selected.
   v. Details of the methodology described in a manner that allows independent suitably qualified practitioners to apply the method and state any limitations of the chosen approach.
   vi. Are supported by maps, plans, diagrams, baseline surveys or other descriptive detail. Any provided map must be consistent with the department's *Guide to providing maps and boundary data for EPBC Act projects 2021*. Appendix A of the Guide provides a check list of the requirements for maps.
   vii. Maps must clearly identify development footprints, buffer zones, and any conservation areas where impacts will be avoided, and areas of adjacent habitat that would be subject to indirect impacts, including areas that are to be retained within and adjacent to the site. Proposed impact and avoidance areas are also to show applicable sizes in hectares shown on map legends.
   viii. Use active language and state clear commitments (e.g., 'must' and 'will') where appropriate, particularly in describing avoidance, mitigation and management actions and outcomes.
   ix. Demonstrate the use of the most up to date statutory documents including, Approved Listing Advice(s), Conservation Advice(s), Recovery Plan(s), Threat Abatement Plan(s) or comparable policy guidelines, approved survey methods and contemporary advice.
   x. Demonstrate the use of up to date; policy guidelines, scientific methods, information, data and species-relevant survey methods.
   xi. Appropriately reference all sources using the Harvard standard. The reference list must include the address of any internet pages used as data sources and the date/s of access.

d. Relevant documents include, but are not limited to, the resources found in the Species Profile and Threats Database (SPRAT database) and EPBC Act publications and resources. Section 139 of EPBC Act provides "the Minister must not act inconsistently with… a recovery plan or threat abatement plan" and "the Minister must, in deciding whether to so approve the taking of the action, have regard to any approved conservation advice for the species or community." To this extent, the PER should consider and have regard to all relevant updated recovery plans, approved conservation advice and threat abatement plans, including those published after the time of the referral decision. This includes updates to definitions such as "habitat critical to the survival of the species".

e. The PER should take into consideration the EPBC Act Significant Impact Guidelines that can be accessed from the following web site: http://www.environment.gov.au/epbc/guidelines-policies.html.

f. Please ensure that any additional supporting documentation and studies, reports or literature not normally available to the public from which information has been extracted be made available at appropriate locations during the period of public display of the PER.

g. Must include summaries of all relevant information referenced or provided in appendices. Complex or detailed technical information, studies or investigations necessary to support the main text should be attached to the main document as appendices.

h. The level of analysis and detail in the PER should reflect the level of significance of the expected impacts on the environment. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed.

i. Please note that the Proponent is required to make the draft PER available for a period of public comment. Specific instructions regarding publication requirements will be provided as part of the Minister's direction to publish. If it is necessary to make use of material that is considered to be of a confidential nature, the Proponent should consult with the department on the preferred presentation of that material, before submitting it to the Minister for approval for publication.

j. The Proponent should ensure that the PER assesses adherence of the action to principles of Ecological Sustainable Development as set out in the EPBC Act, and the objects of the Act at Attachment A. A copy of Schedule 4 of the EPBC Regulations - Matters to be addressed by draft public environment report and environmental impact statement is at Attachment B.

1.2. Format and Style

a. The PER should comprise three elements, namely:

   i. The executive summary.
   ii. The main text of the document.
   iii. Appendices containing detailed technical information and other information that can be made publicly available.

b. The guidelines have been set out in a manner that may be adopted as the format for the PER. This format need not be followed where the required information can be more effectively presented in an alternative way. However, each of the elements must be addressed to meet the requirements of the EPBC Act and Regulations.

c. Include a reference table indicating where to find information and links within the document to relevant sections.

d. Where relevant information was provided in the referral, please incorporate this information as necessary in the PER. The PER should be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any Internet "web" pages used as data sources (as described in section 1.1c).

e. The main text of the PER should include a list of abbreviations, a glossary of terms and appendices containing:

   i. A copy of these guidelines.
   ii. A list of persons and agencies consulted during the PER process.
   iii. Contact details for the Proponent.
   iv. The names of the persons involved in preparing the PER and work done by each of these persons.

f. Maps, diagrams and other illustrative material should be included in the PER. The PER should be appropriate for printed distribution and display, produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size and in colour where possible.

g. The Proponent should consider the format and style of the document appropriate for publication on the Internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

2. INFORMATION TO BE PROVIDED IN THE DRAFT PER

The content below has been determined in accordance with the requirements under schedule 4 of the EPBC Regulations – Matters to be assessed by draft public environment report and environment impact statement (see Attachment B).

Some of the information required below may have been provided as part of the EPBC referral. However, the PER is a standalone document and must address the requirements of the EPBC regulations. Specific content requirements have been included under each section.

In order to adequately assess the nature, severity and extent of likely impacts, and the adequacy of any proposed avoidance, mitigation and/or compensatory (offset) measures, relevant to the matters listed in the preamble, the following information is required.

2.1. Description of the Action

a. The PER must provide the background and context of the action including (but not limited to):

   i. The title of the action.
   ii. The full name and postal address of the designated Proponent.
   iii. A clear outline of the objective of the action.
   iv. The location of the action.
   v. The background to the development of the action.
   vi. How the action relates to any other actions (of which the Proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action.

b. The current status of the action.

c. The consequences of not proceeding with the action.

2.2. Project Details

This should provide the background and context of the action including the following:

a. All phases of the proposed action including early works, construction, operational, ongoing maintenance, decommissioning and rehabilitation should be described in detail. This should include the precise location (including coordinates) of all works to be undertaken, structures to be built or elements of the action that may have impacts on MNES. The information must present all the key aspects including, WTGs locations, laydown and hardstand areas, access tracks and roads, watercourse crossings, underground reticulation network, BESS, collector substations, switching stations, water storage dams and facilities, concrete batching plant, construction compounds, laydown and stockpile areas, rescue and emergency aircraft set down areas (where required), fencing, workers accommodation and facilities, access tracks, operation facilities, maintenance facilities and transport route of oversize-over mass (OSOM) components. The various elements of the proposed action must be illustrated with maps, diagrams, plans (at a suitable scale) as applicable and also be provided in digital format (e.g. shapefile *.kml or *.kmz).

b. Further description of the proposed action must include the impacts from the placement of infrastructure to protected matters and likely habitat, such as:

   - The precise location of all WTGs in relation to their proximity to State Forests in the region.
   - The precise location of all watercourse crossings and the potential impacts road/bridge infrastructure will have on waterbodies and protected matters.
   - Detailed reference to all waterbodies and water sources within the region.
   - The precise locations of all road and access track width clearance, including the potential impacts to protected matters.

c. A description of the anticipated start and completion dates of all actions such as the extent,

staging and timing of clearing undertaken over the construction period.

d. The description of the action must also include details on how the works are to be undertaken (including stages of development and their timing) and design parameters (including schematic diagrams) for those aspects of the structures or elements of the action that may have relevant impacts.

e. Further description of the operational requirements of the action, including any anticipated maintenance works, such as details on whether wind turbine components will need to be replaced during operation as a standard procedure. For any works that come under this point, provide detail of potential impacts to protected matters, such as clearing of habitat for protected matters along roadsides to facilitate replacement of wind turbine blades.

f. A description of decommissioning including, but not limited to:

    i. The activities that will be undertaken for decommissioning.

    ii. Timing and duration of decommissioning activities.

    iii. Clearing of vegetation and rehabilitation to facilitate the removal of wind turbine blades and other infrastructure.

g. The location, extent, and size (in hectares) of the total proposed action footprint, disturbance/impact footprint, and of any adjoining areas (beyond the impact area) that may be subject to indirect or facilitated impacts, including edge effects, noise, light spill, vehicle access, changes to surface and groundwater quality, from sedimentation, hazardous substance spills, quantity/availability, or other associated activities.

h. A description, with supporting spatial information, detailing all proposed action site access roads and any other shared infrastructure with adjacent projects/areas to be constructed to facilitate the proposed action.

i. A description of the intended land uses proposed as part of the completed development, including of any proposed open space and/or conservation areas and associated ongoing activities, and details of the intended party that would be responsible for future management activities.

j. Details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that applies or is likely to apply to the proposed action. Details should include, but are not limited to:

    i. What environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy.

    ii. Application/approval numbers for existing applications where relevant.

    iii. Obtained approvals or additional approvals that are required.

A description of any changes to project or disturbance footprints that may have occurred since the original valid referral, including supporting aerial imagery and spatial files. Please note these changes may require a formal variation request.

2.3. Feasible Alternatives

a. Any feasible alternatives to the action to the extent reasonably practicable, including:

   i. If relevant, the alternative of taking no action.

   ii. A comparative description of the impacts of each alternative on the MNES protected by controlling provisions of Part 3 of the EPBC Act for the action.

   iii. Sufficient detail to make clear why any alternative is preferred to another.

   iv. Discussion of the short, medium and long-term advantages and disadvantages of the options should be discussed.

b. For the selected alternative, this section should also consider whether the proposed action will facilitate further development and growth, and indirectly cause increased pressure on MNES.

c. Wherever possible, mapping and figures should be included to describe any alternative measures/routes.

2.4. Description of the Environment

The PER must provide a description of the environment affected by and surrounding the proposed action (this may also include areas outside of the proposed action area i.e. the proposed transport route), over both the short and long term, including:

a. Details of previous and current land use within and surrounding the proposed action area, including proximity to existing neighbouring wind farms.

b. Hydrology (surface and groundwater), including flood extents, relevant hydrogeology and local water quality.

c. A description of any potential listed threatened species or ecological community and migratory species that occur in the project area and adjacent areas.

d. Soil and geological characteristics, physical, chemical and biological characterisation of any soils that will be disturbed as a result of the action. Include site investigations conducted to date and their results.

e. Assessment of vegetation, not only limited to MNES (including raw data, electronic data, and species lists in attachments).

f. Assessment of fauna habitat values, not limited to MNES (including raw data, electronic data and species lists in attachments).

g. Identification of conservation and special use areas and any outstanding natural features.

Please ensure that a recent Protected Matters Search Tool report is generated and used during the assessment before finalising the draft public environment report to identify any additional species (listed at the time of the controlled action decision) that may be affected by the action.

3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

This section must provide the quantification of the extent of the MNES present both within and surrounding the proposed action site, details of the resources used to identify and assess the below MNES, and whether consultation was undertaken and/or advice sought from local community groups or experts. The description of MNES should focus on the following controlling provisions:

I. Listed threatened species and communities (section 18 & 18A).

II. Listed migratory species (section 20 and 20A).

Output from the protected matters search tool must also be included as an appendix. This can be accessed at the following website: https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool.

This section must address all listed threatened species and communities and listed migratory species below, and any other threatened species or ecological community or listed migratory species listed under the EPBC Act at the time of the controlled action decision that may be impacted by the proposed action. Any listing events (e.g. the listing or up-listing of a species) that occur after the controlled action decision do not affect the assessment and approval process.

- Australian Painted Snipe (Rostratula australis) - Endangered
- Belson's Panic *(Homopholis belsonii)* - Vulnerable;
- Brigalow Woodland Snail *(Adclarkia cameroni)* – Endangered
- Common Greenshank *(Tringa nebularia)* – Endangered, migratory
- Corben's Long-eared Bat *(Nyctophilus corbeni)* – Vulnerable
- Curlew Sandpiper *(Calidris ferruginea)* – Critically Endangered, migratory
- Diamond Firetail *(Stagonopleura guttata)* – Vulnerable
- Greater Glider (southern and central) *(Petauroides Volans)* – Endangered
- Grey Falcon *(Falco hypoleucos)* – Vulnerable
- Grey-headed Flying Fox *(Pteropus poliocephalus)* – Vulnerable
- Japanese Snipe *(Gallinago hardwickii)* – Vulnerable, migratory
- Koala (Phascolarctos cinereus (combined populations of Qld, NSW and the Act)) - Endangered
- Large-eared Pied Bat *(Chalinolobus dwyeri)* – Endangered
- Painted Honeyeater *(Grantiella picta)* – Vulnerable
- Poplar Box Grassy Woodland pn Alluvial Plains - Endangered
- Red Goshawk (*Erythrotriorchis radiatus*) – Endangered
- Sharp-tailed Sandpiper (*Calidris acuminata*) – Vulnerable, migratory
- Silver Perch (*Bidyanus bidyanus*) – Endangered
- South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) – Vulnerable

- Southern Whiteface (*Aphelocephala leucopsis*) – Vulnerable
- Tara Wattle *(Acacia lauta)* – Vulnerable
- White-throated Needletail (Hirundapus caudacutus) – Vulnerable, migratory
- Yakka Skink (Egernia rugosa) – Vulnerable
- Yellow-bellied Glider (south-eastern) (*Petaurus australis australis*) – Vulnerable

Listed migratory species (section 20 and 20A):

- Common Greenshank (*Tringa nebularia*)
- Common Sandpiper (*Actitis hypoleucos*)
- Curlew Sandpiper *(Calidris ferruginea)*
- Fork-tailed Swift (*Apus pacificus*)
- Japanese Snipe (*Gallinago hardwickii)*
- Pectoral Sandpiper (*Calidris melanotos*)
- Sharp-tailed Sandpiper (*Calidris acuminata*)

Note:

The above lists may not be a complete list of listed threatened species and ecological communities and migratory species that will be or are likely to be impacted by the action. It is the proponent's responsibility to ensure that any species and ecological communities listed as threatened or migratory at the time of the controlled action decision, which will or are likely to be impacted by the action are assessed.

Some of the listed migratory species requiring assessment are also listed as threatened under the EPBC Act. These species should be considered in accordance with their status as a threatened species. Assessment of these species does not need to be duplicated in the migratory species section.

This section must include the following:

3.1. Description

a. Describe each listed threatened species and ecological community, and listed migratory species, noted above (including EPBC Act listing status, abundance, condition, distribution, ecology and habitat preferences of the species or communities, etc).

3.2. Desktop Analysis

a. Describe the desktop assessment methodology used to inform the field surveys in and within the vicinity of the proposed action site.

b. This section must provide context to the proposed action area by discussing known historical records of listed threatened species and ecological communities and listed migratory species within the proposed action area and in the broader region. All known records must be supported by an appropriate source (i.e., Commonwealth and State databases, Queensland Government's WildNet, Atlas of Living Australia, published research, publicly available survey reports etc.), and,

where possible, include the year of the record and a description of the habitat in which the record was identified.

c. Describe how the desktop analysis informs the habitat suitability assessment, likelihood of occurrence assessment and the habitat and targeted MNES survey designs.

3.3. Survey Effort and Outcomes

a. Provide details of the scope, methodology, timing and effort of field surveys (undertaken by qualified species experts with demonstrated experience in detecting the above species and ecological communities) in and within the vicinity of the proposed action site. Provide details of:

   i. How surveys were undertaken in accordance with relevant Commonwealth and State guidelines or best practice survey guidelines at the time of the surveys.

   ii. If relevant, the justification for divergence from relevant Commonwealth and State guidelines or best practice survey guidelines at the time of the surveys.

   iii. State the total number of records (individuals and evidence of presence) of listed threatened species and ecological communities in and within the vicinity of the proposed action site, and show in applicable area maps. Provide maps identifying verified sightings of MNES during studies or surveys.

b. This section should include an assessment of the adequacy of any surveys undertaken (including survey effort and timing). In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with the department's relevant survey and policy guidelines available at On-ground surveys and data for referred actions under the EPBC Act and SPRAT.

c. This section must provide context to the proposed action area by discussing known historical records of listed threatened species and ecological communities and listed migratory species within the proposed action area and in the broader region.

d. When providing survey details, please provide up to date baseline survey data at the proposed action site (impact area), and if relevant, the proposed offset site(s) including:

   i. Information on the survey methodology or technique used (e.g. BioCondition (and MHQA) assessments, thermal detection, camera trapping, tree hollow searches, SAT surveys etc).

   ii. When surveys were conducted (e.g., dates, time of day, season, etc.) and survey effort (e.g., two hours for every one hectare within a 5-hectare area). Provide this information summarised in the PER and detailed in raw data sheets in attachments.

   iii. Map/s of survey points or transects and how the survey points or transects were selected. Include photos of surveyed areas.

   iv. An assessment of the adequacy of any surveys undertaken with reference to any relevant scientific literature and/or statutory documents. In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines.

   v. Results of all surveys undertaken. Provide raw data, including electronic data of all surveys

undertaken as attachments to the documentation.

3.4. Survey Timings

a. Please note that some surveys can take more than a year to complete to ensure they are undertaken in the correct season. The department generally cannot accept survey data that's more than 5 years old because:

   i. Populations of species can change due to fires, drought, flooding and land management changes.

   ii. Some species' ranges can shift due to climate change or other external factors.

b. If data is older than four years at the commencement of project planning, the department recommends further up to date surveys are undertaken. For information on survey methodologies approved by the Australian Government, please refer to https://www.dcceew.gov.au/environment/epbc/advice/surveys-and-data.

3.5. Precautionary Principle

a. Failing to survey appropriately for MNES present at a site could result in the department applying the precautionary principle with regard to residual significant impact determinations. That is, if no supporting evidence (such as survey results) is presented to support the claim of MNES absence, then the department may assume that the MNES is in fact present. The department will not accept claimed MNES absence without effective validation such as through the application of survey guidelines, other survey techniques (for example, a state guideline or an accepted industry guideline), or statements from relevant subject matter experts. Where a claim of absence is made, proposals must provide robust evaluation of MNES absence.

3.6. Habitat Assessment

a. Provide a robust assessment of the potential habitat available in and within the vicinity of the proposed action site for listed threatened species and ecological communities and listed migratory species. Habitat assessments must be derived from information obtained from:

   i. Field surveys and vegetation assessments.

   ii. The Species Profile and Threats (SPRAT) Database.

   iii. Relevant Departmental documents (e.g., approved conservation advices, recovery plans, listing advices, referral guidelines, etc).

   iv. Published research and other relevant sources (where relevant).

   v. The SPRAT Database which can be accessed from the following website: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

   The habitat assessments must consider the information in the SPRAT Database and relevant Departmental documents. Where habitat assessments depart from departmental information, adequate justification must be provided to substantiate its suitability to the assessment.

Note:

Where habitat for listed threatened species and communities and listed migratory species is identified on the proposed action site, an assessment must be undertaken regardless of whether or not the species was recorded. As such, the potential for occurrence of listed threatened species and communities and listed migratory species must also be considered and assessed.

b. At a minimum, the habitat assessment for each listed threatened species and ecological community and each listed migratory species must:

   i. Identify any specific habitat requirement/s (e.g. breeding, foraging, dispersal, known important habitat, suitable habitats, roosting, etc).

   ii. Provide an assessment of the quality and importance of known or potential habitat for the species or communities within the proposed action area and surrounding areas.

   iii. Discuss existing threats (e.g. feral predators, traffic, etc.) with reference to threats posed by the proposed action.

   iv. Consider the regional context, describing the connectivity of habitat in the broader landscape, providing annotated maps wherever possible.

   v. Provide the total amount of each type of habitat (in hectares) in the proposed action site. Show this where relevant on each map provided.

Note

The department in general may take a broader view of what constitutes suitable habitat for MNES. The department does not accept the consideration of only Queensland Regional Ecosystem (RE) mapping to determine habitat for protected matters. Further, habitat assessments must not only consider remnant vegetation, but also non-remnant and regrowth vegetation where relevant to the protected matter and connecting areas with reference to the relevant departmental documents.

c. The total amount of each type of habitat must also be presented on a map for each listed threatened species and ecological community and listed migratory species. Each map must:

   i. Include an appropriate base map that provides the geographical context of the proposed action site in the surrounding environment (i.e. aerial imagery).

   ii. Be specific to the habitat assessment undertaken for each listed threatened species and ecological community.

   iii. Include an overlay of the disturbance footprint within the proposed action site.

   iv. Include known records of listed threatened species or ecological communities and listed migratory species derived from desktop analysis and/or field surveys, including clear polygons or point data.

   v. Present a legend listing mapped features sized in hectares.

   vi. Be of a suitable scale to allow interpretation and representation of mapped features.

d. The department notes that the referral documentation includes information related to habitat

assessment. Please incorporate this information into the PER, and provide additional information as specified above.

3.7. Impact Assessment

The PER must include an up-to-date assessment of potential impacts that may occur as a result of the proposed action. Wherever possible, this assessment must be substantiated by evidence (i.e. academic literature, case studies).

Consideration of impacts must not be confined to the immediate area of the proposed action but must also consider the potential of the proposed action to result in impacts in the vicinity that are likely to contain populations and/or habitat for MNES.

Describe and assess the impacts (direct and indirect) to listed threatened species and communities and listed migratory species giving consideration to information provided in the SPRAT Database and relevant departmental policies and guidelines, including the Significant Impact Guidelines 1.1.

a. Include a clear description and maps of the total extent and quality of the following:
    i. Total extent of habitat presents for each relevant protected matter within the disturbance footprint at the proposed action site.
    ii. Direct and indirect impact areas (including the total extent of habitat for each relevant protected matter to be impacted).
    iii. Total areas proposed to be retained/avoided (including the total extent of habitat present for each relevant protected matter to be avoided).
b. Provide an assessment of the indirect, facilitated, and cumulative impacts that may occur as a result of the proposed action at a site specific and regional scale. The assessment should include consideration of:
    i. Interaction between the placement of infrastructure to likely habitat for MNES.
    ii. The nature, likelihood, significance, and extent of impacts and whether any relevant impacts are likely to be unknown, unpredictable or irreversible.
    iii. Timing and whether the impact is temporary or permanent.
    iv. Species specific habitat requirements such as hollow bearing trees, nest trees, refuge habitat, foraging and breeding habitat, sheltering or other microhabitat features relevant to the species within and surrounding the development footprint (if applicable).
    v. Whether connectivity and movement opportunities in the surrounding area may be retained, removed, or functionally lost or compromised.
    vi. Adjacent areas of habitat that may or will be subject to intensification of ongoing impacts (for example, through increased human and vehicle presence).
    vii. Indirect or facilitated impacts that may result from the proposed action.
c. A habitat connectivity analysis detailing, for each listed matter:
    i. The existing conditions within the landscape context of the proposed action area, prior to any works being undertaken.

ii. Proposed habitat connectivity during defined stages of the proposed action, such as early works, habitat and land clearance and modification, construction, operation and rehabilitation.

iii. A figure, with aerial imagery and linework showing habitat connectivity for each matter for the proposed action area and surrounding landscape.

d. Where relevant to the potential impact, a risk assessment should be conducted and documented.

e. Consider impacts to listed threatened species and ecological communities and listed migratory species and their habitats from (but not limited to):

i. Altered hydrology, including volume, timing, duration and frequency of ground and surface water flows (including flood flows) during the construction and operational phase (consider the intensity of slope angles), which may affect the physical structure and vegetation composition of habitat in the vicinity of the proposed action site. This includes the effect of turbine construction on underground water systems.

ii. Water quality impacts from erosion and sediment run-off associated with vegetation clearing, earthworks, construction of bridges and roads, altered surface run-off and steep terrain as well as fertiliser, nutrients, litter, pesticides, and other contaminants of concern (including, but not limited to perfluoroalkyl and polyfluoroalkyl substances (PFAS)) in runoff during the construction and operational phase which may impact species and ecological communities habitat in the vicinity of the proposed action. This includes changes in pH due to the use of concrete in the construction of turbine foundations and associated infrastructure or other activities.

iii. Edge effects, including the potential for the introduction of weed species, pathogens and altered fire regimes in and within the vicinity of the proposed action area which may impact matters and degrade the habitat condition.

iv. Potential increased presence of vertebrate predators and herbivores (e.g., cats, dogs, foxes, deer, pigs) and the impacts to listed threatened species and communities.

v. Habitat loss, degradation, fragmentation/patch isolation within the proposed action area and the area adjacent to the proposed action area by vegetation clearing or modification by infrastructure development, including consideration of, at a minimum:

- Width of disturbance corridor (clearing footprint) and any implications on habitat connectivity and the dispersal ability of threatened species
- Species' movement patterns and site utilisation (including consideration of likely launch heights and gliding distances for the Yellow-bellied Glider and Greater Glider, supported by scientific literature). In areas that may potentially be fragmented by the proposed action, provide average tree height to inform an understanding of Greater Glider and Yellow-bellied Glider gliding distance.
- Discuss whether the proposed action results in dispersal pathways being functionally compromised or lost for certain listed threatened species. If connectivity cannot be maintained, the isolated habitat resulting from the proposed action should be added

to the total habitat area impacted.

- Height of any proposed above ground electrical reticulation and risk of obstruction and entanglement of listed threatened and migratory species.

vi. Individual bird and bat mortality and injury from turbine collisions and barotrauma.

vii. Potential increased risk of vehicle strike to fauna species in the pre-construction, construction, and operation phases of the project.

viii. Potential to generate dust emissions (and impact on vegetation/TEC's and species habitat at and adjacent to the site) from the removal of vegetation and movement of soil in the pre-construction and construction phase of the project.

ix. Species disturbance from increased noise and vibration during early works, construction and operation of the proposed action. This must include an assessment of short- and long-term impacts, including background noise levels and take into account seasonal variations. The magnitude, duration and frequency of any vibration must be discussed. The potential for avoidance/abandonment of species habitat as a result of noise impacts must be discussed.

x. Increased lighting associated with early works, construction and operation of the action on relevant MNES (in particular to threatened and migratory birds). This assessment must provide details of the lighting used during all stages (including from any night operations/maintenance and increased vehicle traffic). The assessment of lighting impacts must have regard to the department's National Light Pollution Guidelines for Wildlife 2023. The potential for avoidance/abandonment of species habitat as a result of lighting impacts must be discussed.

xi. In-situ, introduced, and remobilised contaminants, including but not limited to contaminated soils and imported fill material.

xii. Hazardous chemicals and waste including any fuel to be transported, stored, and used during the construction and operational phases of the action; and / or chemicals such as herbicides and pesticides to be used during the construction and operational phases of the action. Provide an assessment of the risks and proposed management measures (including disposal) associated with hazardous chemicals and waste.

xiii. Where relevant, predicted future climatic conditions at the proposed action area in the assessment of impacts on MNES, and how changes in climate and the frequency and severity of weather events may interact with, exacerbate or reduce the impacts of the action on MNES over time. This should include, but may not be limited to:

- Increased erosion and run-off associated with predicted increases in high rainfall events and high winds at higher elevations, and how this may compound the impacts of vegetation clearance along higher elevated areas, including ridgelines, if present.
- Loss, fragmentation, or drying of potential climate refugia for MNES as a result of the proposed action – consider the potential impacts of removing or otherwise impacting this climate refugia for the long-term survival of MNES in the region.
- Increased risk of fire as a result of the proposed action under drier conditions and

periods of extreme heat or prolonged drought.
- Changes in the frequency and intensity of extreme weather events that may exacerbate impacts to MNES within the proposed action area and downstream.
- Inclusion of different climate scenarios in any hydrological modelling.

Note:

Please review the following policy statement, providing guidance on what impacts constitute an 'indirect consequences(s)', under paragraph 527E(1)(b) of the EPBC Act.

f. Please include current maps and coordinates/shapefiles showing the total project footprint, total disturbance/direct and indirect impact areas, areas of habitat for MNES proposed to be retained.

g. Include details of any policy guidelines, relevant studies, surveys, or consultations with species experts/field specialists, which were not included in the referral or additional information provided in support of the referral.

3.8. Impacts associated with turbine strike and site utilisation

Please note, these requirements are also set out in Attachment C in relation to the preparation of a draft BBMP. This information is required to enable a robust assessment of potential impacts associated with individual mortality from turbine collision and barotrauma, and potential changes to species utilisation of the proposed action area and the area adjacent to the proposed action area as a result of the proposed action.

The department notes that a BBMP is being prepared as outlined in the referral documentation.

The PER must include the following for relevant listed threatened and migratory bird and bat species.

3.8.1. Desktop assessment

To predict the potential for at risk threatened and migratory bird and bat species utilisation of the proposed action area and the area in the vicinity of the proposed action area, the PER must include the process and outcomes of a preliminary site characterisation (desktop and/or initial site visit) for each species to identify all drivers of presence on the proposed action area and utilisation of the proposed action area.

This characterisation must include, at a minimum, the consideration of:

a. Site characteristics: focal habitat features, topography, prevailing wind and weather patterns, wetlands (including adjacent to proposed action area), and distance to potential nesting, roosting and foraging areas.

b. Species characteristics: behaviour, flight or demographic factors (e.g. species presence [ongoing, transitory/migratory]), habitat and site use (e.g. transit, roosting, breeding and/or foraging), flight paths (including migratory flight paths), flight heights and patterns, soaring, flocking, and population numbers.

3.8.2. Site-specific assessment

To validate the outcomes of the desktop assessment, the PER must include a site-specific assessment of how at-risk listed threatened and migratory bird and bat species are using, or likely to

use, the proposed action area and the area in the vicinity of the proposed action area. This assessment must be informed by site-specific and species-specific site utilisation surveys (undertaken by a suitably qualified expert) and supported by other relevant scientific evidence. The site-specific assessment requires the following:

a. At least 24 months of site utilisation surveys must be undertaken to provide sufficient baseline data on a relevant species' potential to utilise the proposed action area and the area adjacent to the proposed action area. This means that site utilisation surveys must be undertaken for each relevant season over a minimum two years (up to 8 survey events).
b. Each site utilisation survey must be of an appropriate duration and spatial coverage (including taking into consideration the potential turbine layout and visibility) to adequately evaluate site utilisation.
c. At a minimum, each site utilisation survey must record the relevant information specified in 'Species characteristics' of the 'Desktop Assessment' requirements (3.8.1 b) for each relevant species.
d. The proposed site utilisation survey methodology for each relevant species must be included as an appendix to the PER.
e. Discussion must be provided that includes detailed information on:
    i. How the design of the site utilisation surveys for each relevant species has been informed by its drivers of presence on the proposed action area and utilisation of the proposed action area and the area adjacent to the proposed action. Consider requirement for sampling at rotor swept height where appropriate such as deployment of detectors on meteorological masts in addition to ground level detectors to improve efficacy of detection of bat species.
    ii. How site utilisation surveys for each relevant species have been designed to improve understanding of site utilisation of the proposed action area and the area adjacent to the proposed action, and support an ongoing Before-After, Control Impact (BACI) framework for an adaptive BBMP.

The department notes that the referral documentation includes information related to surveys that have been completed to date. Please incorporate this information into the PER, and provide additional data and survey effort as specified above.

3.8.3. Long-term impact risk assessment

The PER must include, at a minimum:

a. An assessment of the potential impact pathways on each relevant species (based on the desktop assessment and site utilisation surveys) including, at a minimum:
    i. Direct mortality from turbine collision and barotrauma.
    ii. Potential changes to species utilisation of the proposed action area and the area adjacent to the proposed action during construction and operation of the proposed action.
b. Identification of potential impacts to each relevant species from direct mortality, including but not limited to:

i. Analysis and mapping of suitable habitat, territories and activity/utilisation patterns/rates (e.g., 'heat maps') in the proposed action area and the area adjacent to the proposed action.

ii. Flight path analysis of relevant birds and bats including heights, speeds and flight behaviour.

iii. Estimation of the quantity of individuals to be impacted.

c. A collision risk assessment, which must incorporate:

i. An assessment of the proposed action area and the area adjacent to the proposed action area to identify any high-risk turbines (and their parameters).

ii. Baseline data collected during the minimum 24 months of site utilisation surveys.

iii. A statement of all assumptions and uncertainties.

The PER must include a map for each relevant species that identifies area/s in the proposed action area and the area adjacent to the proposed action area determined to be 'high risk' based on the collision risk assessment.

The PER must clearly demonstrate how relevant departmental policies and guidelines, and the SPRAT Database, have been used to assess the above potential impacts on listed threatened and migratory bird and bat species.

3.8.4 Impact Limits

For each listed bird and bat species at risk of collision and/or barotrauma impacts associated with operational wind turbines, provide a numerical value representing the maximum number of individuals that can be killed by barotrauma and/or collision with operating wind turbines (hereafter referred to as 'impact limit') for each relevant bird and bat species. The impact limit must be biologically meaningful to each species (e.g. population size, specific lifespan, reproductive rate, etc.), and not result in an unacceptable impact to the species. At a minimum, this impact limit must be provided for each listed bird and bat species under section 3 above. This impact limit number must take into account baseline data, outcomes of collision risk assessment for the species, relevant statutory documents, the significant impact guidelines 1.1 and where appropriate, relevant guidelines and scientific literature to provide justification for the impact limit number. The impact limit number must be considered cumulatively over a biologically meaningful period relating to population parameters for individual species (e.g. population size, specific lifespan, reproductive rate, etc.), or alternatively the life of the proposed action.

Both the PER and BBMP must include a commitment stating that the proponent will avoid meeting or exceeding the impact limit identified for the listed bird and bat species in section 3 above. Adaptive management triggers and contingency measures must be included to avoid reaching the impact limit.

The BBMP must focus on commitments to mitigation and management measures, meeting S.M.A.R.T. principals, in order to demonstrate with confidence that the proposed action is unlikely to result in an unacceptable impact to any species due to collision or barotrauma associated with wind turbine operation.

3.9 Species-specific Considerations

3.9.1 Lister threatened species and communities and listed migratory species – specific considerations

In addition to the relevant information requested in sections 3.6 to 3.8, the PER must also include the information listed in Table 1 for specific listed threatened species and communities and migratory species. These matters have been identified from the referral information as requiring further information.

Table 1: Listed threatened species and communities and listed migratory species	
Information required	
Brigalow Woodland Snail *(Adclarkia cameroni)* - Endangered	
1.1	The referral identified 125.93 ha of suitable habitat for the Brigalow Woodland Snail on site, 0.82 ha of which occurs within the disturbance footprint. Include information and discussion on all suitable habitat areas within the proposed action area consistent with the Conservation Advise for *Adclarkia cameroni* 2010. Impact assessment for this species should include the potential, significant impact to the species as a result of disturbance of the ground surface for access roads and other infrastructure. Further information is required to demonstrate how the proposed avoidance and mitigation measures will avoid a significant impact to this species, especially at areas of identified habitat that intersect with the disturbance footprint. Information and assessment included in the PER must be consistent with the Conservation Advise for *Adclarkia cameroni* 2010. If habitat critical to the species is identified within the proposed action area, the PER must assess the impact of the proposed action and outline avoidance and mitigation measures to reduce the impact, as discussed in section 3.9. If the proposed action is likely to have a residual significant impact to the species, offsets in accordance with Section 5 must be provided.
1.1.2	Habitat discussion should consider any potential impacts on the species and its habitat from sedimentation and erosion as well as any changes in hydrology as a result of the proposed action. Include potential impacts to habitat outside the development corridor and study area.
1.1.3	The survey effort for the Brigalow Woodland Snail did not consider all existing suitable habitat areas directly or indirectly impacted by the proposed action. If targeted surveys are not completed in suitable habitat areas, please provide an explanation as to why. According to the Conservation Advise for *Adclarkia cameroni* 2010 survey priorities should focus on accurately identify potentially suitable habitat and undertake survey

	work to locate and map any additional populations.
Corben's Long-eared Bat *(Nyctophilus corbeni)* - Vulnerable	
1.2	Referral documentation notes that the genus is not able to be identified to the species level using echolocation calls, and that an unidentified species was recorded during surveys that could potentially be Corben's Long-eared Bat. As such, further surveys are needed to identify the *Nyctophilus* species present on site. If the Corben's Long-eared Bat is found to be present, this species should be included in the significant impact assessment (including impacts associated with clearing of habitat as well as turbine strike, as discussed in section 3.8). Information and assessment included in the PER must be consistent with the Conservation Advice for *Nyctophilus corbeni* 2015. Survey priorities should focus on precisely assessing population size, distribution, demographics and ecological requirements. If the proposed action is likely to have a residual significant impact to the species, offsets in accordance with Section 5 must be provided. Further information is required on the impacts to the Corben's Long-eared Bat as a result of collision with wind turbines and (where relevant) barotrauma (see section 3.8). A BBMP, including collision risk assessment, should be completed for this species (see Attachment C) and mitigation measures proposed to minimise the risk of turbine strike to the species. In both the PER and the BBMP, provide the number of individuals of the species likely to be killed as a result of collision and (where relevant) barotrauma cumulatively over the life of the proposed action. Provide details of how this was determined in the BBMP. See section 3.8.4 on determining the 'impact limit'.
Greater Glider (southern and central) (*Petauroides volans*) – Endangered	
1.3	The PER must include an assessment of potential breeding and foraging habitat within the study area consistent. Denning habitat for the species includes both living and standing dead trees containing hollows. Identify the presence and density of tree hollows across the proposed action area. The PER must identify key denning and foraging habitat (likely/current and future), including the presence and density of tree hollows across the proposed action area. All habitat definitions must be consistent with the Conservation Advice for Petauroides volans (greater glider (southern and central)) and Guide to Greater Glider habitat in Queensland (2022). Please provide supporting mapping. The department notes that ground-based surveys for hollows are not considered adequate to determine hollow size or presence (as per the Greater Glider conservation advice). Ensure that adequate surveys are undertaken to determine the presence and density of large trees within the development corridor and development footprint, or undertake tree-climbing based hollow surveys), to inform hollow presence within the study area.

1.3.1	A connectivity analysis is required for the Greater Glider in order to quantify the extent of habitat on-site likely to be utilized by the species. This should include more refined mapping of the vegetation on site and how this is connected to locations both on and off the proposed action area where the Greater Glider is known to be present to understand movement of the species through the landscape. If habitat critical to the species is identified within the proposed action area, the PER must assess the impact of the proposed action and outline avoidance and mitigation measures to reduce the impact, as discussed is section 3.9. If the proposed action is likely to have a residual significant impact to the species, offsets in accordance with Section 5 must be provided.
Koala (*Phascolarctos cinereus*) (combined populations of Qld, NSW, and the ACT) – Endangered	
1.4	The department considers that the proposed action will have a significant impact on a minimum of 903.9 ha of habitat critical to the Koala. The department notes that the majority of the proposed action area has been quantified as dispersal habitat for the Koala and that the proposed action would result in a loss of 861.53 ha of dispersal habitat. Habitat descriptions should consider habitat use requirements (e.g., foraging, survival, growth, shelter, reproduction and movement) across the proposed action area and align with the SPRAT database and relevant DCCEEW documents including: i. Identifying habitat for the endangered Koala 2022, ii. the Draft Guide to nationally protected species significantly impacted by paddock tree removal, iii. the Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory 2022, iv. A review of koala habitat assessment criteria and methods, and v. the National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) 2022. The habitat assessment for the Koala at the proposed action site must include a discussion of the vegetation composition and structure as well as an assessment of Koala habitat quality. Avoidance and mitigation measures must be demonstrated in line with section 3.9 and, where there is a residual significant impact to the species, an offset needs to be proposed in accordance with Section 5 of the PER Guidelines. As per the Koala Conservation Advice, habitat critical to the survival of the Koala comprises any habitat with characteristics required to meet their needs. This includes foraging, breeding and dispersal habitat, patches and corridors for gene flow, climate refugia and any habitat which might be currently unoccupied due to serial changes to

	habitat quality and is available for future recolonisation. The department also notes that critical habitat for the Koala is not limited to large, contiguous patches and includes paddock trees (and the safe intervening matrix for traveling between trees) and any trees that are not food trees but are commonly used by the species for shelter or predator avoidance.
Poplar Box Grassy Woodland on Alluvial Plains - Endangered	
1.6	The referral identified 89.86 ha of Poplar Box Grassy Woodland on Alluvial Plains TEC (Poplar Box TEC) on site however, 0.88 ha of clearing will occur on the disturbance footprint. The PER must include an assessment (in a cross-reference table) of vegetation composition against the key diagnostic characteristics and condition thresholds for Poplar Box TEC including, consideration of remnant and regrowth Poplar Box TEC. Include names of flora species present with regard to the Conservation Advice for the Poplar Box Grassy Woodland on Alluvial Plains TEC 2019.
1.6.1	Provide ground-truth survey information on the patch sizes, evidence of recruitment, species richness and coverage, and percentage of weeds present in Poplar Box TEC patches in the study area to inform the quality of the Poplar Box TEC.
1.6.2	Include a description of any vegetation surrounding patches of the Poplar Box TEC which may play a role in the function and integrity of the Poplar Box TEC, particularly surrounding vegetation between patches of Poplar Box TEC which may be relatively close in proximity. Supporting information is required to identify how polygons of patches has been identified in accordance with the diagnostic criteria.
1.6.3	Confirm which areas on site, not limited to those containing the appropriate Regional Ecosystems (Res), meet the threshold to be considered Poplar Box TEC. Provide clear mapping of ground-truth Poplar Box TEC onsite and clear identification of hectares likely to be directly or indirectly impacted by the proposed action. The PER must identify avoidance and mitigation measures to reduce the impact of the proposed action on the Poplar Box TEC as outlined in section 3.9. If the proposed action is likely to have a residual significant impact to the TEC, offsets in accordance with Section 5 must be provided.
Silver Perch (*Bidyanus bidyanus*) – Endangered	
1.7	The Likelihood of Occurrence assessment included in the referral documentation shows that Silver Perch habitat is present within the proposed action area. As such, the PER must include an assessment of the potential habitat within the study area consistent with the Conservation Advice for *Bidyanus bidyanus*, 2024. Include information on any changes or modification to habitat and hydrology as a result of the proposed action. Please provide supporting mapping.

	The PER must assess the impact of the proposed action and outline avoidance and mitigation measures, as discussed in section 3.9. If the proposed action is likely to have a residual significant impact to the species, offsets in accordance with Section 5 must be provided.
South-eastern Glossy Black-cockatoo (*Calyptorhynchus lathami lathami*) – Vulnerable	
1.8	The referral identified 1014 ha of habitat critical on site, this includes 23.84 ha of foraging habitat which is included in the disturbance footprint of the proposed action. As such, the PER must include an assessment of the potential breeding and foraging habitat within the study area consistent with Conservation Advice for *Calyptorhynchus lathami lathami* 2022. Include information on the potential breeding tree species. Breeding habitat for the species is not well understood. Breeding habitat for the species includes living and dead trees containing hollows with the following traits as outlined in the Conservation advice: • >8 m above ground. • Located in branches >30 cm in diameter. • Branch or stem no more than 45° from vertical. • Minimum entrance diameter of >15 cm. The PER must assess the impact of the proposed action and outline avoidance and mitigation measures, as discussed in section 3.9. If the proposed action is likely to have a residual significant impact to the species, offsets in accordance with Section 5 must be provided.
1.8.1	Identification and description of permanent or seasonal water bodies or watercourses. Include a description of these in proximity to the species' habitat.
1.8.2	As the species may fly between habitat patches, provide a discussion of the impacts from WTGs on the movement between potential foraging and breeding habitat, addressing collision risk of individuals with WTGs. Discuss how connectivity of potential foraging and breeding habitat will be impacted by WTGs.
1.8.3	Further information is required on the impacts to the Glossy Black Cockatoo as a result of collision with wind turbines (see section 3.8). A BBMP, including collision risk assessment, should be completed for this species (see Attachment C) and mitigation measures proposed to minimise the risk of turbine strike to the species. In both the PER and the BBMP, provide the number of individuals of the species likely to be killed as a result of collision and (where relevant) barotrauma cumulatively over the life of the proposed action. Provide details of how this was determined in the BBMP. See section 3.8.4 on determining the 'impact limit'.

White-throated Needletail (*Hirundapus caudacutus*) – Vulnerable and Migratory	
1.9	The referral documentation states that 905.4 ha of foraging habitat (the disturbance footprint of the proposed action), will be impacted by the proposed action but is will not result in a significant impact to the species. Habitat descriptions should consider habitat identified as foraging and dispersal habitat is also habitat critical to the survival of the species as defined by the Significant Impact Guidelines 1.1 (2013), which defines areas that are necessary for activities such as foraging, roosting, or dispersal as habitat critical to the survival of the species. With consideration of the above, further information is required (including number of hectares and map/s) to confirm the extent of habitat critical to the survival of the species that will be impacted by the proposed action. This includes foraging, dispersal, and roosting habitat that may be functionally compromised or lost due to being at, or within the vicinity of, a WTGs. As such, impact assessment for this species must quantify the areas at and around WTG sites likely to be unusable, inaccessible, or otherwise lost as habitat for the species. Information and assessment included in the PER must consider the habitat requirements for the species outlined in the Conservation Advice for the White-throated Needletail. If habitat critical to the species is identified onsite, the PER must assess the impact of the proposed action and outline avoidance and mitigation measures to reduce the impact, as stated in section 3.9. If the proposed action is likely to have a residual significant impact to the species, offsets in accordance with Section 5 must be provided.
1.9.1	The department considers there is likely to be a significant impact to the White throated Needletail as a result of collision risk from wind turbine operation. Further information is required on the impacts to the White-throated Needletail as a result of collision with turbines and (see section 3.8). A BBMP, including collision risk assessment, should be completed for this species (see Attachment C) and mitigation measures proposed to minimise the risk of turbine strike to the species. In both the PER and the BBMP, provide the number of individuals of the species likely to be killed as a result of collision and (where relevant) barotrauma cumulatively over the life of the proposed action. Provide details of how this was determined in the BBMP. See section 3.8.4 below on determining the 'impact limit'.
Yellow-bellied Glider (south-eastern) (*Petaurus australis australis*) – Vulnerable	
1.10	Please refer to above comments for the Greater Glider, noting for the Yellow-bellied Glider reference should be made to the Conservation Advice for *Petaurus australis australis* 2022.

In addition to the information requested in Table 1, all species mentioned in section 3 must also be addressed in the PER. This includes a discussion of the habitat assessment (as mentioned in section

3.6) impact assessment (as mentioned in section 3.7), and impacts associated with turbine strike and site utilisation (as mentioned in section 3.8) for each species.

As previously stated, the list provided in section 3 may not be a complete list of listed threatened species and ecological communities and migratory species that will be or are likely to be impacted by the action. It is the proponent's responsibility to ensure that any species and ecological communities listed as threatened or migratory at the time of the controlled action decision, which will or are likely to be impacted by the action, are assessed.

3.10. Avoidance, Management and Mitigation Measures

The mitigation hierarchy is a process that is used to limit the amount of damage an action, such as a development, will have on the environment. There are three steps, and each step must be followed in order and to the greatest extent possible before moving on to the next. These steps are:

1. **Avoid** harm to the environment within and surrounding the project area.
2. **Reduce** or mitigate environmental damage within and surrounding the project area.
3. Identify **offsets** within the region that compensate for the significant residual impacts to listed species or ecological communities.

Specific details on avoidance, minimisation, mitigation and management measures, along with relevant monitoring, must be provided for all stages of the project.

This section should provide:

a. Demonstration that mitigation hierarchy has been applied and all options exhausted to avoid and mitigate harm to protected matters, before resorting to environmental offsets.

b. In doing this, demonstrate that any avoidance or mitigation measures will provide ecological benefits to the species in the long-term. For example, on-site avoidance/conservation areas are connected or provide connectivity opportunities for species in the broader landscape and include enduring mitigation of impacts from adjacent development. A detailed description of the proposed measures to avoid, mitigate and manage potential impacts on listed threatened species and ecological communities, including the timing, frequency, and duration of the measures to be implemented.

c. A description of avoidance and mitigation measures that have been considered and applied, including but not limited to:

    i. Project site selection and design phases to avoid valuable habitat.

    ii. Micro-siting of infrastructure during the design phase to avoid habitat fragmentation and patch isolation, with consideration of whether avoidance areas would still be connected to habitat in the broader landscape, as well as avoidance of any activity that may indirectly impact on essential lifecycle processes for species.

    iii. Minimising clearance widths for linear infrastructure.

    iv. Incorporating pinch points to maintain habitat connectivity.

    v. Innovative turbine blade transportation, including methods to minimise necessary

clearance widths (e.g. 'Blade Manipulator' trucks).

vi. Adjusting powerline heights to avoid fauna obstruction/entanglement and maximise canopy retention.

d. A description of proposed safeguards and mitigation measures to minimise and manage relevant impacts of the action, with reference to relevant statutory or policy documents at the Commonwealth and State level (e.g., State Development Assessment Provision Guidelines (State Codes)).

e. Pre-clearance and clearance procedures (including translocation procedures) to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease.

f. A discussion on the measures employed to avoid, minimise and mitigate impacts to MNES from turbine strike, including but not limited to:

i. Turbines should be sited away from known or likely areas of MNES habitat, movement, and activity (including roosting and nest sites), particularly of listed threatened species or listed migratory species.

ii. Turbine-free buffers should be used around features that attract and support aerial species, such as forest edges, riparian corridors, wetlands, ridgetops and gullies.

iii. Turbine-free corridors should be used in areas of regular movement for species of concern to avoid a barrier effects.

iv. The proposal to install transmission and communication lines either above or underground should be determined following an assessment of the values likely to be affected and on the method that will have the least impact. This may result in a proposal to construct using a combination of above and underground infrastructure. Underground lines should be installed with as little disturbance to the vegetation, substrate or hydrology of the area as possible. Additionally, avian safe design options for overhead lines could be considered.

v. All infrastructure, including turbines, access roads, transmission lines and fences should avoid both direct and indirect damage to significant areas of natural habitat, such as: wetlands; waterways; important breeding, roosting or foraging habitat for listed threatened species and/or listed migratory species and listed threatened ecological communities.

vi. Turbine design (e.g. blade design features).

vii. Acoustic and visual deterrents (e.g. ultrasound acoustic devices).

viii. Some significant impacts can be eliminated by timing early works, construction, maintenance, decommissioning or other activities to avoid sensitive times of the year or periods when weather conditions are unfavourable for listed threatened plants, animals and communities or listed migratory species. For example:

a. Timing construction and operation during the period when migratory birds are absent.

b. Curtailment at dawn or dusk if MNES species are likely to be active during those

hours.

ix. The inclusion of triggers for adaptive mitigation measures to avoid exceeding or reaching the impact limit of each listed bird and bat species over the defined period that is biologically relevant to the specific species, or over the life of the proposed action.

x. Include curtailment and consideration of appropriate cut-in speeds.

xi. Radar and camera detection systems to detect and track certain flying species (e.g. IdentiFlight®, Robin Radar Systems).

g. Ongoing management of direct and indirect impacts due to increased likelihood of human presence, and injury caused by negotiating various fence types.

h. Details of how speed reduction is to be achieved (e.g., traffic calming devices) and plans showing the locations of each of these features and the manner in which they will be implemented).

i. Information on safe road design and placement, including installation of crossing warning signs, wildlife threshold marking on road (include maps and imagery).

j. Details of management measures to be implemented during the construction and operational phases to limit potential water quality impacts, such as erosion and sediment control measures, chemical spill control measures, and stormwater management.

k. Identification of the cost of mitigation measures and party responsible for undertaking proposed mitigation and measures, if different to the proponent.

l. The locations and size of any proposed fauna movement solutions, fire breaks, no-go or buffer zones (including buffers between the construction footprint or remaining habitat in the referral area and adjacent to the site), and potential fencing, including:

i. The location of any movement solutions, fire breaks, buffer zones, or fencing.

ii. The characteristics of the fauna movement solutions, fire breaks, buffer zones and fencing, (i.e., height, length, wildlife proof measures etc).

iii. Location and design of proposed fauna crossing infrastructure as supported by scientific literature, noting the *Conservation Advice for Petauroides volans (greater glider (southern and central)) 2022* states artificial structures (nest boxes, glide poles) have limited effectiveness as mitigation actions for loss, degradation or fragmentation of Greater Glider habitat.

iv. Details of any proposed buffer areas around remaining habitat as well as specific protected matters such as TEC's. Please note, any proposed buffers must be consistent with departmental documents where information is available (including, but not limited to, approved Conservation Advices, Recovery Plans, SPRAT Database) and must have adequate justification provided to substantiate suitability for that individual protected matter with consideration of the location, scale and severity of indirect impacts to that protected matter.

v. Whether the proposed measures, such as fencing will provide a wildlife barrier to/from/within the proposed action area.

m. Bushfire mitigation and management measures, including information on preventing the spread

of bushfires that may start as a result of the proposed action to areas outside of the project area. A fire management plan should be developed and implemented for construction and operation of the action and should include mechanisms of management, available resources (including their source), and the potential ecological impacts of the proposed fire regime on MNES.

n. Wastewater management measures, including the design and management of a wastewater management plan for the 550 –person construction workers accommodation facility. The plan should address how wastewater management will be undertaken to avoid impacts to protected matters.

o. A description of the environmental outcomes the measures are expected to achieve including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes.

p. Information on the timing, frequency, and duration of the measures to be implemented.

q. An assessment of the predicted effectiveness of each proposed avoidance or mitigation measure, noting that the effectiveness of a particular measure is a reflection of confidence in the anticipated outcome. The assessment of effectiveness should be evidence based and include examples of demonstrated success of a particular measure to achieve the desired avoidance/mitigation outcome.

r. For each measure proposed, indicate the:

    i. Impacts that are being avoided and/or the significance of impacts being reduced through mitigation.

    ii. Scientific basis for conclusions being drawn.

    iii. An evidence-based likelihood of success/risk assessment.

    iv. Responsible party.

    v. Milestones / performance / completion criteria.

s. Describe any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice, recovery plan or threat abatement plan, and a discussion on how the proposed measures are not inconsistent with relevant plans. Please provide a discussion on how the proposed action is not inconsistent with relevant species' objectives or alternatively, how the proposed avoidance, mitigation/management and offsetting actions will compensate for any residual significant impacts, thereby ensuring consistency with the objective for relevant EPBC Act species.

t. Provide details of ongoing management, including monitoring programs to support an adaptive management approach, that validate the effectiveness of the proposed measures and overall demonstrate that environmental outcomes will be achieved. Include:

    i. A scientifically robust monitoring program for the detection/quantification of impacts on protected matters, including as a result of turbine strike and barotrauma. The monitoring program must be able to accurately and in a timely manner detect when impact triggers are reached.

ii. Impact triggers, at suitable increments, should be informed by scientific literature and relevant departmental guidelines such as the Referral guideline for 14 birds listed as migratory species under the EPBC Act.

u. Details of tangible, on-ground corrective actions that will be implemented in the event the monitoring programs indicate that the environmental outcomes have not or will not be achieved, and when these corrective actions would be triggered. Include corrective actions to be undertaken in the event that incremental impact triggers are reached or exceeded from impacts on protected matters from turbine strike and barotrauma, including:

i. The implementation of additional/alternative mitigation measures (such as additional curtailment or deterrents).

ii. Shutdown procedures – the wind turbine/s that contributed to reaching or exceeding an impact trigger.

iii. Note that provision of environmental offsets will also be expected for any residual significant impact (see section 5).

v. A detailed outline of an Environmental Management Plan (EMP) (or plans) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing. The EMP must:

i. Address the project phases (early works, construction, operation, decommission) separately.

ii. State the environmental objectives, performance criteria, monitoring, reporting, triggers, corrective actions, responsible parties and timing for each environmental issue.

iii. Describe contingencies for events such as heavy or prolonged rainfall, unexpected finds protocol for encountering unexpected contamination, the importation of inappropriate fill material, chemical spills, off-target impacts of chemical usage.

iv. In the construction phase of the EMP, include management measures such as dust suppression and enforcement of reduced construction zone vehicle speeds.

v. The EMP should incorporate weed and pest management actions, including monitoring.

vi. The *Environmental Management Plan Guidelines* provides general guidance to stakeholders preparing environmental management plans for environmental impact assessments and approvals under Chapter 4 of the EPBC Act.

w. The department notes that the referral documentation includes information related to avoidance, management and mitigation measures. Please incorporate this information into the PER, and provide additional information as specified above.

Note:

The draft PER must include detailed measures and use language that clearly identifies whether the measures will be implemented (e.g. 'will be undertaken' rather than 'may', 'where possible', 'if required')

The proposed measures must be based on best available practices, appropriate standards and supported by scientific evidence (e.g. outcomes of successful field trials, research papers, other projects, etc.).At the time of writing these guidelines, the departments position is that due to the low success of translocation proposals, unless it can be shown that there is a high degree of certainty that a translocation will be successful in contributing to the long-term conservation of the species or community, a proposal for translocation associated with an action will be unlikely to be accepted. The departments Translocation Policy provides information relevant for consideration when proposing translocation in connection with a proposed action under the EPBC Act.

All proposed measures for MNES must be specific, measurable, achievable, relevant and timebound (the 'S.M.A.R.T' principle).

3.11.Rehabilitation requirements

The PER should include the following information regarding any rehabilitation proposed during the construction, operational and decommissioning stages of the project:

a. Details of any proposed rehabilitation, including locations and timing. Please include maps showing the areas that will be rehabilitated within the project area and the size in hectares of these areas.

b. A summary of the vegetation community/habitat that is being rehabilitated and the dominant species that will be included in the rehabilitation site.

c. Provide details of rehabilitation methods and how they meet best practice standards, including for the restoration of habitat for relevant protected matters and avoidance of sedimentation/erosion.

d. The details of any rehabilitation activities proposed to be undertaken as required by the Commonwealth, State or Territory, and local government legislation.

e. Information on the management of the rehabilitation site, including, but not limited to, weed and pest management.

f. Rehabilitation acceptance criteria relevant to MNES and the procedures, including contingency measures, that will be undertaken to achieve them.

g. Details of a monitoring program to determine the success of rehabilitation activities implemented by the proponent, including any contingency measures and when they would be triggered.

h. Include information on whether any post-construction rehabilitation sites will be subsequently cleared during the decommissioning stage.

3.12. Residual Significant Impact

After consideration of proposed avoidance, mitigation and management measures, provide an assessment of the likelihood of residual significant impacts on relevant listed threatened species and ecological communities.

The PER must provide a clear and definitive conclusion of residual significant impacts on relevant listed threatened species and ecological communities to align with the EPBC Act Environmental Offsets Policy 2012.

3.12.1 Environmental Offsets

If it is determined that a residual significant impact is likely on listed threatened species and ecological communities and listed migratory species, see **Section 5** below.

3.12.2 Statutory Requirements

Provide a discussion that clarifies whether the action is consistent or inconsistent with relevant species recovery plans and threat abatement plans and Australia's obligations under the Biodiversity Convention, Apia Convention and CITES.

For listed migratory species, provide a discussion that clarifies whether the action is consistent or inconsistent with Australia's obligations under the Bonn Convention, CAMBA, JAMBA, ROKAMBA and any other international agreements approved under subsection 209(4) of the EPBC Act.

4. CUMULATVE IMPACTS

a. Provide an assessment of cumulative impacts, where potential project impacts on MNES are in addition to existing impacts of other activities (including current or future developments by the proponent and other proponents in the region and vicinity). Consider, with reasonably available information, the proposed action's cumulative impacts with regards to any neighbouring wind farms and associated infrastructure including habitat loss, habitat fragmentation, bird and bat turbine strike (including the potential barrier effect of multiple wind farms) and sedimentation and run-off downstream.

b. The PER should also address the potential cumulative impact of the proposed action on ecosystem resilience. The cumulative effects of climate change impacts on the environment must also be considered in the assessment of water resources and ecosystem resilience.

c. The PER should also provide a detailed assessment of any likely combined impact of one or more individual impacts that this proposed action may facilitate on relevant MNES at the local, regional, state and national scale.

5. PROPOSED OFFSETS

INFORMATION REQUIREMENTS FOR EPBC ACT OFFSET PROPOSALS AND OFFSET MANAGEMENT PLANS

An EPBC Act offset proposal must demonstrate that the relevant species or ecological communities significantly impacted by the proposed action is not worse-off when compared to a situation where neither the impact nor the offset occurred.

a. Where residual significant impacts remain after application of all reasonable avoidance and mitigation measures, a compensatory environmental offset in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy 2012 (EPBC Offsets Policy) is required.

b. Offsets must be specific to the species or ecological community being impacted, must address the attribute of the protected matter that is impacted, and must deliver an outcome for the protected matter that is demonstrably equal or better than if neither the impact nor the offset occurred. Offsets are not intended to make proposed actions with unacceptable impacts, acceptable.

c. If an offset is required, the PER must include an:

   i. **Offset Proposal** – The Offset Proposal must provide detail about the proposed offset site(s) including baseline survey information, habitat or vegetation quality scores, how the offset will be managed, and evidence that the protected matter is present or uses the offset site(s). The Offset Proposal must demonstrate how the proposed offset is suitable and meets the principles of the EPBC Offsets Policy and must include sufficient information (in a table with supporting evidence) for the department to assess it using the EPBC Offsets Assessment Guide.

   ii. **Offset Management Plan (OMP)** – The OMP supports the Offset Proposal and must detail all the management activities to be undertaken at the offset site(s) including setting environmental objectives, milestones, monitoring and reporting measures. Management plans and activities must be targeted towards the specific plant, animal, ecological community, or place (protected matter) that is being offset. If there is more than one offset site, then a separate OMP may be required for each site if the management requirements and protected matters vary for each offset site.

5.1. Habitat Quality Assessment

a. For each listed threatened species, threatened ecological community or migratory species where there is a residual significant impact, a suitable methodology must be used to assess habitat quality (i.e., endorsed by the department or supported by literature), noting the same scoring mechanism must be used at both impact and offset sites.

b. For each methodology, provide justification for how that methodology is suitable for each listed threatened species, threatened ecological community or migratory species. This includes proposed scoring attributes, attribute weightings and, if relevant, proxy measures.

Note:

The department encourages proponents to consult and seek endorsement from the department on a proposed method prior to undertaking any habitat quality assessment at both impact and offset site(s).

The department currently prefers habitat quality scoring methods for each prescribed matters to be consistent with the Modified Habitat Quality Assessment (MHQA) method. The MHQA tool derives habitat quality scores using an adaptation of the Queensland Government's 'Guide to determining terrestrial habitat quality version 1.2 (DEHP Guide).

The MHQA aligns, as far as possible, to the DEHP Guide with the requirements of the EPBC Act Environmental Offsets Policy for determining habitat quality scores. In aligning with this policy, all habitat quality scoring methods are required to generate future scores for 'with' and without' offset scenarios. Forecast gains or loss in habitat quality score must be substantiated by scientific information and via the endorsed MHQA (or alternative) method.

To support the habitat quality assessment, a link to the DEHP Guide, a MHQA scoring guide, and a MHQA scoring spreadsheet template (.xlsx) are provided herein. When calculating offsets, please refer to the department's published guidance: How to use the Offsets Assessment Guide.

c. A precautionary approach to forecasting scores should be applied, with all limitations and uncertainties considered, documented and integrated within the 'Confidence in Result % (Quality)' value applied in the Offset Assessment Guide (offset calculator). Please also note the following:

   i. If a habitat quality gain of more than 2 points is proposed, or an achieved future habitat quality score 'with offset' of 9 or 10, it becomes less certain that the conservation outcome can be achieved. The justification of effectiveness of the proposed management measures and associated habitat quality score improvements and (reflected in the confidence in result) must be supported by substantial evidence.

   ii. Higher habitat quality gains will generally be associated with lower 'confidence in result' scores in the Offset Assessments Guide to reflect the difficulty associated with achieving the conservation outcomes. In these cases, it is likely that outcomes-based commitments will be required in the associated management plan for the site(s), including specifying binding metrics to be met to demonstrate quality improvement. For further information, please contact the department to discuss the metrics that will be used to demonstrate achievement of quality standards.

g. If an alternative methodology is proposed for assessing and scoring habitat quality for any/all of the prescribed matters likely to experience significant residual impacts as a result of the proposed action, the alternative methodology must:

   i. Directly relate to habitat requirements of the species and factors associated with the viability of the prescribed matter, and align with information contained in the SPRAT database and relevant statutory/departmental documents.

   ii. Be substantiated with appropriate field surveys in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

h. Where there are any inconsistencies between the habitat assessment approach and information contained in the SPRAT database, the inconsistencies must be discussed with the department prior to the submission of the assessment documentation and must be supported by scientific evidence including published research, independent expert advice and information derived from field surveys.

5.2. Offset Proposal Requirements

a. The offset proposal must include, but not be limited to, the following:
   i. A detailed project description, including a site description and how and to what extent the proposed action will impact on protected matters.
   ii. Details of the protected matters being impacted by the proposed action, including the total number of individuals or extent of habitat being impacted.

b. Details about the offset proposal/offset site, including:
   i. A description of the proposed offset site(s) including location, size, and relevant ecological/species habitat features, landscape context and cadastre boundaries of the offset site(s) (supported by mapping).
   ii. Information about how the proposed offset/s area will provide connectivity with other relevant habitats and biodiversity corridors.
   iii. Information how the proposed offset site/s contribute to relevant State and/or regional plan/s or initiatives for the conservation of the protected matter.
   iv. Evidence of the presence of, or usage by, relevant MNES on, or adjacent to the proposed offset site(s).
   v. Evidence that the location of the offset site is suitable and provides a conservation benefit to the impacted protected matter. Note: The EPBC Offsets Policy states that in most cases, the offset site should be as close to the impact as possible.
   vi. Up to date surveys and baseline data confirming the current condition/quality of vegetation on the proposed offset site (including number of hollow bearing trees if relevant), the extent and presence of weeds, and the extent of threats.
   vii. Information about the ecosystems present, current usage of the proposed offset site, its general condition and location in the landscape/region.
   viii. An assessment of how the offset and impacts sites are like-for-like, i.e., the environmental values for the MNES at the offset are of the same type or equivalent to that affected by the proposed action.
   ix. The methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the proposed offset site for each relevant MNES, including:

- Total area of habitat (in hectares).
- Habitat quality (as discussed in section 5.1).
- Time over which loss is averted (max. 20 years).
- Time until ecological benefit.
- Risk of loss (%) without offset.
- Risk of loss (%) with offset.
- Confidence in result (%).
- Details and execution timing of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide enduring protection

for the potential offset area/s against development incompatible with conservation.

c. The Offset Proposal must demonstrate how the offset meets the principles of the EPBC Offsets Policy and EPBC Offsets Assessment Guide to inform the Minister's decision on whether or not the project should be approved under the EPBC Act.

d. Offset proposals must engage specifically with the ecological requirements of the protected matter. For example, for a species like the Greater Glider, management measures such as weeding and fencing will not generally be accepted as suitable compensation for the loss of hollows suitable for denning, which is a limiting habitat requirement for the species.

e. Where denning resources are proposed to be impacted, offset proposals should demonstrate an increase in the quality and/or availability of denning resources at an offset site, relative to the quantum of impact. Offset proposals based on creation of hollows (or artificial denning resources) must realistically address whether they will be used by Greater Gliders, whether they will attract predator or competitor species and their durability, accompanied by suitable monitoring and performance measures. Deviations from these principles will need to be explained and justified.

f. Details of the actual or estimated cost of the offset proposal including costs associated with proposed mitigation and management measures onsite.

g. Details of the execution timing of the protective mechanism to legally secure the environmental offset/s (minimum covenant or otherwise accepted method) proposed to be applied at any offset site/s to provide enduring protection (for at least the duration of the impact), including a draft of the protective mechanism and its terms. Note that protective mechanisms for permanent impacts should continue in perpetuity.

h. Details of the protective mechanism proposed to be applied at any offset site/s to provide enduring protection to the site for at least the duration of the impact, including a draft of the protective mechanism and its terms.

5.3. Offset Management Plan (OMP) Requirement

a. An offset management plan is a practical document that outlines what must be done to manage an offset site. A plan must detail all the management activities at the offset site and how progress will be monitored and reported. An OMP provides confidence that the outcomes described in an offset proposal can and will be achieved. The OMP must include, but may not be limited to:

   i. A description of the proposed offset site(s) including location, size, condition, existing and future tenure, and relevant ecological/species values present and surrounding land uses.

ii. Maps and shapefiles to clearly define the location and boundaries of the offset area/s, accompanied by the offset attributes (e.g., physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the relevant MNES that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares).

iii. Baseline survey information showing MNES presence and the extent and quality of the respective habitat(s) at the proposed offset site(s) in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

iv. Summarised details of the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area/s.

v. Information about how the proposed offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant MNES. This should include information about how the proposed offset/s area contributes to any state and/or regional plan/s for the conservation of the protected matter.

vi. Mechanisms for protection, for at least the full duration of the impact, under a conservation covenant or otherwise accepted method, noting that protection mechanisms for permanent impacts should continue in perpetuity.

vii. Completion criteria and, if necessary, performance targets that evidence protection or improvement of EPBC Act listed communities, species and their habitat. For the purpose of the plan:

- Completion criteria are longer term time-bound values, specified for measurable parameters, that if attained and maintained ensure the plan's environmental objectives are achieved. For example: 'By Year 20, the approval holder must reduce non-native plant cover to within 5% of the benchmark value associated with each Regional Ecosystem.'
- Performance targets are time-bound short- and medium-term targets, for management interventions and environmental condition, that are used to monitor, evaluate, review and improve the effectiveness of the plan to offset impacts. For example: 'By Year 10, the approval holder must reduce non-native plant cover to within 10% of the benchmark value associated with each Regional Ecosystem.'

b. The plan includes management measures that will protect or improve EPBC Act listed threatened ecological communities and/or species and their habitat. Each management measure:

i. Is specifically linked to the attribute of the protected matter for which the management measure applies.

ii. Has timeframes for implementation.

iii. Is described sufficiently to avoid ambiguity and to inform plan implementation.

iv. Is related to attaining/maintaining completion criteria and/or performance targets.

v. Is derived from recognised principles, practice, or guidelines, and is justified – technically, scientifically and legally (e.g. by recommendation in a national recovery plan) – as an effective and appropriate measure to attain and/or maintain the plan's completion criteria and/or performance targets.

c. Management activities must be targeted towards the needs of the protected matter that is offset, and must align with the recovery objectives for the species as identified in relevant National Recovery Plans or Conservation Advice.

d. The plan identifies and manages uncertainty. To this end the plan specifies:

i. Key data/information used to formulate the plan.

ii. The limitations and/or uncertainty associated with the use of that data/information.

iii. The risks that limitation and/or uncertainty represents for plan failure.

iv. How limitations and/or uncertainty, and associated risks, are mitigated during plan implementation. For example, where a margin of safety is applied to management measures until uncertainty is reduced to an acceptable level or performance targets/completion criteria are attained/maintained.

e. The plan assesses the risk of failure to achieve the plan's performance targets and/or completion criteria. To this end the plan:

i. States the plan's performance targets and/or completion criteria.

ii. Identifies events or circumstances that prejudice attainment/maintenance of performance targets and/or completion criteria. The events or circumstances must address scientific/ecological uncertainty, stochastic events and legal/land use planning factors that may represent risks.

iii. Includes a qualitative assessment of the likelihood and consequence of those events or circumstances, and the residual risk of failure to achieve those criteria due to identified events or circumstances (assuming management measures will be implemented).

iv. Characterises risk as low, medium, high or severe, and derived from likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical).

v. Outlines how consequence, likelihood and risk level for each risk have been determined.

i. The plan manages the risk of failure to achieve performance targets and/or completion criteria by:

ii. Specifying management measures that will be implemented to attain/maintain the completion criteria and/or performance targets.

iii. Enhancing monitoring and management measures for high-risk events or circumstances, thereby providing a 'margin of safety' to detect, avoid or mitigate the likelihood and/or

impacts of the event or circumstance.

iv. Specifying measurable events or circumstances (management triggers) that detect actual or potential issues in a timely manner to avoid, minimise or mitigate adverse impacts.

v. Ensuring the monitoring program includes activities to detect management triggers and explains how monitoring activities may inform the selection and implementation of corrective actions.

vi. Specifying methods to be used to determine whether the management trigger is project attributable.

vii. Specifying effective and appropriate corrective actions that may be implemented if a management trigger is realised.

viii. Monitoring the effectiveness of corrective actions and implementing appropriate responses in the event corrective actions are not effective.

ix. Identifies events or circumstances that prejudice attainment/maintenance of performance targets and/or completion criteria. The events or circumstances must address scientific/ecological uncertainty, stochastic events and legal/land use planning factors that may represent risks.

x. Includes a qualitative assessment of the likelihood and consequence of those events or circumstances, and the residual risk of failure to achieve those criteria due to identified events or circumstances (assuming management measures will be implemented).

xi. Characterises risk as low, medium, high or severe, and derived from likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical).

xii. Outlines how consequence, likelihood and risk level for each risk have been determined.

f. The plan describes the monitoring methods that will be implemented, and:

i. Demonstrates the relevance of the monitoring methods to the protection of the relevant aspect of the protected matter(s) for which the offset is implemented.

ii. Includes quantitative (e.g. on-ground survey results) and qualitative baseline data (e.g. photo-point monitoring sites) that establish the start quality/condition of the environment and which can be used to measure performance against.

iii. Describes the sampling strategy (including monitoring area, site selection and sampling intensity over space and time) and statistical analyses to be employed.

iv. Justifies the sampling strategy/monitoring methods, including through.

v. An assessment of effectiveness and constraints to use.

vi. Capacity to detect change in environmental condition due to management interventions.

vii. Capacity to demonstrate attainment of performance targets and/or completion criteria.

viii. The statistical power of the strategy/method.

ix. Commits to engage appropriately qualified experts to design and conduct monitoring and survey activities and analyse monitoring results.

x. Accounts for seasonal/climatic variability.

xi. Details the location, nature and number of monitoring sites, including benchmark/reference sites to evaluate management performance.

g. The plan includes commitments to report on plan implementation and success as well as opportunities for improvement. This is achieved by:

i. If the project is approved, identifying relevant reporting obligations under the EPBC approval, or otherwise proposing appropriate regular reporting intervals, objectives and methods.

ii. Specifying how plan/strategy implementation will be reported in accordance with those obligations.

iii. Including a reporting template specifying key risk management, management measures, monitoring and adaptive implementation outcomes for the reporting period.

iv. Including a schedule and triggers for reporting types (e.g. annual compliance, incident, non-compliance, contingency).

6. ENVIRONMENTAL OUTCOMES

a. The PER should provide information on the outcomes that the proponent will achieve for MNES. Outcomes need to be specific, measurable, and achievable, and must be based on robust baseline data. To allow application of outcomes-based conditions, the PER should include:

i. Consideration of the Outcomes-based conditions policy 2016 and Outcomes-based conditions guidance 2016, with suitable justification for considerations identified in the policy and guidance.

ii. The specific environmental outcomes to be achieved, and reasoning for these in reference to relevant Recovery Plans, Conservation Advices and Threat Abatement Plans. For each proposed outcome:

- The risks associated with achieving the outcome.
- The measurability of the outcome, including all suitable performance measure.
- Appropriate baseline data upon which the outcome has been defined and justified.
- The likely impacts that the proposed outcome will address.
- Demonstrated willingness and capability of achieving the outcome.
- Commitments to independent and periodic audits of performance towards achieving outcomes.

- Details of proposed management to achieve the outcome including, but not limited to, performance indicators, periodic milestones, proposed monitoring and adaptive management, and record keeping, publication and reporting processes.

7. OTHER APPROVALS AND CONDITIONS

a. The PER must include information on any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. This must include details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that deals with the proposed action, including:

   i. What environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy.

   ii. How the scheme provides for the prevention, minimisation and management of any relevant impacts.

   iii. A description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the action.

   iv. A statement identifying any additional approval that is required.

   v. A description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

   vi. Attachment of relevant Commonwealth, State or Territory, and local government approvals and permits as supporting documents to the PER.

8. CONSULTATION

a. Provide details of any consultation that has occurred concerning the action, including:

   i. Any consultation that has already taken place.

   ii. Proposed consultation about relevant impacts of the action and plans for future consultation throughout the life of the proposed action, including design modifications (where relevant).

   iii. If there has been consultation about the proposed action, any documented response to, or result of, the consultation and management measures to address community concerns.

   iv. Identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

   v. Signed documents or statements of consent from land holders or managers (including Registered Native Title Body Corporates.

Indigenous Consultation

b. Identify existing or potential native title rights and interests, including any areas and objects that are of particular significance to Indigenous peoples and communities, possibly impacted by the proposed action and the potential for managing those impacts.

c. Describe any Indigenous consultation that has been undertaken, or will be undertaken, in relation to the proposed action and their outcomes. This should include:

    i. Details regarding the specific Indigenous groups and Traditional Owners consulted and an indication of the areas, both tangible and intangible, of cultural significance across the proposed action site.

    ii. A discussion about how impacts to areas and/or objects of Indigenous cultural significance (tangible and intangible) are avoided, mitigated or minimised.

d. Describe any state requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action with regards to Indigenous peoples and communities.

e. The department considers that best practice consultation, in accordance with the Interim Engaging with First Nations People and Communities on Assessments and Approvals under the EPBC Act (2023).

9. ENVIRONMENTAL RECORD OF PERSON(S) PROPOSING TO TAKE THE ACTION

a. The information provided must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

    i. The person proposing to take the action.

    ii. For an action for which a person has applied for a permit, the person making the application.

    iii. If the person is a body corporate—the history of its executive officers in relation to environmental matters.

    iv. If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

    v. If the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers.

10. ECONOMIC AND SOCIAL MATTERS

a. The economic and social impacts of the action, both positive and negative, must be analysed. Analysis must include:

    i. Projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies. Where possible, please include the total economic capital investment and economic ongoing value of the project.

ii. Economic and employment opportunities expected to be generated by the project (including construction and operational phases), including, specifics on how priority will be given to local job creation and employment opportunities.

iii. Projected energy production including:

- The installed capacity (e.g. MW).
- The estimated generation of electricity over a period of time (e.g. MWh per annum).

b. Identification, assessment and mitigation measures to reduce any potential impacts to humans from the construction, operation and decommissioning of the proposed action. This may include blade erosion, blade vibration frequency, impeded public use of shared roads, visual amenity impact, electromagnetic interference to radar and radio and potential contamination risks. Economic and social impacts should be considered at the local, regional and national levels. Details of the relevant cost and benefits of alternative options to the proposed action, as identified in **section 2.3** above, should also be included.

11. PROMOTING ECOLOGICALLY SUSTAINABLE DEVELOPMENT

a. The draft PER must describe how the action will conform to the principles of ecologically sustainable development (ESD), which are as follows:

i. Decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

ii. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

iii. The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

iv. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.

12. INFORMATION SOURCES PROVIDED IN THE PER

a. For information given in a draft Public Environment Report, the draft must state:

i. The source of the information.

ii. How recent the information is.

iii. How the reliability of the information was tested.

iv. What uncertainties (if any) are in the information.

Ecological data provision

The PER must include an appendix of occurrence records (both sightings and evidence of presence)

for all listed threatened and migratory species identified during field surveys for the proposed action. This data may be used by the department to update the relevant species distribution models that underpin the publicly available Protected Matters Search Tool (PMST). Records should also be provided for common species not listed under the EPBC Act to inform assessment of survey adequacy.

The species occurrence records must be provided in accordance with the department's *Guidelines for biological survey and mapped data* (2018) using the species observation data template provided with this request for additional information. Sensitive ecological data must be identified and treated in accordance with the department's *Sensitive Ecological Data – Access and Management Policy V1.0* (2016) or subsequent revision.

13. CONCLUSION

An overall conclusion as to the environmental acceptability of the action should be provided, including discussion on compliance with principles of ESD and the objects and requirements of the EPBC Act. Reasons justifying undertaking the action in the manner proposed should also be outlined.

Measures proposed or required by way of offset for any unavoidable impacts on MNES, and the relative degree of compensation, should be restated here.

ATTACHMENT A - THE OBJECTS AND PRINCIPLES OF THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 SECTIONS 3 AND 3A

3 Objects of the Act

a) To provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance.

b) To promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.

c) To promote the conservation of biodiversity.

d) To promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples.

e) To assist in the co-operative implementation of Australia's international environmental responsibilities.

f) To recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity.

g) To promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.

3A Principles of Ecologically Sustainable Development

The following principles are principles of ecologically sustainable development.

a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

c) The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

e) Improved valuation, pricing and incentive mechanisms should be promoted.

ATTACHMENT B - SCHEDULE 4 OF THE EPBC REGULATIONS 2000 - MATTERS THAT MUST BE ADDRESSED IN A PER AND EIS

1 General information

1.01 The background of the action including:

a) The title of the action.

b) The full name and postal address of the designated Proponent.

c) A clear outline of the objective of the action.

d) The location of the action.

e) The background to the development of the action.

f) How the action relates to any other actions (of which the Proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action.

g) The current status of the action.

h) The consequences of not proceeding with the action.

2 Description

2.01 A description of the action, including:

a) All the components of the action.

b) The precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts.

c) How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts.

d) Relevant impacts of the action.

e) Proposed safeguards and mitigation measures to deal with relevant impacts of the action.

f) Any other requirements for approval or conditions that apply, or that the Proponent reasonably believes are likely to apply, to the proposed action.

g) To the extent reasonably practicable, any feasible alternatives to the action, including:

   i. If relevant, the alternative of taking no action.

   ii. A comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action.

   iii. Sufficient detail to make clear why any alternative is preferred to another.

h) Any consultation about the action, including:

   i. Any consultation that has already taken place.

   ii. Proposed consultation about relevant impacts of the action.

iii. If there has been consultation about the proposed action — any documented response to, or result of, the consultation.

i. Identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

3 Relevant impacts

3.01 Information given under paragraph 2.01(d) must include:

a) A description of the relevant impacts of the action.

b) A detailed assessment of the nature and extent of the likely short term and long term relevant impacts.

c) A statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible.

d) Analysis of the significance of the relevant impacts.

e) Any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

4 Proposed safeguards and mitigation measures

4.01 Information given under paragraph 2.01(e) must include:

a) A description, and an assessment of the expected or predicted effectiveness of, the mitigation measures.

b) Any statutory or policy basis for the mitigation measures.

c) The cost of the mitigation measures.

d) An outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing.

e) The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

f) A consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the Proponent.

5 Other Approvals and Conditions

5.01 Information given under paragraph 2.01(f) must include:

a) Details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:

i. What environmental assessment of the proposed action has been, or is being carried out under the scheme, plan or policy.

ii. How the scheme provides for the prevention, minimisation and management of any relevant impacts.

b) A description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the action.

c) A statement identifying any additional approval that is required.

d) A description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

6 Environmental record of person proposing to take the action

6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

a) The person proposing to take the action.

b) For an action for which a person has applied for a permit, the person making the application.

6.02 If the person proposing to take the action is a corporation — details of the corporation's environmental policy and planning framework.

ATTACHMENT C: BIRD AND BAT MANAGEMENT PLAN (BBMP) REQUIREMENTS

The following table outlines the framework for the preparation and submission of a draft BBMP as an appendix to the PER. The purpose of the BBMP is to enable a robust long-term approach to mitigate and manage potential impacts of the proposed action associated with individual mortality from turbine collision and barotrauma, and potential changes to species utilisation of the proposed action area and the area adjacent to the proposed action on relevant listed threatened and migratory bird and bat species.

The draft BBMP must be prepared by a suitably qualified ecologist and in accordance with the department's *Environmental Management Plan Guidelines* (2024) available at: https://www.dcceew.gov.au/sites/default/files/documents/environmental-management-plan-guidelines.pdf. The draft BBMP must be informed by desktop and field-derived information, best available practices, appropriate standards, evidence of effectiveness for other similar actions and supported by published scientific evidence.

C1. Pre-commissioning requirements	
C1.1	**Desktop assessment** To predict the potential for listed threatened and migratory bird and bat species to be using the proposed action area and the area adjacent to the proposed action, the BBMP must include the process and outcomes of a preliminary site characterisation (desktop and/or initial site visit) for each species to identify all drivers of presence on the proposed action area and utilisation of the proposed action area. This characterisation must include, at a minimum, the consideration of: • Site characteristics: focal habitat features, topography, prevailing wind and weather patterns, wetlands and distance to potential nesting, roosting and foraging areas (including neighbouring National Parks and State Forests). • Species characteristics: behaviour, flight or demographic factors (e.g. species presence [ongoing, transitory/migratory]), site use (e.g. transit, roosting, breeding and/or foraging), flight paths (including migratory flight paths), flight heights, soaring, flocking, and population numbers.
C1.2	**Site-specific assessment** To validate the outcomes of the desktop assessment, the BBMP must include a site-specific assessment of how at-risk listed threatened and migratory bird and bat species are using, or likely to use, the proposed action area and the area adjacent to the proposed action. This assessment must be informed by site-specific and species-specific site utilisation surveys (undertaken by a suitably qualified expert) and supported by other relevant scientific evidence. At least 24 months of site utilisation surveys must be undertaken to provide sufficient baseline data about a relevant species' potential to utilise the proposed

	action area and the area adjacent to the proposed action. This means that site utilisation surveys must be undertaken for each relevant season over a minimum two years (up to 8 survey events). Each site utilisation survey must be of an appropriate duration and spatial coverage (including taking into consideration the potential turbine layout and visibility) to adequately evaluate site utilisation. At a minimum, each site utilisation survey must record the relevant information specified in 'Species characteristics' of the desktop assessment (Section C1.1 above). The BBMP must include the site utilisation survey methodology for each relevant species. Discussion must be provided that includes detailed information on: • How the design of the site utilisation surveys for each relevant species has been informed by its drivers of presence on the proposed action area and utilisation of the proposed action area (as determined through the preliminary site characterisation). Consider requirement for sampling at rotor swept height where appropriate such as deployment of detectors on meteorological masts in addition to ground level detectors to improve efficacy of detection of bat species. • How site utilisation surveys for each relevant species have been designed to improve understanding of site utilisation on the proposed action area and the area adjacent to the proposed action; and support an ongoing Before-After, Control Impact (BACI) framework in the BBMP.

C1.3	**Long-term impact risk assessment**
	
	To enable a robust assessment of the potential impacts of the proposed action on listed threatened and migratory bird and bat species, the BBMP must include, at a minimum:
	
	• An assessment of the potential impact pathways on each relevant species (based on the desktop assessment [Section C1.1 above] and site utilisation surveys [Section C1.2 above]) including, at a minimum:
	
	  ○ Direct mortality from turbine collision and barotrauma.
	
	  ○ Potential changes to species utilisation of the proposed action area and the area adjacent to the proposed action during construction and operation of the proposed action.
	
	• Identification of potential impacts to each relevant species from direct mortality, including but not limited to:

	○ Analysis and mapping of suitable habitat, territories and activity/utilisation patterns/rates (e.g. 'heat maps') in the proposed action area and the area adjacent to the proposed action. ○ Flight path analysis of relevant birds and bats including heights and speeds. • A collision risk assessment, which must incorporate: ○ An assessment of the proposed action area and surrounds to identify any high-risk turbines. ○ Baseline data collected during the minimum 24 months of site utilisation surveys. ○ A statement of all assumptions and uncertainties. The BBMP must include a map for each relevant species that identifies area/s in the proposed action area and the area adjacent to the proposed action determined to be 'high risk' based on the collision risk assessment. The BBMP must clearly demonstrate how relevant departmental policies and guidelines, and the SPRAT Database, have been used to assess the above potential impacts on listed threatened and migratory bird and bat species.
C1.4	**Curtailment thresholds** The assessment should determine the appropriate impact for which curtailment would be implemented for all threatened and migratory species likely to be impacted by collision and/or barotrauma as the result of the action, as defined in C1.1 and C1.2 of the BBMP.

C2. Post-Commissioning requirements	
C2.1	**Environmental outcomes** To enable a robust long-term approach to mitigate and manage potential impacts from turbine collision and barotrauma, and potential changes to species utilisation of the proposed action area and the area adjacent to the proposed action, the BBMP must include specific environmental outcomes to be achieved by the implementation of the BBMP. This may include, but is not limited to: • An improved understanding of the risk of turbine collision and barotrauma impacts on listed bird and bat species. • An improved understanding of whether or how proposed action area usage changes as a result of wind farm construction and operation.

	• An improved monitoring approach for the timely identification of turbine collisions and the timely collection and analysis of data. • An improved approach to the timely and regular validation and update to the collision risk assessment using monitoring data, to support a robust adaptive management approach. • The development and implementation of tangible, on-ground management measures and corrective actions to promote a long-term reduction in the risk of turbine collision and barotrauma impacts on listed bird and bat species.
C2.2	**Long-term site utilisation surveys** To detect potential long-term changes to species utilisation of the proposed action area and the area adjacent to the proposed action as a result of operations, the BBMP must include a long-term site utilisation survey program (prepared by a suitably qualified expert) for each relevant species. The program must, at a minimum: • Be designed to ensure that species behavioural responses can be detected, including avoidance of turbines and changes to site utilisation. • Be designed to support a BACI monitoring framework. • Include site utilisation survey methodologies, and proposed timings, which are consistent with the pre-commissioning site utilisation survey methodologies. • Be undertaken by a suitable qualified expert. • Be statistically reliable. • Be able to inform adaptive mitigation and management measures, and corrective actions, to ensure environmental outcomes will be achieved and impacts are minimised to the greatest extent reasonably possible.
C2.3	**Long-term turbine collision and barotrauma monitoring** To manage potential long-term mortality impacts on relevant species as a result of turbine collision and barotrauma, the BBMP must include a long-term monitoring and collision risk assessment update approach. The approach must, at a minimum: • Include details of the nature, timing and frequency of monitoring to inform progress against achieving the environmental outcomes, and be sufficient to determine whether the BBMP is likely to achieve those environmental outcomes in adequate time to implement all necessary corrective actions. • Demonstrate how species-specific factors (e.g., size, colour) and site-specific factors (e.g., terrain, ground cover, seasonality, obstructions) have been

	incorporated into the design of monitoring programs (i.e., turbine selection, feasibility of conducting searches etc.).
	• Include a proposed timeframe for the regular validation and update of the collision risk assessment using site-specific data collected through ongoing monitoring activities.
	• Include a commitment to DNA test carcasses, where identification of a carcass based upon morphology is inconclusive and cannot rule out a potential listed species.
	• Include a commitment for carcass persistence trials and searcher efficiency trials to maximise the accuracy of total mortality estimates by determining the appropriate correction factor:
	  ○ For carcass persistence trials, ensure carcass type and placement around the site is appropriate.
	  ○ For searcher efficiency trials, ensure trials are completely blind.
	• Include a commitment to determine whether there is variation in detection and persistence rates due to seasonality, substrate, or location at windfarm.
	
	The BBMP must take into account the following paper in the development of a long-term monitoring program, including the survey data requirements set out in Appendix 2:
	
	Moloney, P.D., Lumsden, L.F. and Smales, I. (2019). *Investigation of existing post-construction mortality monitoring at Victorian wind farms to assess its utility in estimating mortality rates*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 302. Department of Environment, Land, Water and Planning, Heidelberg, Victoria.

C2.4	**Reporting requirements to the department**
	
	The BBMP must include, at a minimum, the following reporting commitments (and proposed timeframes) for the provision of site-specific and species-specific information to the department:
	• Annual turbine strike reports, comprising:
	  ○ Raw strike data and strike notifications.
	  ○ Survey methodologies.
	  ○ Results of detection/persistence trials.
	  ○ Environmental/meteorological conditions.
	  ○ Associated statistical analysis.

	• Estimations of annual mortality rate for each relevant species, comprising:
	  ○ Supporting evidence from case studies of listed species carcass size classes.
	  ○ Results of persistence trials and searcher efficiency trials.
	  ○ Annual probability of detection and monthly strike monitoring.
	  ○ Collision monitoring protocol and survey effort.
	• Species occurrence records in accordance with the department's *Guidelines for biological survey and mapped data* (2018) using the department's *Species observation data template* (sensitive ecological data must be identified and treated in accordance with the department's *Sensitive Ecological Data—Access and Management Policy V1.0* (2016) or subsequent revision).

C2.5	**Adaptive management framework**
	To ensure the environmental outcomes will be achieved for relevant species, the BBMP must include an adaptive management framework. The adaptive management framework must, at a minimum:
	• Be designed to clearly demonstrate the linkages between:
	  ○ Environmental outcomes.
	  ○ Implementation of mitigation and management measures.
	  ○ Monitoring, reporting and investigations.
	  ○ Implementation of corrective actions to ensure environmental outcomes will be achieved.
	• Be designed to incorporate site-specific data collected through ongoing monitoring activities (see requirement C2.4 above) and take into account changes to turbine risk ratings based on the collision risk assessment.
	• Identify, with proposed timeframes for implementation, responsible parties, tangible, on-ground corrective actions to be implemented if monitoring activities indicate the environmental outcomes have not been achieved.

C2.6	**Offset requirements and shutdown procedures** The BBMP must include a framework for the ongoing assessment of impacts on protected matters as a result of turbine strike and/or barotrauma. Annual impact triggers (informed by scientific literature and relevant departmental guidelines) must be tracked and reported to the department. Incremental impact triggers must be tracked that, if reached or exceeded, may require:

	• The implementation of additional/alternative mitigation measures (which should include curtailment). Provide a discussion on curtailment of wind turbines specific to relevant listed bird and bat species in the BBMP. Include details of timing for this measure and specific wind speeds for which it will apply. • The provision of environmental offsets, which should be defined in the BBMP to be implemented in the event that impact triggers are exceeded. • Shutdown procedures – the wind turbine generator/s that contributed to reaching or exceeding an impact trigger may be required to cease operation. Note that the department considers curtailment of wind turbines for particular periods is necessary to minimise impacts from collision and barotrauma to specific listed bird and bat species. Operationally it may be necessary to shutdown individual wind turbines, groups of wind turbines or all wind turbines in a project site when an impact trigger threshold is reached for particular listed bird or bat species.