Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC ref: 2023/09639

Ruth Smith
Senior Environment and Development Planner
Tilt Renewables
L24/600 Bourke Street
MELBOURNE VIC 3000
ruth.smith@tiltrenewables.com

Dear Ms Smith

**Further information required for preliminary documentation for Waddi Wind Farm, WA**

I am writing to you about your proposal to construct and operate a wind farm, including associated transmission line infrastructure, located 150 km north of Perth.

On 13 November 2023, a delegate of the Minister for the Environment and Water decided that the proposed action is a controlled action and that it will be assessed by preliminary documentation. Further information was required to assess the relevant impacts of the proposed action.

I refer to your submission of the Preliminary Documentation (PD) for this project, on 8 May 2024.

The department has reviewed the PD and the details outlining the further information required is at Attachment A. The critical outstanding information are the additional surveys for Carnaby's cockatoos and star sun-orchids requested on 22 December 2023. We are keen to ensure seasonal opportunities to conduct these surveys are undertaken at the earliest time possible.

The department will work closely with Tilt Renewables in 2024 to address any comments or questions that may arise from the information request to enable the timely finalisation of the Preliminary documentation.

If you have any questions about the assessment process or the further information required, please contact the project manager Cameron Craigie, by email to EADSouthWA@dcceew.gov.au or telephone (08) 98667400 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Kate Hamer
Director
South WA Section

28 May 2024
Attached: Attachment A - Waddi Wind Farm, WA (EPBC ref 2023/09639) comments on preliminary documentation (First Draft)

**Attachment A: Waddi Wind Farm, WA (EPBC ref 2023/09639) comments on preliminary documentation (First Draft)**

| Topic | Requested | Comments |
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| **1. Ecological data provision** | 1. 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. 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. | 1. Further requested field studies have not been conducted. Please provide the requested appendix of occurrence records (both sightings and evidence of presence) for Carnaby's Cockatoo (*Zanda latirostris* listed as *Calyptorhynchus latirostris*) and Fork-tailed Swift (*Apus pacificus*) identified during the field surveys for the proposed action. |
| **2. Additional information on listed threatened bird species and listed migratory species** | Additional information on all listed, threatened and migratory bird species must include but may not be limited to:<br><br>1. The status of populations (e.g. abundance) that occur in, adjacent to, or may transit or overfly, the project area. | 1. Criteria met for: Curlew Sandpiper (*Calidris ferruginea*), Sharp-tailed Sandpiper (*Calidris acuminata*), Pectoral Sandpiper (*Calidris melanotos*), and Common Sandpiper (*Actitis hypoleucos*). Assessment of the status of the population is required for: Carnaby's Cockatoo (*Zanda latirostris* listed as *Calyptorhynchus latirostris*) and Fork-tailed Swift (*Apus pacificus*). |
| | 2. Assessment of habitat occurring within, or adjacent to, the project area, and its importance (including habitat utilisation) in a local, regional, national and international context. | 2. Criteria met for: Curlew Sandpiper, Fork-tailed Swift, Sharp-tailed Sandpiper, Pectoral Sandpiper, Common Sandpiper, and Fork-tailed Swift. Assessment of habitat is required for: Carnaby's Cockatoo, particularly related to roosting and breeding habitat utilised by nesting birds. |
| | 3. Assessment of site utilisation for each of the bird species including foraging, roosting, transiting, resting and nesting habitats, and migratory flight paths across the site. This must include frequency, time of day/night, numbers and time of year, particularly with regard to migratory overflying. | 3. Site utilisation not required for: Curlew Sandpiper, Sharp-tailed Sandpiper, Pectoral Sandpiper, and Common Sandpiper. Assessment of site utilisation required for: Carnaby Cockatoo and Fork-tailed Swift. |
| | 4. Include a discussion on vegetation composition and structure in relation to the development footprint, project area and broader region. The presence, extent and density (including foliage cover and flowering density) of all plant species that provide foraging, including non-native food sources. | 4. Criteria met, no further information required. |
| | 5. Provide detailed mapping of suitable habitat for all listed threatened or migratory bird species which: | 5. Detailed mapping was not provided of the suitable habitat for all listed threatened or migratory bird species which includes: i-ix. |

**Attachment A**

| Topic | Requested | Comments |
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| | i. Is specific to the habitat assessment undertaken for each bird species.<br>ii. Includes an overlay of the updated project disturbance footprint.<br>iii. Includes known records of individuals derived from desktop analysis, including from SPRAT Database and field surveys.<br>iv. Include habitat that is within and adjacent to the project to provide regional context.<br>v. Include a map of all water bodies (including farm dams/ troughs, etc.) within the development footprint, project area and broader region, with an overlay of the different habitat features (e.g., breeding, foraging, dispersal).<br>vi. Identification of permanent or seasonal water bodies or watercourses within twelve (12) kilometres of the disturbance footprint to demonstrate the use of different habitat features.<br>vii. Discuss the suitability of the water sources for each of the species (e.g., rate of water movement, potability for birds, access).<br>viii. Include mapping of nearby conservation areas (e.g. National Parks, Nature Reserves, Nature refuges, etc.) and road reserves and describe how these different habitats are utilised for each of the species (e.g. breeding, foraging, roosting).<br>ix. Images provided separately as attachments in JPEG format. | Separate maps need to be provided for the Carnaby's cockatoo and the Fork-tailed Swift.<br>It would be appropriate to include a singular map for the migrating waders. |
| | 6. Details of the foraging habitat available to each bird species, and the impact the proposed action will have on the ability for species to utilise this habitat. | 6. Criteria met for: Curlew Sandpiper, Fork-tailed Swift, Sharp-tailed Sandpiper, Pectoral Sandpiper, Common Sandpiper, and Fork-tailed Swift.<br>Further Assessment is required for the Carnaby's Cockatoo. |
| | 7. Details of the flight characteristics and behaviours of the listed birds species, specifically with regard to occupying or overflying the project area within the rotor swept area and transmission lines. | 7. Flight characteristics and behaviours is not required for: Curlew Sandpiper, Sharp-tailed Sandpiper, Pectoral Sandpiper, and Common Sandpiper.<br>Further flight characteristics and behaviours is required for: Carnaby Cockatoo and Fork-tailed Swift. |

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| **2.1.2 Carnaby's Black-Cockatoo (*Zanda latirostris* listed as *Calyptorhynchus latirostris*) (Endangered)** | Preliminary Documentation must include a detailed habitat assessment for Carnaby's Black Cockatoos (CBC). A general fauna habitat assessment was provided with the referral documentation and additional information about the quality of the foraging habitat, the availability of breeding habitat for CBC is required, including:<br>1. Provide the results/scores of a habitat quality assessment using methodology that recognises key habitat characteristics specific to CBC foraging habitat requirements and values. The values from the scoring system for the assessment of foraging value of vegetation for CBC must be supported with clear evidence. Relevant habitat characteristics and associated methodology needs to be documented. | 1. Criteria met. |
| | 2. Provide further information on breeding habitat trees. The Referral guideline for 3 WA threatened black cockatoo species notes that trees suitable to develop a nest hollow in the future are 30-50 cm DBH. Provide details (number, type and size) of trees with DBH > 30 cm. Provide details (number, type and size) of potential roosting trees. | 2. Sufficient information has been provided with the location of breeding habitat trees. |
| | 3. Provide details of trees (number, type and size) with a diameter at breast height (DBH) within 12 km radius from the perimeter of the proposed action area. a. Discuss the distance of the closest breeding site from the proposed action site, the species using the breeding site, the size of the breeding site (number of trees and area in ha), and estimated number of breeding pairs that use the site. | 3. Further information needs to be provided on breeding and roosting locations within 12km. We are particularly interested in information regarding the breeding and roosting locations near the perimeter of the proposed action and out to 6km. This information is imperative to characterising the Carnaby's use of the area and assess the possible direct and/or indirect impacts. |
| | 4. Provide further information on the role of the site in maintaining habitat connectivity and supporting CBC movement through the landscape. | 4. Further information needs to be provided, expanding the information from the Murdoch tracking data. Murdoch's data relates to a very small number of the Carnaby's cohort that use and move through the landscape. This data relates to a small number of individuals tracked from three primary breeding areas. Providing an understanding of how breeding birds (not represented in the Murdoch study) use and move |

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| | | through the breeding habitat and landscape is imperative. The Department is looking for behavioural observations that provide:<br>• The likely navigation flight paths to be used by breeding and roosting birds (such as predominantly flying close to vegetation canopy and utilise these areas as ecological linkages from breeding to roosting and foraging habitats).<br>• Where breeding and roosting birds are likely to cut across open areas between vegetation linkages.<br>• How breeding birds will move across cleared ground and at what height they fly when: the distance isn't significant; they do not have any other option; they are reacting to birds of prey; and they are under significant pressure to supply resources.<br>Understanding the areas the birds are flying to and from and how they may utilise the site is imperative to assess the possible significance of impacts. Although the species is considered to be of medium likelihood of direct impact with the turbines, any impact would be of high consequence to the species. |
| | 5. Provide a mapped area including a 12 km radius from the perimeter of the proposed action area. The map must include:<br>i. potential habitat (vegetation cover that could include vegetation types likely to include species suitable for foraging, breeding and/or roosting habitat).<br>ii. suitable watering habitat, based on the best available information.<br>iii. Conservation areas (areas with ongoing conservation protection on the title of the land, under an enduring protection mechanism).<br>iv. Migration and key seasonal movement patterns of CBC flocks, relative to the proposed action area (based on best available information).<br>v. Known areas of aggregation/key habitats areas. | 5. A consolidated mapped area still needs to be provided. The map should include a 6km and a 12km radius from the perimeter of the proposed action area, as well as i. – v.<br>All the sourced information should be included on one layered map. |

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| | 6. Provide a description of methodology, source data and any other relevant evidence used to create the maps. | 6. An adequate description of methodology, source data and any other relevant evidence used to create the maps still needs to be provided. |
| | 7. Survey data more than 5 years old may be used as supplementary supporting evidence; however, due to continual changes in populations of species, recent survey data is required. | 7. Further surveys will be required to better understand the site utilisation by Carnaby's cockatoos as outlined in point 2.1.2.4 above.<br><br>In accordance with the department's requirement for recent survey data the only site-specific surveys related to the Carnaby's cockatoo were the 2022 Reconnaissance Flora Survey that looked at flora and the foraging habitat of the cockatoo, and the 2022 Black Cockatoo Habitat Assessment that looked at the foraging, roosting, and breeding habitat in the Project Area. The purpose of 2022 Black Cockatoo Habitat Assessment was to look at Carnaby habitat, and during the assessment some observations of Carnaby presence was noted. The area covered 1408.26 ha on the 14 and 15 October 2021 using All Terrain Vehicles and 4WD, and 42.43ha on the 28 October 2022 predominantly by foot. |
| **2.2.1 Banksia Woodlands of the Swan Coastal Plain Ecological Community – (Endangered)** | The referral form states that 0.3 ha of Banksia TEC will be impacted by the proposed action. With reference to the Conservation Advice, address the following:<br>1. Provide the size and condition of the larger patch that the 0.3 ha is within. Survey the patch extending outside of the proposed action area to provide a regional context. | 1. Criteria met. |
| | 2. Provide an analysis as to whether the wider patch remains a TEC with the removal of the 0.3 ha within the proposed action area. | 2. Criteria met. |
| | 3. The referral application notes that the 0.3 ha is in 'Excellent to Good to Very Good condition'. The supplementary flora, vegetation, and fauna survey (Att15) identified 5.05 ha of Banksia Low Open Woodland vegetation units in 'Excellent' condition. Please confirm the condition of the 0.3 ha. | 3. Criteria met. |
| | 4. Provide the Floristic Community Type of the Banksia TEC. | 4. Criteria met. |
| | 5. Provide a regional context map showing the extent of the Banksia TEC. | 5. A consolidated map needs to be provided that show the project area, the 0.3ha proposed to be cleared, 12.7ha of further Banksia TEC, and DBCA regional records. |

**Attachment A**

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| **2.2.2 Star Sun-orchid (*Thelymitra stellata*) (Endangered)** | Discuss the habitat and number of individuals of Star Sun-orchid (*Thelymitra stellata*) in the development footprint, and project area. Include a discussion on the habitat and how it aligns with the Star Sun-orchid Conservation Advice in the immediate region.<br><br>1. Conduct a targeted surveys for Star Sun-orchid in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids found at Table C Item 2.4d. Surveys should be during the flowering seasons within the development footprint, project area and broader region to provide a greater understanding of the occurrence of the species. | 1. No further surveys have been conducted since the 29 Sept 21-7 Oct 2021 survey over 1408 ha and the 7 and 9 Sept 2022 survey over 37ha. The requested additional targeted survey for Star Sun-orchid in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids is still required.<br><br>The targeted survey in 2022 was conducted in early September and not during the peak detectability month of October in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids.<br><br>The Department considers that, even with the period leading up to survey in 2021 being considered ideal, surveying later into the month of October may have identified further individuals. Several records of the Star Sun Orchid within the Project Area and within close proximity to the Indicative Works Area were identified in the DBCA records, however, these were not identified during the 2021 and/or 2022 surveys.<br><br>We note that the 2021 survey plus the 2022 targeted survey covered 90% of the proteaceous heath vegetation within the Native Vegetation Clearing Area. Given the proteaceous heath is key target habitat for the endangered Star sun-orchid, we request that the 90% of likely star sun-orchid habitat is re-surveyed and the remaining 10% is surveyed for the first time during the ideal time window according to the Draft Survey Guidelines for Australia's Threatened Orchids (October to December), unless a local orchid expert justifies a more appropriate survey window in accordance with the local conditions. This additional survey can be considered to cover the multiple seasons required in the Draft Survey Guidelines for Australia's Threatened Orchids and ensure that 100% of the likely star sun-orchid habitat within the project area is surveyed. |
| | 2. Weather and climate conditions must be recorded for all surveys and the periods leading up to surveys as the orchid does not | 2. Weather and climate conditions leading up to surveys was included; however, no information was provided relating to the timings or conditions on the days of survey. |

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| | flower every year and may remained closed during cool and overcast weather opening only in warm, sunny weather. | |
| | 3. Provide a map that clearly demonstrates the extent of the orchid with an overlay of the different habitat features within and adjacent to the project area. | 3. A consolidated map needs to be provided that show the project area, DBCA records, survey records, with an overlay of suitable habitats within and adjacent to the project area for the species. |
| | 4. Discuss the relationships between the habitat, the surveyed individuals, the development footprint, the likely need to support the genetic connectivity between the known and likely occurrences of the orchid across the distribution and broader regions. | 4. Discussion on the relationships between the habitat, the surveyed individuals, the development footprint, the likely need to support the genetic connectivity between the known and likely occurrences of the orchid across the distribution and broader regions has not been provided. Discussion into the relationship requested in 2.2.2.4 will need to include the DBCA records and any further records located during further surveys.<br>Should pre-clearance surveys detect the species in areas of planned disturbance, DCCEEW is seeking avoidance of all individuals. Further, the Department requires an adequate protective buffer to all individuals. The buffer size should be justified by an accepted orchid expert with support of scientific evidence. The buffer should consider the types of indirect impacts of the proposed action will impose on the populations. |
| **2.2.3 Dwarf Green Kangaroo Paw (*Anigozanthos viridis* subsp. *Terraspectans*) (vulnerable)** | Discuss the habitat and number of individuals of Dwarf Green Kangaroo Paw (*Anigozanthos viridis subsp. Terraspectans*) in the development footprint, project area and immediate region. The Reconnaissance Flora and Vegetation Assessment identified the occurrence of Dwarf Green Kangaroo Paw flora species in the development envelope. However, no information was provided on the species location, the numbers in the area, or the occurrences in relation to the Indicative Disturbance Area.<br>1. Discuss the habitat and the number of surveyed individuals in relation to the development footprint, and project area. | 1. Criteria met. |
| | 2. Discuss this population within the context of the immediate region. | 2. Criteria met. |

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| | 3. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area. | 3. A consolidated map needs to be provided that shows the project area, DBCA records, survey records, with an overlay of suitable habitats within and adjacent to the project area for the species. |
| | 4. Discuss the potential impacts to the species and if the proposed action is likely to adversely affect habitat critical to the survival of the species in alignment with the approved Conservation Advice for *Anigozanthos viridis* subsp. *terraspectans* (Dwarf Green Kangaroo Paw). | 4. Criteria met. |
| | 5. If required, conduct targeted surveys for Dwarf Green Kangaroo Paw and its habitat in accordance with the Environmental Protection Authority (EPA) (2016a) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016. | 5. Further surveys not required. |
| **2.2.4 Lesueur Hakea (*Hakea megalosperma*) (vulnerable)** | Discuss the habitat and number of individuals of Lesueur Hakea (*Hakea megalosperma*) in the development footprint, project area and immediate region. The Reconnaissance Flora and Vegetation Assessment identified the occurrence of Lesueur Hakea (*Hakea megalosperma*) flora species in the development envelope. However, no information was provided on the species location, the numbers in the area, or the occurrences in relation to the Indicative Disturbance Area. The possible impact on this listed flora species has not been addressed in the referral documentation.<br>1. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area. | 1. A consolidated map needs to be provided that shows the project area, DBCA records, survey records, with an overlay of suitable habitats within and adjacent to the project area for the species. |
| | 2. Discuss the habitat and the number of surveyed individuals in relation to the development footprint, project area and immediate region. | 2. In addition to the discussion of the species within the PD, a suitable description of the location of the species (e.g. road reserve) needs to be provided. |
| | 3. Discuss the potential impacts to the species and if the proposed action is likely to adversely affect habitat critical to the survival of the species in alignment with the approved Conservation Advice for *Hakea megalosperma* (Lesueur Hakea). | 3. Discussion on the potential impacts to the species and if the proposed action is likely to adversely affect habitat critical to the survival of the species in alignment with the approved Conservation Advice for *Hakea megalosperma* (Lesueur Hakea) has not been provided. This discussion should include proximity to existing infrastructure (e.g. unsealed road) |

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| | | and outline any potentially indirect impacts such as dust from increased road use due to the wind farm operations. |
| | 4. Surveys for Lesueur Hakea and its habitat must be conducted in accordance with the Environmental Protection Authority (EPA) (2016a) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016. | 4. Further surveys not required. |
| **2.2.5 Sandplain Duck Orchid (*Caleana dixonii* listed as *Paracaleana dixonii*) (endangered)** | The department notes that the Reconnaissance Flora and Vegetation Assessment did not identify these species within the development envelope; however, suitable vegetation types occur within the development envelope. The department considers that these species of orchids may not emerge each year if conditions are not favourable, can be cryptic and sometimes multiple survey efforts may be required to conclude likely absence. Targeted surveying is required to conclude with confidence whether the Sandplain Duck Orchid is absent from the proposed action area.<br>1. Conduct targeted surveys for the Sandplain Duck Orchid, and its habitats within the development footprint, project area and broader region in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids found at Table C Item 2.4d. | 1. No further surveys have been conducted since the 29 Sept 21-7 Oct 2021 survey over 1408 ha and the 7 and 9 Sept 2022 survey over 37ha. The requested additional targeted survey for Sandplain Duck orchid is still required to be undertaken in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids. These Survey Guidelines indicates peak detectability for this species is October to January and requires 2 consecutive seasons. This additional survey can be considered to cover the multiple seasons required in the Draft Survey Guidelines for Australia's Threatened Orchids and ensure that 100% of the likely sandplain duck orchid habitat within the project area is surveyed. Due to the cryptic nature of this species, the survey should be undertaken when a known local population is confirmed to be flowering to ensure the adequacy of the environmental factors leading to this species presenting. This will support claims if the species is found to be absent during targeted surveys. |
| | 2. If follow up surveys detect the species: provide information about population size and the number of individuals that will be directly and indirectly impacted by the proposed action as well as habitat quality for the development footprint, project area and broader region. | 2. Surveys have not been conducted. |
| | 3. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area. | 3. A consolidated map needs to be provided showing the project area, DBCA records, survey records, with an overlay of suitable habitats within and adjacent to the project area for the species. |
| **2.2.6 Glossy-leafed Hammer Orchid** | The department notes that the Reconnaissance Flora and Vegetation Assessment did not identify these species within the development envelope; however, suitable vegetation types occur within the development envelope. The department considers that | 1. Sufficient evidence has been provided to support the absence of this species in this project location. |

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| **(*Drakaea elastica*) (endangered)** | these species of orchids may not emerge each year if conditions are not favourable, can be cryptic and sometimes multiple survey efforts may be required to conclude likely absence. Targeted surveying is required to conclude with confidence whether the Glossy-leafed Hammer Orchid is absent from the proposed action area.<br>1. Conduct targeted surveys for the Sandplain Duck Orchid, the Glossy-leafed Hammer Orchid and their habitats within the development footprint, project area and broader region in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids found at Table C Item 2.4d. | |
| | 2. If follow up surveys detect the species: provide information about population size and the number of individuals that will be directly and indirectly impacted by the proposed action as well as habitat quality for the development footprint, project area and broader region. | 2. No longer required. |
| | 3. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area. | 3. No longer required. |
| **3. Relevant Impacts** | The preliminary documentation must include an assessment of potential impacts (including direct, indirect, facilitated and cumulative impacts) that may occur as a result of all elements and project phases of the proposed action (e.g. construction, post-construction and operation) on the MNES addressed at Section 2. 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 impact on adjacent areas that are likely to contain populations of, or habitat for, MNES. | The relevant impacts component of the Preliminary Documentation has not been assessed as further surveys are required in order to better define the possible direct, indirect, facilitated and accumulative impacts. |
| **4. Proposed Avoidance and Mitigation Measures** | Avoidance and mitigation measures are the primary methods of eliminating and reducing significant impacts on MNES. Where possible and practicable it is best to avoid impacts. If impacts cannot be avoided, then they should be minimised or mitigated as much as possible. Avoidance and mitigation measures must be investigated | The proposed avoidance and mitigation measures of the preliminary documentation have not been assessed as further surveys are required in order to better define the possible impacts. |

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| | thoroughly as a part of the assessment and be supported by evidence to demonstrate likely success.<br>The preliminary documentation must include detailed descriptions of measures proposed to be undertaken by the proponent to avoid, minimise and manage relevant impacts of the project on the listed MNES species. The proposed measures should be based on best available practices, appropriate standards and supported by scientific evidence and must include the following elements: | |
| **5. Residual Impacts and Proposed Offsets** | Describe the residual impacts on MNES that are likely to occur as a result of the proposed action in its entirety, after proposed avoidance and mitigation measures are taken into account. If applicable, this should include the reasons why avoidance or mitigation of impacts cannot be reasonably achieved.<br>If residual impacts are likely to be significant, please provide an offset package to compensate for residual impacts to MNES. This should consist of an offset proposal and key commitments and management actions to deliver and implement a proposed offset (i.e. an Offset Management Plan).<br>Offsets must directly contribute to the ongoing viability of the threatened and migratory species. It must deliver an overall conservation outcome that improves or maintains the viability of the protected matter, as compared to what is likely to have occurred if neither the action nor the offset had taken place. The offset proposal should demonstrate how the conservation outcome will be delivered for the protected matter. | The proposed residual impacts of the projects can not be understood until further required surveys have been undertaken. Therefore, the residual impacts and proposed offsets have not been assessed for the preliminary documentation at this stage. |
| **6. Other Approvals and Conditions** | The preliminary documentation must include information on any other requirements for approval or conditions that apply, or that you reasonably believe are likely to apply, to the proposed action. This must include:<br>1. A description of any approval obtained or required to be obtained from a State or Commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the proposed action. | 1. The preliminary documentation provides information on the acts, regulations and guidance's applicable to the proposed action. There appears to only be an approval given by the Shire of Dandaragan under the Planning and Development Act 2005. Further information is required on the relevant approvals required and where the proponent is at with each approval.<br>2. To assist the description of the monitoring, enforcement and review procedures that apply, or are proposed to apply to the action (still to |

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| | 2. A description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action. | be adequately provided), please include a map listing all the lots, road reserves and crown land parcels for the proposed action. The enforcement and procedures relevant to the land tenures, such as land use agreements, need to be provided.<br>**Lot and road reserve details Certificate of Title (volume/folio)**<br>Lot 2 on Deposited Plan 8424 1747/835<br>Lot 3 on Deposited Plan 8424 1604/69<br>Lot 2 on Deposited Plan 408189 2906/375 (intersect mining lease)<br>Lot 3 on Deposited Plan 408189 2906/376 (intersect mining lease)<br>Lot 101 on Diagram 72336 1780/891<br>Lot 105 on Deposited Plan 59027 2685/985<br>Lot 3846 on Deposited Plan 209083 1604/70<br>Lot 3805 on Deposited Plan 209083 1888/114<br>Lot 3897 on Deposited Plan 209569 1834/391<br>Lot 3899 on Deposited Plan 209567 1780/892<br>Lot 3903 on Deposited Plan 209569 1859/822<br>Lot 3901 on Deposited Plan 209568 3141/872<br>Lot 4134 on Deposited Plan 240347 3089/642 (DBCA managed Crown Reserve 41986)<br>**Road reserve**<br>P Road (Land ID 3182207)(Shire of Dandaragan managed Waddi Road Reserve)<br>P Road (Land ID 3608625)(Shire of Dandaragan managed Mullering Road Reserve)<br>P Road (Land ID 3608624) – (Main Roads WA managed Brand Highway Road Reserve) |
| **7. Social and Economic** | The proponent must provide a discussion and analysis of the social and economic impacts of the project, both positive and negative, in the preliminary documentation. Economic and social impacts should be considered at the local, regional and national levels. Matters of interest may include:<br>1. details of any public consultation activities undertaken, and their outcomes; | 1. Criteria met.<br>2. Criteria met.<br>3. Criteria met.<br>4. Criteria met.<br>5. Criteria met. |

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| | 2. details of any consultation with Indigenous stakeholders;<br>3. projected economic costs and benefits of the project (in dollars), including the basis for their estimation through cost/benefit analysis or similar studies; and<br>4. employment opportunities expected to be generated by the project (including construction and operational phases)<br>5. projected public benefits expected to be generated by the project. | |
| **8. Ecologically Sustainable Development (ESD)** | Please include a discussion of how the project will conform to the principles of ESD. To assist you, the *National Strategy for Ecologically Sustainable Development* (1992) is available at: www.environment.gov.au/about-us/esd/publications/national-esd-strategy. | The ecologically sustainable development discussion cannot be assessed until the impacts of the projects can be fully understood. |
| **9. Consistency with National and International Obligations** | Justify, with supporting evidence, how the proposed action will not be inconsistent with Australia's obligations under:<br>1. Environment Protection Biodiversity Conservation Act 1999,<br>2. EPBC Act Policy Statements, and guidelines.<br>3. any recovery plan or threat abatement plan for the species.<br>4. the Bonn Convention;<br>5. China-Australia Migratory Bird Agreement;<br>6. Japan-Australia Migratory Bird Agreement;<br>7. International Agreement – Republic of Korea-Australia Migratory Bird Agreement; and<br>8. any international agreement approved under subsection 209(4) of the EPBC Act. | The proposed actions consistency with Australia obligations cannot be assessed until the impacts of the projects can be fully understood. |

Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC ref: 2023/09639

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**Further information required for preliminary documentation for Waddi Wind Farm, 914 Mullering Road, Cataby, WA**

Dear Ms Smith

I am writing to you about your proposal to construct and operate a wind farm, including associated transmission line infrastructure, located 150 km north of Perth.

On 13 November 2023, a delegate of the Minister for the Environment and Water decided that the proposed action is a controlled action and that it will be assessed by preliminary documentation. Further information was required to assess the relevant impacts of the proposed action.

I now request, under s95A(2) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), further information as outlined in the attached.

The department has intentionally developed the information request with a high level of specificity to assist you in meeting the requirements of the EPBC Act, remove ambiguity and to minimise the potential for further requests for information following the submission of the draft Preliminary Documentation.

The department will work closely with Tilt Renewables in January 2024 to address any comments or questions that may arise from the information request to enable the timely finalisation of the Preliminary documentation.

Details on the assessment process for the project and the responsibilities of the proponent are set out in the EPBC Act — Environment Assessment process fact sheet. Further information on the referral and assessment process can be found on the department's website.

If you have any questions about the assessment process or the further information required, please contact the project manager Cameron Craigie, by email to EADSouthWA@dcceew.gov.au or phone (08) 98667400 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Kate Hamer
Director
South WA Section

22 December 2023

Attached: Attachment A - Request for further information for Preliminary Documentation

**Attachment A**

**REQUEST FOR ADDITIONAL INFORMATION**

**ASSESSMENT BY PRELIMINARY DOCUMENTATION**

**EPBC 2023/09639 – Waddi Wind Farm, Western Australia**

It has been determined by the delegate of the Minister for the Environment that the above proposed action to construct and operate a wind farm is likely to have a significant impact on matters protected under Division 4, Part 3 of the *Environment Protection and Biodiversity Act 1999* (EPBC Act):

- Listed threatened species and communities (sections 18 &18A)
- Migratory species (sections 20 and 20A)

It has been determined that the proposed action will be assessed by preliminary documentation. Preliminary documentation for the proposal will include:

- The information contained in the original referral.
- The further information you provide on the impacts of the action and the strategies you propose to avoid, mitigate and/or offset those impacts (as described below) – sought pursuant to Part 8, Section 95A (2) of the EPBC Act; and
- Any other relevant information on the matters protected by the EPBC Act.

The preliminary documentation should be sufficient to allow the Minister (or delegate) 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. The preliminary documentation must address the matters set out below.

## 1. GENERAL CONTENT, FORMAT AND STYLE

The preliminary documentation, which includes the referral documentation and the additional information described below, must be a stand-alone document that contains sufficient information to avoid the need to search out previous or supplementary reports. The preliminary documentation should take into consideration the EPBC Act Significant Impact Guidelines 1.1 and EPBC Act Significant Impact Guidelines 1.3, available at: www.environment.gov.au/epbc/guidelines-policies.html.

The document must enable interested stakeholders and the Minister to easily understand the consequences of the project on matters of national environmental significance (MNES). Information provided in the document should be objective, clear, succinct, avoid technical jargon and, where appropriate, be supported by maps, plans, diagrams, data or other descriptive detail.

Detailed technical information, studies or investigations necessary to support the information in the stand-alone document must be included as appendices. It is recommended 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 preliminary documentation. The proponent should also make sure the preliminary documentation is made available on the Internet.

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 of Climate Change, Energy, the Environment and Water (the department) on the preferred presentation of that material before submitting it to the Minister for approval for publication or for public comment.

The level of analysis and detail in the stand-alone document should reflect the level of significance of the expected impacts on MNES. 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 must be discussed.

The document 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 of referencing. The reference list should include the address of any Internet webpages used as data sources. The preliminary documentation must include a list of persons and agencies consulted and the names of, and work done by, the persons involved in preparing the preliminary documentation. Methodology should be scientifically-robust, appropriate for purpose, including a description of the methodology used, and justification of why the methodology was selected. The preliminary documentation must reference all relevant standards, policies and other guidance material published by the Department. Any instances where published guidance is not followed must be justified. Where no Commonwealth standards exist, state government and/or industry standards may be appropriate.

Maps, plans, diagrams and other illustrative material should be included in the preliminary documentation, and any images provided must be clearly annotated, in colour and of high resolution. The document should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size. The proponent should consider the format and style of the document appropriate for publication on the Internet. The capacity of a website to store data and display the material may have some bearing on how the document is constructed.

The stand-alone document must include a copy of this request for information and a cross-reference table indicating where the information fulfilling this request is included in the preliminary documentation.

**Ecological data provision**

The Preliminary Documentation 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). 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.

## 2. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Based on the information provided in your referral, and other available information, the department considers that the listed species and communities and migratory species identified below may be significantly impacted by the proposed action, because of habitat clearance, habitat

fragmentation, and through turbine and transmission line collision and barotrauma. These MNES species include:

Listed threatened species and communities (sections 18 and 18A):

i. Carnaby's Black-Cockatoo (*Zanda latirostris* listed as *Calyptorhynchus latirostris*) (Endangered)

ii. Curlew Sandpiper (*Calidris ferruginea*) – Critically Endangered

iii. Banksia Woodlands of the Swan Coastal Plain Ecological Community – (Endangered)

iv. Star Sun-orchid (*Thelymitra stellata*) (Endangered)

v. Dwarf Green Kangaroo Paw (*Anigozanthos viridis* subsp. *Terraspectans*) (vulnerable)

vi. Lesueur Hakea (*Hakea megalosperma*) (vulnerable)

vii. Sandplain Duck Orchid (*Caleana dixonii* listed as *Paracaleana dixonii*) (endangered)

viii. Glossy-leafed Hammer Orchid (*Drakaea elastica*) (endangered)

Migratory species (section 20 and 20A):

ix. Curlew Sandpiper (*Calidris ferruginea*) (Migratory)

x. Fork-tailed Swift (*Apus pacificus*) (Migratory)

xi. Sharp-tailed Sandpiper (*Calidris acuminata*) (migratory)

xii. Pectoral Sandpiper (*Calidris melanotos*) (migratory)

xiii. Common Sandpiper (*Actitis hypoleucos*) (migratory)

Note: The list above may not be a complete list of listed threatened species that will or are likely to be impacted by the project. It is the proponent's responsibility to ensure any listed threatened species and ecological communities at the time of the controlled action decision, which will or are likely to be impacted by the project, are assessed for the Minister's consideration. It is the proponent's responsibility to be aware of any changes to the distribution of listed threatened and migratory species, and information available in the Species Profile and Threats (SPRAT) Database. The proponent must ensure that a recent Protected Matters Search Tool (PMST) report has been generated and considered before finalising the draft preliminary documentation.

**2.1 Additional information on listed and threatened bird species and listed migratory species**

a) Additional information on all listed, threatened and migratory bird species must include but may not be limited to:

i. The status of populations (for example, abundance) that occur in, adjacent to, or may transit or overfly, the project area. This must include listed species that transit or overfly the project area on route to another location.

ii. Assessment of habitat occurring within, or adjacent to, the project area, and its importance (including habitat utilisation) in a local, regional, national and international context.

iii. Assessment of site utilisation for each of the bird species including foraging, roosting, transiting, resting and nesting habitats, and migratory flight paths across the site. This must

include frequency, time of day/night, numbers and time of year, particularly with regard to migratory overflying.

iv. Include a discussion on vegetation composition and structure in relation to the development footprint, project area and broader region. The presence, extent and density (including foliage cover and flowering density) of all plant species that provide foraging, including non-native food sources.

v. Provide detailed mapping of suitable habitat for all listed threatened or migratory bird species which:

   a. Is specific to the habitat assessment undertaken for each bird species.

   b. Includes an overlay of the updated project disturbance footprint.

   c. Includes known records of individuals derived from desktop analysis, including from SPRAT Database and field surveys.

   d. Include habitat that is within and adjacent to the project to provide regional context.

   e. Include a map of all water bodies (including farm dams/ troughs, etc.) within the development footprint, project area and broader region, with an overlay of the different habitat features (e.g., breeding, foraging, dispersal).

   f. Identification of permanent or seasonal water bodies or watercourses within twelve (12) kilometres of the disturbance footprint to demonstrate the use of different habitat features.

   g. Discuss the suitability of the water sources for each of the species (e.g., rate of water movement, potability for birds, access).

   h. Include mapping of nearby conservation areas (e.g. National Parks, Nature Reserves, Nature refuges, etc.) and road reserves and describe how these different habitats are utilised for each of the species (e.g. breeding, foraging, roosting).

   i. Images provided separately as attachments in JPEG format.

vi. Details of the foraging habitat available to each bird species, and the impact the proposed action will have on the ability for species to utilise this habitat.

vii. Details of the flight characteristics and behaviours of the listed birds species, specifically with regard to occupying or overflying the project area within the rotor swept area and transmission lines.

viii. Where there is a lack of certainty, an assessment of the confidence with which any claims are made.

(*Please note Department considers at least 2 years surveys are needed to adequately assess utilisation*)

### *2.1.1 Habitat Assessment for migratory species*

The Preliminary Documentation must include a detailed habitat assessment for each of the listed migratory species which will be or is likely to be impacted by the proposed action. Survey data more than 5 years old may be used as supplementary supporting evidence; however, due to continual changes in populations of species, recent survey data is required. Assessments must be informed by

desktop and field surveys (in accordance with departmental guidelines or as defined by best practice surveys), and with reference to relevant departmental documents (e.g., approved Conservation Advice, Recovery Plans, draft referral guidelines and Listing Advice, and SPRAT Database), including published research and other relevant sources.

Attach all relevant ecological surveys referenced in the referral and preliminary documentation as supporting documents to the preliminary documentation. Include information related to:

i. Survey effort
ii. Time of day surveyed; and
iii. Number of individual recorded per survey (include incidental observations)

Surveys must be conducted to reasonably cover the disturbance footprint, adjacent areas, and include any possible micro-site locations to capture the significance of the habitat and capture the regional context.

Provide relevant information on any consultation undertaken with experts regarding migratory birds.

***2.1.2 Carnaby's Black Cockatoo Specific Assessment***

The Preliminary Documentation must include a detailed habitat assessment for Carnaby's Black Cockatoos (CBC). A general fauna habitat assessment was provided with the referral documentation and additional information about the quality of the foraging habitat, the availability of breeding habitat for CBC is required, including:

i. Provide the results/scores of a habitat quality assessment using methodology that recognises key habitat characteristics specific to CBC foraging habitat requirements and values. The values from the scoring system for the assessment of foraging value of vegetation for CBC must be supported with clear evidence. Relevant habitat characteristics and associated methodology needs to be documented. It is recommended that you use
ii. Provide further information on breeding habitat trees. The Referral guideline for 3 WA threatened black cockatoo species notes that trees suitable to develop a nest hollow in the future are 30-50 cm DBH. Provide details (number, type and size) of trees with DBH > 30 cm. Provide details (number, type and size) of potential roosting trees.
iii. Provide details of trees (number, type and size) with a diameter at breast height (DBH) within 12 km radius from the perimeter of the proposed action area.
    a. Discuss the distance of the closest breeding site from the proposed action site, the species using the breeding site, the size of the breeding site (number of trees and area in ha), and estimated number of breeding pairs that use the site.
iv. Provide further information on the role of the site in maintaining habitat connectivity and supporting CBC movement through the landscape.
v. Provide a mapped area including a 12 km radius from the perimeter of the proposed action area. The map must include:
    a. potential habitat (vegetation cover that could include vegetation types likely to include species suitable for foraging, breeding and/or roosting habitat).
    b. suitable watering habitat, based on the best available information.
    c. Conservation areas (areas with ongoing conservation protection on the title of the land, under an enduring protection mechanism).
    d. Migration and key seasonal movement patterns of CBC flocks, relative to the proposed action area (based on best available information).
    e. Known areas of aggregation/key habitats areas.

vi. Provide a description of methodology, source data and any other relevant evidence used to create the maps.
vii. Survey data more than 5 years old may be used as supplementary supporting evidence; however, due to continual changes in populations of species, recent survey data is required.

**2.2 Habitat Assessment for flora**

The Preliminary Documentation must include a detailed habitat assessment for each of the listed threatened flora species and ecological community which will be or is likely to be impacted by the proposed action. Survey data more than 5 years old may be used as supplementary supporting evidence; however, due to continual changes in populations of species, recent survey data is required. Assessments must be informed by desktop and field surveys (in accordance with departmental guidelines or as defined by best practice surveys), and with reference to relevant departmental documents (e.g., approved Conservation Advice, Recovery Plans, draft referral guidelines and Listing Advice, and SPRAT Database), including published research and other relevant sources.

Attach all relevant ecological surveys referenced in the referral and preliminary documentation as supporting documents to the preliminary documentation. Include information related to:

iv. Survey effort
v. Time of day surveyed; and
vi. Number of individuals recorded per survey (include incidental observations)

Surveys must be conducted to reasonably cover the disturbance footprint, adjacent areas, and include any possible micro-site locations to capture the significance of the habitat and capture the regional context.

Provide relevant information on any consultation undertaken with experts regarding protected matters, such as listed threatened species and communities.

***2.2.1 Banksia TEC***

The referral form states that 0.3 ha of Banksia TEC will be impacted by the proposed action. With reference to the Conservation Advice, address the following:

i. Provide the size and condition of the larger patch that the 0.3 ha is within. Survey the patch extending outside of the proposed action area to provide a regional context.

ii. Provide an analysis as to whether the wider patch remains a TEC with the removal of the 0.3 ha within the proposed action area.

iii. The referral application notes that the 0.3 ha is in 'Excellent to Good to Very Good condition'. The supplementary flora, vegetation, and fauna survey (Att15) identified 5.05 ha of Banksia Low Open Woodland vegetation units in 'Excellent' condition. Please confirm the condition of the 0.3 ha.

iv. Provide the Floristic Community Type of the Banksia TEC.

v. Provide a regional context map showing the extent of the Banksia TEC.

### *2.2.2 Star Sun-orchid*

Discuss the habitat and number of individuals of Star Sun-orchid (*Thelymitra stellata*) in the development footprint, and project area. Include a discussion on the habitat and how it aligns with the Star Sun-orchid Conservation Advice in the immediate region.

i. Conduct a targeted surveys for Star Sun-orchid in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids found at Table C Item 2.4d. Surveys should be during the flowering seasons within the development footprint, project area and broader region to provide a greater understanding of the occurrence of the species.
ii. Weather and climate conditions must be recorded for all surveys and the periods leading up to surveys as the orchid does not flower every year and may remained closed during cool and overcast weather opening only in warm, sunny weather.
iii. Provide a map that clearly demonstrates the extent of the orchid with an overlay of the different habitat features within and adjacent to the project area.
iv. Discuss the relationships between the habitat, the surveyed individuals, the development footprint, the likely need to support the genetic connectivity between the known and likely occurrences of the orchid across the distribution and broader regions.

### *2.2.3 Dwarf Green Kangaroo Paw*

Discuss the habitat and number of individuals of Dwarf Green Kangaroo Paw (*Anigozanthos viridis subsp. Terraspectans*) in the development footprint, project area and immediate region. The Reconnaissance Flora and Vegetation Assessment identified the occurrence of Dwarf Green Kangaroo Paw flora species in the development envelope. However, no information was provided on the species location, the numbers in the area, or the occurrences in relation to the Indicative Disturbance Area.

i. Discuss the habitat and the number of surveyed individuals in relation to the development footprint, and project area.
ii. Discuss this population within the context of the immediate region.
iii. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area.
iv. Discuss the potential impacts to the species and if the proposed action is likely to adversely affect habitat critical to the survival of the species in alignment with the approved Conservation Advice for *Anigozanthos viridis* subsp. *terraspectans* (Dwarf Green Kangaroo Paw).
v. If required, conduct targeted surveys for Dwarf Green Kangaroo Paw and its habitat in accordance with the Environmental Protection Authority (EPA) (2016a) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016.
vi. Surveys need to be conducted when it flowers between August and December, in line with Conservation Advice.

### *2.2.4 Lesueur Hakea*

Discuss the habitat and number of individuals of Lesueur Hakea (*Hakea megalosperma*) in the development footprint, project area and immediate region. The Reconnaissance Flora and Vegetation Assessment identified the occurrence of Lesueur Hakea (*Hakea megalosperma*) flora species in the development envelope. However, no information was provided on the species

location, the numbers in the area, or the occurrences in relation to the Indicative Disturbance Area. The possible impact on this listed flora species has not been addressed in the referral documentation.

i. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area.
ii. Discuss the habitat and the number of surveyed individuals in relation to the development footprint, project area and immediate region.
iii. Discuss the potential impacts to the species and if the proposed action is likely to adversely affect habitat critical to the survival of the species in alignment with the approved Conservation Advice for *Hakea megalosperma* (Lesueur Hakea).
iv. Surveys for Lesueur Hakea and its habitat must be conducted in accordance with the Environmental Protection Authority (EPA) (2016a) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, December 2016.

***2.2.5 Sandplain Duck Orchid and Glossy-leafed Hammer Orchid***

The department notes that the Reconnaissance Flora and Vegetation Assessment did not identify these species within the development envelope; however, suitable vegetation types occur within the development envelope. The department considers that these species of orchids may not emerge each year if conditions are not favourable, can be cryptic and sometimes multiple survey efforts may be required to conclude likely absence. Targeted surveying is required to conclude with confidence whether the Sandplain Duck Orchid and Glossy-leafed Hammer Orchid are absent from the proposed action area.

i. Conduct targeted surveys for the Sandplain Duck Orchid, the Glossy-leafed Hammer Orchid and their habitats within the development footprint, project area and broader region in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids found at Table C Item 2.4d.
ii. If follow up surveys detect the species:
    a. provide information about population size and the number of individuals that will be directly and indirectly impacted by the proposed action as well as habitat quality for the development footprint, project area and broader region.
    b. Include a map of surveyed individuals with an overlay of the different habitat features within and adjacent to the project area.

**3. RELEVANT IMPACTS**

The preliminary documentation must include an assessment of potential impacts (including direct, indirect, facilitated and cumulative impacts) that may occur as a result of all elements and project phases of the proposed action (e.g. construction, post-construction and operation) on the MNES addressed at Section 2.

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 impact on adjacent areas that are likely to contain populations of, or habitat for, MNES.

The preliminary documentation must include:

**Attachment A**

a) A description of all components of the action, including:

   i. A description of all associated activities.

   ii. A description of the operational requirements of the action including any anticipated maintenance works.

   iii. The timing and duration of each component of the project including decommissioning (anticipated start and completion dates).

   iv. Clarification of any changes made to the project since the referral documentation.

b) A detailed assessment of the nature, extent, likelihood and consequence of the likely short-term and long-term impacts associated with the proposed action on each MNES, including but may not be limited to:

   i. Analysis of the impacts associated with the proposed action, including fragmentation of the habitat in the proposed disturbance area and possible impacts on breeding success;

   ii. Provide information on the impacts of habitat loss and habitat degradation (e.g. cropping habitat and breeding trees for transmission line clearance).

   iii. Direct and indirect impacts of the wind turbines and related infrastructure on MNES species.

   iv. Include a discussion of the wind resources on site noting the presence of potential updrafts/thermal wind currents.

   v. Provide information on the wind turbines that will be used. Include: turbine height, turbine blade length, turbine blade ground clearance, rotor swept area, and any component that will be included to minimise strikes or barotrauma.

   vi. Provide information on transmission lines that will be used. Discuss the benefits of above ground versus below and reasons for the pathway of the transmission lines. Include information on the transmission lines and tower set up, line upper height, line lower height, the clearance required under the lines, location of each component of the transmission lines and equipment, and any component that will be included to minimise strikes or electrocution.

   vii. Based on utilisation studies, collision risk from turbines including clear mathematical modelling explaining how you have assessed the risk of collision for each species. Modelling must be based on best available data and should include flight behaviour, movement (migratory pathways) patterns, the potential attribution of relative risk to individual turbines or clusters of turbines, and the variation in the risk of collision across the site;

   viii. low air pressure zones around the blades effecting the behaviour of protected species;

   ix. alienation and landscape sterilisation (i.e. behavioural avoidance of species to habitat near turbines, at various temporal and spatial scales);

   x. the impact of shadow “flicker”, blade “glint”, blade throw and night lighting; and

   xi. analysis of the volume, composition, origin, destination and route for vehicle movements and other traffic likely to be generated during construction and operational phases, including a breakdown for over-dimension and heavy vehicles and erosion from road construction.

xii. An assessment of noise impact on each MNES associated with construction and operation of the proposed action, including a description of all relevant impacts at various wind speeds, temporal and spatial variables and under various meteorological scenarios (including varying atmospheric stability classes);

c) A detailed assessment of the actual and potential impacts on MNES including:

i. A statement on whether any relevant impacts are likely to be unknown, unpredictable, irreversible or sub-lethal (reversible over time) and what confidence level is placed on the predictions of relevant impacts.

ii. An analysis of the significance of the relevant impacts.

iii. Consideration of potential impacts throughout the life of the proposal – from construction through to operation and decommissioning.

iv. A discussion of the potential impacts, considering how the interaction of extreme environmental events (for example: cyclones, flood events) and any related cumulative impacts may impact on the proposal and the environment (both independently and cumulatively).

v. Discuss the risk of fire and any fire management strategies that will be implemented (e.g. fire breaks) and how they may impact MNES species.

vi. The framework used to assess impacts, including risk assessment processes, based on best available practice;

d) A risk assessment of changing climate patterns that may affect the proposal and surrounding environment and a description of the preferred and alternative adaptation strategies to be implemented;

e) Discuss the presence and prevalence of plant diseases (such as dieback disease Phytophthora spp., or any other plant diseases).

f) Full justification of all discussions and conclusions based on the best available information, including relevant conservation advices, recovery plans, threat abatement plans and guidance documents, should be included if applicable. Departmental documents regarding listed threatened species can be found at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

## 4. PROPOSED AVOIDANCE AND MITIGATION MEASURES

Avoidance and mitigation measures are the primary methods of eliminating and reducing significant impacts on MNES. Where possible and practicable it is best to avoid impacts. If impacts cannot be avoided, then they should be minimised or mitigated as much as possible. Avoidance and mitigation measures must be investigated thoroughly as a part of the assessment and be supported by evidence to demonstrate likely success.

The preliminary documentation must include detailed descriptions of measures proposed to be undertaken by the proponent to avoid, minimise and manage relevant impacts of the project on the listed MNES species. The proposed measures should be based on best available practices, appropriate standards and supported by scientific evidence and must include the following elements:

a) Identify and describe potential alternatives and proposed design options (e.g. turbine models and configurations (including height, blade length and generator models); and mitigation measures, which could avoid or minimise significant impacts on listed birds species, and clearly state which avoidance or mitigation measure will be committed to;

b) assessment of the expected or predicted effectiveness of the proposed mitigation measures;

c) any statutory or policy basis for the proposed mitigation measures, including reference to approved conservation advices relevant to the listed threatened species, and discussion on how the proposed mitigation measures are not inconsistent with recovery plans and threat abatement plans relevant to the listed threatened species and communities;

d) evidence to support the basis for proposed mitigation measures and their likely effectiveness;

e) any mitigation measures proposed to be undertaken by State and local governments;

f) details of ongoing management, including monitoring programs to support an adaptive management approach and determine the effectiveness of the measures proposed; and

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

The preliminary documentation must include a revised Bird and Bat Management Plan (BBMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing.

The revised BBMP must state the environmental objectives, performance criteria, monitoring, reporting, corrective actions, responsibility and timing for each MNES in each stage. The BBMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines (2014), available at www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines

The preliminary documentation must include detailed descriptions of the proposed avoidance, mitigation and management measures that will be implemented:

a) during the design, construction, operation, maintenance, and decommissioning stages of the proposed action.
b) to address the presence, introduction or spread of plant diseases, weeds and feral pests.

The proposed measures must be based on best available practices, appropriate standards, evidence of success for other similar actions and supported by published scientific evidence. With consideration of the construction, operation and maintenance stages of the proposed action, the Preliminary Documentation must include:

i. details of specific and measurable environmental outcomes to be achieved for relevant MNES;
ii. details of the proposed measures to be undertaken to avoid, mitigate and manage therelevant impacts of the proposed action, including those required through other Commonwealth, State and local government approvals;
iii. the use of committed language (e.g. 'will' and 'must') when describing the proposed measures;
iv. an assessment of the expected or predicted effectiveness of the proposed measures;

v. any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advices, and a discussion on how the proposed measures are not inconsistent with relevant recovery plans and threat abatement plans;
vi. details of ongoing management, including monitoring programs to support an adaptive management approach, validate the effectiveness of the proposed measures and overall demonstrate that the environmental outcomes will be achieved;
vii. 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;
viii. details of measures, if any, proposed to be undertaken by Western Australia Government, Local Governments, including the name of the agency responsible for approving each measure; and
ix. information on the timing, frequency and duration of the proposed avoidance, mitigation, management and monitoring measures, and corrective actions to be implemented.

Avoidance and mitigation measures may be provided in an Environmental Management Plan (EMP). If you provide this information in an EMP then the plan must set out the framework for management, mitigation and monitoring of relevant impacts, including any provisions for independent environmental auditing. The plan must be prepared in accordance with the department's Environmental Management Plan Guidelines (2014) available at: www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines. The SPRAT Database, and associated statutory documents, may provide relevant mitigation measures for listed threatened species and ecological communities and listed migratory species. All proposed measures for MNES must consider the 'S.M.A.R.T' principle:

- S – Specific (what and how)
- M – Measurable (baseline information, number/value, auditable)
- A – Appropriate and Achievable (timeframe, money, personnel)
- R – Relevant (conservation advices, recovery plans, threat abatement plans)
- T – Time-bound (specific timeframe to complete) Further detailed guidance is provided below.

## 5. RESIDUAL IMPACTS AND PROPOSED OFFSETS

Describe the residual impacts on MNES that are likely to occur as a result of the proposed action in its entirety, after proposed avoidance and mitigation measures are taken into account. If applicable, this should include the reasons why avoidance or mitigation of impacts cannot be reasonably achieved.

If residual impacts are likely to be significant, please provide an offset package to compensate for residual impacts to MNES. This should consist of an offset proposal and key commitments and management actions to deliver and implement a proposed offset (i.e. an Offset Management Plan).

Offsets must directly contribute to the ongoing viability of the threatened and migratory species. It must deliver an overall conservation outcome that improves or maintains the viability of the protected matter, as compared to what is likely to have occurred if neither the action nor the offset had taken place. The offset proposal should demonstrate how the conservation outcome will be delivered for the protected matter.

**Attachment A**

The proposed offset must meet the requirements of the Department's *EPBC Act Environmental Offsets Policy* (October 2012) available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy.

The Department's *Offset Assessment Guide* may be used as a guide to estimate the area of offset required to adequately compensate for the residual impacts of the project, it is available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy.

The Department will assess the offset based on the information provided in the offsets proposal using the offsets assessment guide.

The preliminary documentation must include an Offset Strategy that:

a. Describes the offset site(s) including location, size, condition and environmental values.

b. Details of the surveys undertaken in accordance with the survey guidelines used to confirm the presence of the protected matter at the offset site.

c. Details of the quality of the offset site including a vegetation condition assessment (VCA) and habitat characteristics for the protected matter.

d. Details of threats to the protected matter at the offset site and how those threats will be mitigated.

e. A comparison of the environmental values as compared to the impact site.

f. Explain how the offset package addresses the principles of the *EPBC Act Environmental Offsets Policy*.

g. The specific environmental outcomes to be achieved and maintained for the duration of the impact.

h. Details on how the offset will be secured, managed and monitored to meet these environmental outcomes, including:
   i. Management actions, performance targets, monitoring methodology and review criteria.
   ii. Responsibility and timing for implementation of actions.

Please note, in all cases, targets and criteria should be specific and measurable.

Offsets required by the State can contribute to offset obligations under the EPBC Act if those offsets also meet the requirements of the *EPBC Act Environmental Offsets Policy*.

If relevant, please provide demonstrated engagement with any third parties engaged to deliver the proposed offset (including the proposed landowner of the offset site and any entity providing a security mechanism for the offset), and confirmation that those third parties are able to deliver the aspects of the proposed offset for which they are responsible, as described in the offset management plan.

**Attachment A**

## 6. OTHER APPROVALS AND CONDITIONS

The preliminary documentation must include information on any other requirements for approval or conditions that apply, or that you reasonably believe are likely to apply, to the proposed action. This must include:

a) A description of any approval obtained or required to be obtained from a State or Commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply to the proposed action.
b) A description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

## 7. SOCIAL AND ECONOMIC

The proponent must provide a discussion and analysis of the social and economic impacts of the project, both positive and negative, in the preliminary documentation. Economic and social impacts should be considered at the local, regional and national levels. Matters of interest may include:

a) details of any public consultation activities undertaken, and their outcomes;
b) details of any consultation with Indigenous stakeholders;
c) projected economic costs and benefits of the project (in dollars), including the basis for their estimation through cost/benefit analysis or similar studies; and
d) employment opportunities expected to be generated by the project (including construction and operational phases)
e) projected public benefits expected to be generated by the project.

## 8. ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

Please include a discussion of how the project will conform to the principles of ESD. To assist you, the *National Strategy for Ecologically Sustainable Development* (1992) is available at: www.environment.gov.au/about-us/esd/publications/national-esd-strategy.

## 9. CONSISTENCY WITH NATIONAL AND INTERNATIONAL OBLIGATIONS

Justify, with supporting evidence, how the proposed action will not be inconsistent with Australia's obligations under:

a) Environment Protection Biodiversity Conservation Act 1999,
b) EPBC Act Policy Statements, and guidelines.
c) any recovery plan or threat abatement plan for the species.
d) the Bonn Convention;
e) China-Australia Migratory Bird Agreement;
f) Japan-Australia Migratory Bird Agreement;
g) International Agreement – Republic of Korea-Australia Migratory Bird Agreement; and
h) any international agreement approved under subsection 209(4) of the EPBC Act.

**Attachment A**

## 10. ENVIRONMENTAL RECORD OF PERSON PROPOSING TO TAKE THE ACTION

Please provide the following information if updated from that provided with the referral document, 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:

- The person proposing to take the action.

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.

## 11. CONCLUSION

The preliminary documentation must provide an overall conclusion as to the environmental acceptability of the proposal, including discussion on compliance with the principles of Ecologically Sustainable Development (ESD) and the objects and requirements of the EPBC Act. To assist you, the *National Strategy for Ecologically Sustainable Development* (1992) is available on the following web site: https://www.environment.gov.au/about-us/esd/publications/national-esd-strategy.

You may wish to include a statement as to whether or not the controlled action should be approved and may recommend conditions pertaining to an approval. This should include justification for undertaking the proposed action in the manner proposed. The measures proposed or required by way of offset for any unavoidable impacts on MNES and the relative degree of compensation, should be restated here.

## 12. INFORMATION SOURCES

The preliminary documentation must state for the information provided, the following:

a) The source and currency (date) of the information.

b) How the reliability of the information was tested.

c) The uncertainties (if any) in the information.

d) The guidelines, plans and/or policies considered.

**Attachment A**

**APPENDIX A: Preliminary documentation content, style and formatting requirements**

**A1. Content requirements**

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| A1.1 | Be a stand-alone document containing sufficient information to avoid the need to search out previous or supplementary reports. |
| A1.2 | Enable interested stakeholders and the Minister to easily understand the consequences of the project on matters of national environmental significance (MNES). |
| A1.3 | Be written so that any conclusions reached can be independently assessed. Include all key claims, findings, proposals, and undertakings in the main document. |
| A1.4 | Refer to all relevant standards, policies and other guidance material published by the department. Any instances where published guidance is not followed must be justified. Where no Commonwealth standards exist, state government and industry standards may be useful. |
| A1.5 | Include the names, roles and qualifications (where relevant) of all persons involved in preparing the preliminary documentation. |
| A1.6 | Include a copy of this request for information and a cross-reference table indicating where the information fulfilling this request is included in the preliminary documentation (e.g., Section 4.2.2 and Appendix A, Chapter 2.1). |
| A1.7 | The preliminary documentation must state the following for all information provided:<br>• The source and date of the information.<br>• How the reliability of the information was tested.<br>• The uncertainties (if any) in the information.<br>• The guidelines, plans, and/or policies considered. |
| A1.8 | Where appropriate, the information provided must be supported by:<br>• Evidence-based conclusions based on the best available peer-reviewed scientific literature with supporting references cited or expert opinion provided and/or the views of suitably qualified experts.<br>• Scientifically robust methodologies that are appropriate for purpose, and sufficient description of the methodology used and justification of why the methodology was selected.<br>• Include detailed technical information, studies or investigations necessary to support the information in the stand-alone document as appendices. |

**Attachment A**

**A2. Format and style requirements**

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| A2.1 | Be in a suitable format to be published in hardcopy (A4 or A3 size, with maps and diagrams in A4 or A3 size and in colour) and published in electronic format (e.g., MSWord or PDF) on the internet. |
| A2.2 | Include detailed technical information, studies or investigations necessary to support the information in the stand-alone document as appendices. |
| A2.3 | Be objective, clear, succinct, avoid technical jargon and, where appropriate, be supported by maps, plans, diagrams, data or other descriptive detail. |
| A2.4 | Reference all sources using the Harvard standard of referencing. Ensure that other supporting documents (e.g. academic studies, regulatory standards) are publicly accessible, with electronic links provided where possible. |
| A2.5 | Redact the contact details of departmental officers. |
| A2.6 | Not contain any commercial in confidence markings. If the preliminary documentation contains sensitive information, please discuss this with the assessment officer. |

**A3. Ecological data provision**

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| A3.1 | The preliminary documentation 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). |
| A3.2 | 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. |

**Attachment A**

## APPENDIX B: Information Requirements for EPBC Act Offset Proposals

### B1. Minimum Requirements for a draft Offset Management Strategy:

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| B1.1 | Specify the nature of the conservation gain to be achieved for relevant MNES. |
| B1.2 | Detail the creation, restoration, and revegetation of habitat in the proposed offset area/s. |
| B1.3 | Details of the environmental offset/s (in hectares) to compensate for the residual significant impacts of the proposed action on relevant MNES. |
| B1.4 | Details of the potential offset area/s (including a map) to compensate for the residual significant impacts of the proposed action on relevant MNES. |
| B1.5 | The methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the project site for each relevant MNES, including:<br>• total area of habitat (in hectares); and<br>• habitat quality. |
| B1.6 | Details, with supporting evidence, of how the environmental offset/s meets the requirements of the department's EPBC Act Environmental Offsets Policy (2012) (Offsets Policy), available at: www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy. |
| B1.7 | The methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to each potential offset area/s for each relevant MNES, including:<br>• time over which loss is averted (max. 20 years);<br>• time until ecological benefit;<br>• risk of loss (%) without offset;<br>• risk of loss (%) with offset; and<br>• confidence in result (%). |
| B1.8 | Evidence that the relevant MNES, and/or their habitat, can be present in the potential offset area/s. |
| B1.9 | Information about how the potential offset area/s provides connectivity with other relevant habitats and biodiversity corridors. |
| B1.10 | Details and execution timing of the mechanism to legally secure the environmental offset/s to provide enduring protection for the potential offset area/s against development incompatible with conservation. |

**Attachment A**

**B2. Minimum Requirements for a draft Offset Area Management Plan:**

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| B2.1 | Specific, committal and measurable environmental outcomes which detail the nature of the conservation gain to be achieved for relevant MNES. |
| B2.2 | Detail the measures to be employed in the creation, restoration and revegetation of habitat in the proposed offset area/s to achieve the conservation gain. |
| B2.3 | Details, with supporting evidence, to demonstrate how the environmental offset/s compensate for residual significant impacts of the proposed action on relevant MNES, and/or their habitat, in accordance with the principles of the Offsets Policy and all requirements of the Offsets Assessment Guide including:<br>• time over which loss is averted (max. 20 years);<br>• time until ecological benefit;<br>• risk of loss (%) without offset;<br>• risk of loss (%) with offset; and<br>• confidence in result (%). |
| B2.4 | 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). |
| B2.5 | Specific offset completion criteria derived from the site habitat quality to demonstrate the improvement in the quality of habitat in the offset area/s over a 20-year period. |
| B2.6 | Details of the management actions, and timeframes for implementation, to be carried out to meet the offset completion criteria. |
| B2.7 | Interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset completion criteria. |
| B2.8 | Details of the nature, timing and frequency of monitoring to inform progress against achieving the 5-yearly interim milestones (the frequency of monitoring must be sufficient to track progress towards each set of milestones, and sufficient to determine whether the offset area/s are likely to achieve those milestones in adequate time to implement all necessary corrective actions). |
| B2.9 | Commitment to timings for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones have been achieved. |
| B2.10 | Timing for the implementation of tangible, on-ground corrective actions to be implemented if monitoring activities indicate the interim milestones have not been achieved. |

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| B2.11 | Risk analysis and a risk management and mitigation strategy for all risks to the successful implementation of the Offset Area Management Plan and timely achievement of the offset completion criteria, including a rating of all initial and post-mitigation residual risks in accordance with a risk assessment matrix. |
| B2.12 | Evidence of how the management actions and corrective actions take into account relevant approved conservation advices and are consistent with relevant recovery plans and threat abatement plans. |
| B2.13 | Details and timing of the mechanism to legally secure the proposed offset area/s, such that legal security remains in force over the offset area/s for at least 20 years to provide enduring protection for the offset area/s against development incompatible with conservation. |
| B2.14 | All proposed management actions, monitoring approach and corrective actions must be written using committed language (e.g. 'will' and 'must'). |

**Attachment A**

## APPENDIX C – Bird and Bat Management Plan (BBMP)

The following table outlines the framework to assist in the preparation and submission of a draft BBMP as an appendix to the Preliminary Documentation (as required by Section 4 above). 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 project site on relevant listed threatened and migratory bird and bat species.

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. The draft BBMP must be prepared by a suitably qualified ecologist and in accordance with the department's Environmental Management Plan Guidelines (2014), available at: https://www.dcceew.gov.au/sites/default/files/documents/environmental-management-plan-guidelines.pdf and includes the following key requirements as a minimum.

| **Pre-commissioning requirements***<br>*The department considers that these requirements must be completed during the EPBC Act assessment process. | |
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| C1.1 | **Desktop assessment: Preliminary site characterisation**<br>To predict the potential for the listed threatened and migratory bird and bat species identified in Section C2 above (at a minimum) to be using the project site and its surrounds, the BBMP must include the process and outcomes of:<br>• A preliminary site characterisation (desktop and/or initial site visit) for each species to identify all drivers of presence on the project site and utilisation of the project site. This characterisation must include, but not limited to, the consideration of:<br>- site characteristics: focal habitat features, topography, prevailing wind and weather patterns, wetlands (including adjacent to project site), and distance to potential nesting, roosting and foraging areas.<br>- 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: Site utilisation surveys**<br>To validate the outcomes of the desktop assessment, the BBMP must include a detailed discussion of how at-risk listed threatened and migratory bird and bat species are using the project site (both project site and proposed disturbance footprint). This discussion 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.<br>Further, this discussion must include detailed information on:<br>• How the design of the site utilisation surveys for each relevant species has been informed by its drivers of presence on the project site and utilisation of the project site (as determined through the preliminary site characterisation). |

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| | • How site utilisation surveys for each relevant species have been designed to improve understanding of site utilisation on the project site and its surrounds; and support the proposed ongoing Before-After, Control Impact (BACI) framework in this BBMP.<br><br>The site utilisation survey methodology for each relevant species must be included as an attachment to the BBMP.<br><br>Note: At least 24 months of site utilisation surveys must be undertaken to provide sufficient baseline data about a relevant species' potential to utilise the project site and its surrounds. 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.<br><br>At a minimum, each site utilisation survey must record the relevant information specified in 'Species characteristics' of the 'Desktop assessment: Preliminary site characterisation' (Section C1.1 above). |
| C1.3 | **Long-term impact risk assessment**<br><br>To enable a robust assessment of potential impacts of the proposed action associated with individual mortality from turbine collision and barotrauma, and potential changes to species utilisation of the project site and its surrounds on relevant species, the BBMP must include, but not be limited to:<br><br>• 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, but not limited to:<br>  - direct mortality from turbine collision and barotrauma; and<br>  - potential changes to site utilisation during construction and operation of the proposed action.<br>• Identification of potential impacts to each relevant species from direct mortality, including but not limited to:<br>  - analysis and mapping of suitable habitat, territories and activity/utilisation patterns/rates ('heat maps') in the project site and its surrounds;<br>• Mathematical Collision Risk Modelling (CRM), which must:<br>  - incorporate a project site-wide assessment and identify high risk turbines;<br>  - incorporate baseline data collected during the minimum 24 months of site utilisation surveys;<br>  - incorporate the recommendations of a peer review (the peer review must be included as an appendix to the Preliminary Documentation); and<br>  - include a literature review, justification of the choice of the model used, and a statement of all assumptions and uncertainties.<br>• Where limited data is available to inform a robust CRM, an alternative methodology must be proposed in order to meet the requirements of the long-term risk assessment. |

**Attachment A**

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| C1.4 | The BBMP must clearly demonstrate how relevant departmental policies and guidelines, and the SPRAT Database have been used to assess the potential impacts of direct mortality from turbine collision and barotrauma, and potential changes to site utilisation during construction and operation of the proposed action on relevant listed threatened and migratory bird and bat species. The BBMP must include a map for each relevant species which identifies area/s in the project site and its surrounds which have been determined as 'high risk' based on the outputs of the CRM. |
| C1.5 | The BBMP must include a map for each relevant species which identifies area/s in the project site and its surrounds which have been determined as species at risk based on the outputs of the CRM. |

| **Post-commissioning requirements** | |
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| C2.1 | **Environmental outcomes**<br>To enable a robust long-term approach to mitigate and manage potential impacts associated with individual mortality from turbine collision and barotrauma, and potential changes to species utilisation of the project site and its surrounds on relevant species, the BBMP must include specific environmental outcomes to be achieved by the implementation of the BBMP. This may include, but is not limited to:<br>• An improved understanding of the risk of turbine collision and barotrauma impacts on listed bird and bat species.<br>• An improved understanding of whether or how project site usage changes as a result of wind farm construction and operation.<br>• An improved monitoring approach for the timely identification of turbine collisions and the timely collection and analysis of data.<br>  – The department notes that the use of cadaver dogs and artificial intelligence monitoring technologies might be needed to detect and prevent bird and bat collision.<br>• An improved approach to the timely and regular validation and update to the CRM using monitoring data that supports a robust adaptive management approach.<br>• 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**<br>To detect potential long-term changes to species utilisation of the project site and its surrounds on relevant species as a result of operation, 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:<br>• be designed to ensure that species behaviour responses, including avoidance of turbines, and changes to project site utilisation, can be detected; |

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| | • be designed to support a BACI monitoring framework;<br>• include site utilisation survey methodologies, and proposed timings, which are consistent with the pre-commissioning site utilisation survey methodologies;<br>• be undertaken by a suitable qualified expert;<br>• be statistically reliable;<br>• be able to inform adaptive mitigation and management measures, and corrective actions, to ensure environmental outcomes will be achieved. |
| C2.3 | **Long-term turbine collision and barotrauma monitoring**<br>To avoid, minimise, mitigate and 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 CRM update approach. The approach must, at a minimum:<br>• 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.<br>• Demonstrate how site-specific and species-specific risks and uncertainties have informed the design of the monitoring program (e.g. scavenger activity, searcher efficiency, etc.).<br>• Include a proposed timeframe for the regular validation and update of the CRM using site-specific data collected through ongoing monitoring activities.<br>• Include a commitment to DNA test carcasses that cannot be otherwise identified by a bird or bat expert.<br>• Include a commitment for carcass persistence trials to maximise turbine collision detection in a timely manner.<br>• Include a commitment for searcher efficiency trials to maximise carcass detection in a timely manner. |
| C2.4 | **Reporting requirements to the department**<br>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:<br>• Annual turbine strike reports comprising raw strike data and strike notifications, survey methodologies, results of detection/persistence trials, environmental/meteorological conditions and associated statistical analysis.<br>• Estimations of annual mortality rate for each relevant species, comprising supporting evidence from case studies of EPBC species carcass size classes, results of persistence trials, searcher efficiency trials and substitute carrion trials, and annual probability of detection and monthly strike monitoring.<br>• Species occurrence records in accordance with the department's *Guidelines for biological survey and mapped data* (2018) using the species observation data template on the department's website (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). |

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| C2.5 | **Adaptive management framework**<br>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:<br>• Be designed to clearly demonstrate the linkages between:<br>- environmental outcomes;<br>- implementation of mitigation and management measures;<br>- monitoring, reporting and investigations; and<br>- implementation of corrective actions to ensure environmental outcomes will be achieved.<br>• 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 CRM outputs.<br>• Identify, with proposed timeframes for implementation, tangible, on-ground corrective actions to be implemented if monitoring activities indicate the environmental outcomes have not been, or unlikely to be, achieved.<br>• Propose alternative avoidance, mitigation and management measures, supported by scientific literature, if monitoring activities indicate the environmental outcomes have not been achieved. |
| C2.6 | **Offset requirements and shutdown procedures**<br>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, require:<br>• the implementation of additional/alternative avoidance and mitigation measures;<br>• the provision of environmental offsets; and/or<br>• shutdown procedures – the wind turbine/s that contributed to reaching or exceeding an impact trigger would be required to cease operation. |