



ST PATRICKS PLAINS WIND FARM PTY LTD – ST PATRICKS PLAINS WIND FARM

ENVIRONMENTAL IMPACT STATEMENT, 29 JUNE 2023

ADDITIONAL INFORMATION REQUIREMENTS – AGENCY and PUBLIC COMMENTS

NBES response to regulator comments – bats

Comment 31 - EPA

It appears that no information has been supplied in the EIS relating to the likelihood of bats being present in the vicinity of the project site, or potential impacts from the proposal on bats.

Records from other wind farms in Tasmania indicate that bats are at risk of collision with both turbine blades and stands.

Provide the following information relating to bats:

1. Whether there are any records in the Natural Values Atlas of bats within 5 km of the project site, and whether any of these are listed under State or Commonwealth legislation;
2. Based on known information, whether there are any features or areas in the vicinity of the project site considered to constitute potential roosting or feeding habitat for bats;
3. Discussion of the ways in which construction and operation of the proposal may impact bats, and consideration of the potential for such impact to occur, including the potential for bats to fly through the project site and to collide with turbines;
4. Whether there are any mitigation or management measures, in addition to monitoring for bat carcasses, which can be implemented to reduce potential impact on bats from the construction and operation of the proposal.

Responses (contributions by Lisa Cawthen and Grant Daniels)

1. Recorded bat distribution with respect to the site

Method:

- To identify whether there are any records of bats within the vicinity of the Project, a Tasmanian Natural Values Atlas search (7/11/2023) and grey literature review was undertaken with respect to reported (and verified) bat observations within 10 km of the Project Area, noting we doubled the requested buffer from the EPA to offset typically low density of reported bat observations. A 10 km search area was also selected to account for the known range of nightly movements of Tasmanian bats, acknowledging that bats recorded between 5-10 km of the site have the potential to utilise the site as part of their roosting and/or foraging range. Upon undertaking the desktop review, a list of potential bat species and their likelihood of occurrence at the Project Site was completed. For the purpose of this assessment, likelihood of occurrence is defined in Table 1.

Table 1. Likelihood of occurrence categories

Likelihood of occurrence categories	Description
Known	Species has been recorded within 10 km of the site and has a medium to high probability, based on its habitat requirements and known distribution, of utilising the site.
Likely	Species has the potential to occur within 10 km of the site based on its known distribution, and there is a medium to high probability, based on its habitat requirements, of utilising the site.
Possible	Species has the potential to utilise the site based on its habitat requirements, which are consistent with habitat on the site, but there is insufficient information on this species known distribution to categorise the species as likely to occur, or unlikely to occur.
Unlikely	Species has a low probability of utilising the site based on its known distribution and habitat requirements.

Findings – potential bat occurrence:

- Of Tasmania's 8 resident bat species, 7 have been recorded within 10 km of the Project Site and are thus taken to be present on site (Table 2). An additional 2 species have the potential to occur within the project site, with one of these being more likely (Table 2). None of these species are listed as threatened under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA).

Table 2. Likelihood of occurrence of bat species at the proposed St Patricks Plains Wind Farm site

Scientific name	Common name	Conservation status TSPA and EPBCA*	Likelihood of occurrence	Reference
<i>Nyctophilus geoffroyi</i>	lesser long-eared bat	Not listed*	Known	Tasmanian Natural Values Atlas, 7/11/2023, Cattle Hill Wind Farm - Annual Environmental Review 2021
<i>Nyctophilus sherrini</i>	Tasmanian long-eared bat	Not listed* (endemic to Tasmania)	Known	Tasmanian Natural Values Atlas, 7/11/2023, Cattle Hill Wind Farm - Annual Environmental Review 2021
<i>Vespadelus regulus</i>	southern forest bat	Not listed*	Known	Tasmanian Natural Values Atlas, 7/11/2023, Cattle Hill Wind Farm - Annual Environmental Review 2021
<i>Vespadelus darlingtoni</i>	large forest bat	Not listed*	Known	Cattle Hill Wind Farm - Annual Environmental Review 2021 & 2022
<i>Vespadelus vulturnus</i>	little forest bat	Not listed*	Known	Cattle Hill Wind Farm - Annual Environmental Review 2021 & 2022
<i>Chalinolobus morio</i>	chocolate wattled bat	Not listed*	Known	Cattle Hill Wind Farm - Annual Environmental Review 2020, 2021 & 2022
<i>Chalinolobus gouldii</i>	Gould's wattled bat	Not listed*	Known	Cattle Hill Wind Farm - Annual Environmental Review 2021 & 2022
<i>Falsistrellus tasmaniensis</i>	eastern falsistrelle	Not listed*	Likely	Tasmanian Natural Values Atlas, 7/11/2023
<i>Austronomus australis</i>	white-striped free-tailed bat	Not listed	Possible	Tasmanian Natural Values Atlas, 7/11/2023
<i>Pteropus poliocephalus</i>	grey-headed flying fox	Vulnerable (EPBC Act)*	Unlikely	Tasmanian Natural Values Atlas, 7/11/2023

* Species protected under the *Nature Conservation (Wildlife) Regulations 2021*

2. Roosting and feeding habitat

Method:

- To identify whether there are any features or areas in the vicinity of the Project Site considered to constitute potential roosting or feeding habitat for bats that are known, likely or potentially occurring in the area, an assessment of potential roosting, foraging and drinking habitat was undertaken using baseline natural values data collected by NBES during the natural values assessment undertaken for the project, combined with thematic layers from government databases such as LISTmap.
- Roosting habitat for this assemblage of bats is identified as eucalypt forest containing mature forest elements (*i.e.* hollow-bearing tree) or man-made structure (*i.e.* buildings). To identify whether such features occur within the vicinity of the site, three spatial data sets were used – the Forest Practices Authority (FPA) Mature Habitat Availability Layer, recorded building footprints from LISTmap, and individual hollow-bearing tree locations identified by NBES during baseline surveys. Using these layers, areas of roosting habitat suitability were classified as detailed in Table 3.

Table 3. Bat roosting habitat suitability categories

Roosting habitat suitability categories	Description
Optimal expected suitability	<ul style="list-style-type: none"> • This is an area predicted to have more than 20 % mature eucalypt crown cover with tree senescence (mapped as medium to high mature habitat availability by the FPA). • This area is highly likely to be utilised as regular bat roosting habitat, as it has the potential to contain multiple hollow-bearing trees in sufficient densities to provide roosting habitat for all bat species and their maternal colonies (breeding group of bats).
Moderate expected suitability	<ul style="list-style-type: none"> • This is an area predicted to have less than 20 % mature eucalypt crown cover, or more than 20 % mature eucalypt crown cover with no tree senescence (mapped as low mature habitat availability). • This area is potentially has moderate suitability as regular bat roosting habitat, as it has the potential to contain at least some concentrations of hollow-bearing trees that could provide roosting habitat for certain bat species and their maternal colonies (breeding groups of bats).
Possible	<ul style="list-style-type: none"> • Contains isolated potential habitat elements in the form of hollow-bearing trees and building footprints that haven't been assessed on a specific basis as being suitable for containing bat roosts, but could be expected to do so if internal traits are suitable – noting that local habitat traits will also influence if such elements are used for bat roosting, these elements outside of the optimal and moderate suitability classes are mapped as possible habitat only.

<p>Low expected suitability</p>	<ul style="list-style-type: none"> • This is an area that is not expected to contain mature eucalypt crown cover, or is an area that is unlikely to contain a substantial eucalypt component (mapped as negligible to not applicable mature habitat availability), and does not contain a concentration of mapped potential habitat elements such as buildings or isolated hollow-bearing trees. • This area is unlikely to be regularly utilised as bat roosting habitat, as it contains no known or predicted mature habitat availability, hollow-bearing trees or man-made structures.
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- Feeding habitat is identified as any area that has the potential to contain flying and/or non-flying invertebrate prey for bats to forage on. These areas were identified by examining the following spatial layers: NBES vegetation layer (TASVEG 4.0 units) and hydrology.
- Drinking habitat is identified as any area that has the potential to provide a permanent or ephemeral water supply for bats to drink from, informed by examining the hydrology spatial layer.

Findings - potential bat habitat:

Roosting habitat

- The majority of the site (68 %, 6,821 ha) is predicted to have low suitability for bat roosting habitat. It is predicted that up to 32 % of the site (3,222 ha) contains potential roosting habitat identified as either moderate or optimal suitability, with up to 11 % (1,102 ha) predicted as optimal. Areas of potential roosting habitat are located predominately in the northeast and south of the site (consistent with the distribution of forest habitat) in patches ranging in size from < 1 ha to > 100 ha.

Foraging habitat

- The entire site consists of a range of vegetation communities and water bodies that have the potential to provide suitable foraging habitat for the bat species that have the potential to be present in the area.

Drinking habitat

- There are numerous permanent and ephemeral water bodies throughout the project site that have the potential to provide suitable drinking habitat for bats. The majority of these water bodies are located in the northern section the land.

Habitat elements in relation to the footprint

- The proposed construction/operation footprint is predominately located in areas with low or moderate expected suitability for bat roosting and where roosting habitat does occur is considered relatively unlikely to support maternal colonies (breeding groups of bats). The footprint however constitutes viable foraging habitat (noting the generally low specificity of this trait) and habitat elements where bats have the potential to drink.

3. Potential impacts

Construction phase and footprint

- Although the footprint avoids the majority of potential roosting habitat on site (Figure 1), some potential roosting habitat is expected to require permanent clearance or have its suitability impacted through vegetation removal and modification.
- Temporary lighting during the construction phase has the potential to temporarily influence bat activity within the site, attracting certain species to forage at lights (e.g. *Chalinolobus gouldii*) and potentially resulting in avoidance from other species (e.g. *Nyctophilus sherrini* and *N. geoffroyi*).

Operational phase

- As the entire site is considered potential foraging habitat, supported by several viable drinking habitats, it is highly likely that bat injury and/or mortality will occur during the operation phase, either through bat strikes with the wind turbines (blades and towers) or barotrauma as bats fly through the vicinity of turbines. This may be exacerbated in certain scenarios where turbulence from the blade rotation creates insect activity that attracts bats to foraging opportunities.
- There is the potential that certain bat species (e.g. *Chalinolobus gouldii*) will be attracted to the project site (or specifically internal locations) as a result of operational lighting. This however is expected to be minor on account of minimal operational light requirements (noting the site already includes homesteads that can be expected to be illuminated at night, and, in the absence of the turbines themselves requiring illumination, attraction to site office lighting and equivalent sources is not seen to pose a risk but rather expected to provide additional foraging opportunities). In contrast, certain light-sensitive species (e.g. *Nyctophilus sherrini* and *N. geoffroyi*) may suffer localised avoidance, noting again relatively minor illumination requirements for project operation and noting existing illumination within the range of these species has evidently not been sufficiently demonstrated to be a conservation significant threat given the species are not currently listed under the TPSA or EPBCA (noting this could potentially be a case of data deficiency and notwithstanding other potential conservation threats the species may be subject to).
- Vegetation clearance and modification can be expected to create additional edge habitat, leading to increased foraging opportunities, which may variously benefit edge dwelling species where the edges are not within collision-risk areas.

4. Mitigation and management options – commensurate to risk and conservation status

Construction phase and footprint

- By maintaining the majority of potential roosting habitat within the site, any displaced bats are most likely to have the potential to find alternate roosting habitat within their home range; this is considered to have been satisfactorily achieved with the current footprint in relation to known and expected roosting habitat elements.

- Pre-clearance surveys should nonetheless be used to identify any potential roosting habitat elements (e.g. hollow-bearing trees or buildings) requiring removal or modification for construction, noting removal of such elements can be expected to require a permit to take products of wildlife listed under the *Nature Conservation (Wildlife) Regulations 2021* (whether it be in relation to bats or other protected species).
- A pre-clearance protocol should apply to these elements (and be produced as a condition of approval), including clauses for safely relocating bats or, if injured, procedures for animal rescue and, if necessary, euthanasia. The protocol should include clauses for unanticipated discoveries (including during both construction and operation if applicable, such as for maintenance requirements).
- Requirements for wildlife-friendly light pollution minimisation should be included within a Construction Environment Management Plan (or equivalent instrument) as a condition of approval.

Operational phase

- Requirements for wildlife-friendly light pollution minimisation should be included within operational requirements as a condition of approval.
- Monitoring (and reporting) of mortalities should be undertaken throughout the operational phase of the project, guided by a bat mortality monitoring plan (or relevant section/s within a general fauna management plan).
- Where regulators consider mortalities to be unacceptably high, mitigation measures that may be considered for implementation at that time include (but are not limited to):
 - Curtailment by increasing cut-in speeds to higher wind velocities, such that blades don't rotate when there's little to no wind, which can significantly reduce bat mortalities on account of an inverse relationship with wind speed and foraging activity.
 - Limiting blade activity during known periods of high bat mortalities, which may be seasonal or apply to specific time/s of day.
- It is noted that for some of these curtailment measures to be adequately informed would require detailed monitoring, such as real-time mortality monitoring designed to inform adaptive management – this would be atypical in the context of a Tasmanian wind farm on account of potentially being disproportionate to the current conservation statuses of the species potentially occurring on site. Modified mitigation measures commensurate to the level of risk and conservation status of the species would thus be more likely to be applied by regulators in a situation where curtailment was considered to be warranted and justifiable.
- It is similarly noted that the capacity of the regulator to make informed decisions about unacceptable levels of mortality would be limited without site-specific baseline data on the extant bat assemblage, contingent upon if baseline data is available from a sufficiently similar location.

Conclusions and summary of recommendations

- The St Patricks Plains Wind Farm site is highly likely to have multiple bat species utilising the Project Area.

- None of the bat species considered to have potential to utilise the site are listed as rare or threatened under the TSPA or EPBCA, but most are protected under the *Nature Conservation (Wildlife) Regulations 2021*.
- A relatively small proportion of the site (and subsequently the footprint) is predicted to contain optimal roosting habitat, with the majority of the area (and footprint) limited in roosting suitability. The entire area is identified as potential foraging habitat, with frequent drinking habitats.
- Potential risks from construction and operations include mortalities, loss/alteration of habitat, and light-associated responses.
- The following are recommended:
 - Requirements for wildlife-friendly light pollution minimisation should be included within a Construction Environment Management Plan (or equivalent instrument) and within operational requirements as conditions of approval.
 - Pre-clearance surveys should be used to identify any potential roosting habitat elements (e.g. hollow-bearing trees or buildings) requiring removal or modification for construction, noting removal of such elements can be expected to require a permit to take products of wildlife listed under the *Nature Conservation (Wildlife) Regulations 2021* (whether it be in relation to bats or other protected species).
 - A pre-clearance protocol should apply to these elements (and be produced as a condition of approval), including clauses for safely relocating bats or, if injured, procedures for animal rescue and, if necessary, euthanasia. The protocol should include clauses for unanticipated discoveries (including during both construction and operation if applicable, such as for maintenance requirements).
 - Monitoring (and reporting) of mortalities should be undertaken throughout the operational phase of the project, guided by a bat mortality monitoring plan (or relevant section/s within a general fauna management plan).
 - Where regulators consider mortalities to be unacceptably high, mitigation measures commensurate with site specifics and the conservation status of the applicable species should be considered and curtailment measures applied if warranted and justifiable.

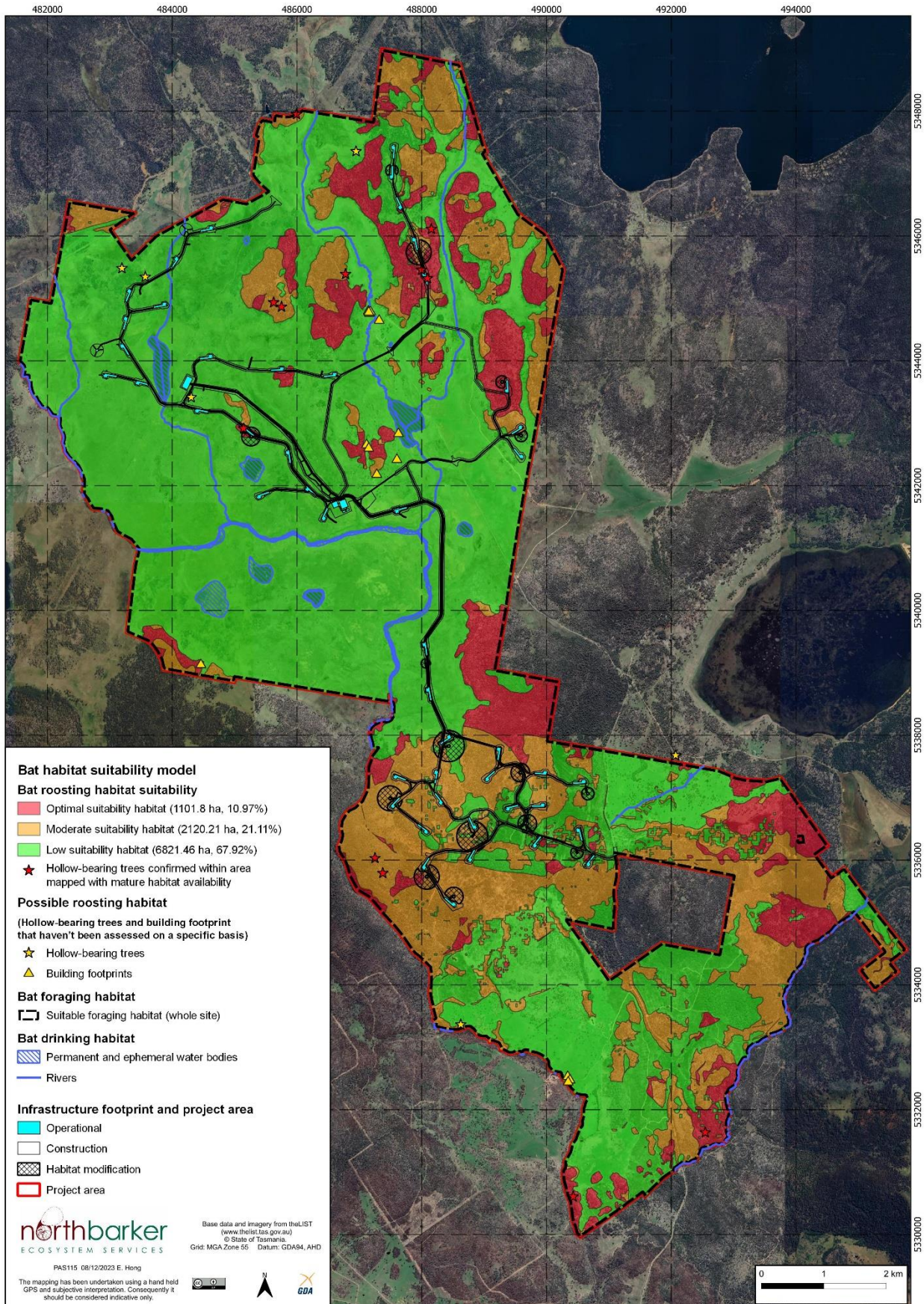


Figure 1: Expected potential for bat habitat across the site