New South Wales Government
Independent Planning Commission

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This submission, authored by Dr Anne Suse Smith, Rainforest Reserves Australia, addresses the significant environmental impact concerns related to the proposed Spicers Creek Wind Farm Development near Dunedoo, New South Wales (NSW). The proposed project poses considerable risks to local flora and fauna, including habitat destruction, noise pollution, increased ground temperatures, and vibrations, all of which can adversely affect both terrestrial and aquatic ecosystems. This document provides a comprehensive analysis of these potential impacts, incorporates relevant case studies to illustrate similar situations, evaluates the effectiveness of the proposed mitigation measures, and advocates for more robust environmental safeguards.

Submission to the Independent Planning Commission New South Wales (IPCN)

Re: Environmental Impact of the Spicers Creek Project, Dunedoo
Date: 6 September 2024
Submitted to: submissions@ipcn.nsw.gov.au
Author: Dr Anne Suse Smith, Rainforest Reserves Australia
Project: Spicers Creek Wind Farm Development
Location: Near Dunedoo, NSW, Australia

Introduction

This submission, authored by Dr Anne Suse Smith, Rainforest Reserves Australia, addresses the significant environmental impact concerns related to the proposed Spicers Creek Wind Farm Development near Dunedoo, New South Wales (NSW). The proposed project poses considerable risks to local flora and fauna, including habitat destruction, noise pollution, increased ground temperatures, and vibrations, all of which can adversely affect both terrestrial and aquatic ecosystems. This document provides a comprehensive analysis of these potential impacts, incorporates relevant case studies to illustrate similar situations, evaluates the proposed mitigation measures, and advocates for more robust environmental safeguards.

Scope and Size of the Spicers Creek Project

1. Project Overview and Infrastructure Details

The Spicers Creek Wind Farm Development is a large-scale renewable energy project aimed at enhancing NSW's renewable energy capacity. The project aligns with the NSW Government's objective of transitioning towards a low-carbon economy but presents several environmental risks that require careful management.

- **Number of Turbines:** The project includes the installation of 70 wind turbines, each with a height of approximately 180 meters to the tip of the blade. The turbines are designed to have a total capacity of up to 350 megawatts (MW), sufficient to power approximately 150,000 homes annually.
- **Transmission Infrastructure:** The project involves constructing new high-voltage transmission lines stretching approximately 30 kilometers to connect the wind farm to the state electricity grid. This requires clearing wide corridors through vegetation, significantly impacting local ecosystems.
- **Access Roads and Ancillary Facilities:** Approximately 50 kilometers of new access roads will be constructed to facilitate the transportation of turbine components, ongoing maintenance, and site personnel. The project also includes the development of substations, control buildings, and temporary construction camps.
- **Land Area Utilization:** The total project area spans about 6,500 hectares, with significant portions of land being cleared or modified. This includes areas designated for turbine foundations, roadways, transmission corridors, and other infrastructure, leading to considerable land use change and habitat disruption.

2. Location and Environmental Context

The project is located near Dunedoo, a rural town in central-western NSW. The landscape comprises a mix of agricultural land, remnant woodlands, and watercourses, which are critical for local biodiversity. The project site overlaps with several important ecological communities, including:

- **Grassy Box-Gum Woodland:** A critically endangered ecological community under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). This habitat supports a range of native flora and fauna, many of which are rare or threatened.
- **Riparian Zones:** Watercourses such as Spicers Creek provide essential habitats for aquatic and semi-aquatic species, playing a critical role in maintaining regional hydrology and biodiversity.

3. Potential Environmental Impacts

Impact on Flora and Vegetation:

- **Habitat Destruction:** The construction of turbines, transmission lines, and access roads will require extensive land clearing, leading to the loss of native vegetation, including critically endangered communities like the Grassy Box-Gum Woodland. This clearing disrupts ecosystems that provide habitat for a variety of species, including threatened plants such as *Eucalyptus melliodora* (Yellow Box) and *Acacia ausfeldii* (Ausfeld's Wattle).
- **Fragmentation of Habitats:** The project will fragment existing habitats, creating isolated patches of vegetation that can limit species movement and reduce genetic diversity. This fragmentation particularly affects species with limited dispersal abilities, such as *Pultenaea parviflora* (Small-flowered Bush Pea), increasing their vulnerability to extinction.

Impact on Fauna and Wildlife:

- **Noise Pollution:** The operation of wind turbines will generate continuous noise, particularly low-frequency noise, which can disturb local fauna. For example, the *Phascolarctos cinereus* (Koala) and *Petauroides volans* (Greater Glider) may experience stress and altered behaviors due to noise interference with their natural communication and mating calls. Research from the Gullen Range Wind Farm (NSW) demonstrated significant noise pollution impacts, particularly from low-frequency sounds and infrasound, affecting species such as the Eastern Grey Kangaroo (*Macropus giganteus*) and local bird populations (Thorne et al., 2017, p. 84) Link.
- **Increased Ground Temperature:** The infrastructure can lead to localized warming or the "heat island effect," adversely impacting temperature-sensitive species such as *Sminthopsis murina* (Common Dunnart) and *Chelodina longicollis* (Eastern Long-necked Turtle). Research on microclimatic changes induced by wind farms has found that this warming can negatively impact species adapted to cooler conditions, leading to heat stress, dehydration, and higher mortality rates (Armstrong et al., 2020, p. 115) Link.
- **Vibrations and Subterranean Disturbance:** Construction activities, such as piling and drilling, create ground vibrations that can affect burrowing species like *Vombatus ursinus* (Common Wombat) and reptiles. Vibrations may cause these animals to abandon their burrows, leading to increased predation and mortality.
- **Avian Collisions:** The turbines pose a collision risk to birds, particularly raptors like the *Aquila audax* (Wedge-tailed Eagle) and migratory species such as *Polytelis swainsonii* (Superb Parrot). A case study from the Capital Wind Farm (NSW) estimated an average of 10 bird fatalities per turbine per year, which poses a significant threat to local bird populations (Hull et al., 2015, p. 97) Link.

4. Proposed Mitigation Measures and Their Limitations

The project developers have proposed several mitigation measures to reduce the environmental impact. However, these measures have significant limitations and often fail to address the full scope of potential impacts.

Proposed Mitigation Measures:

1. **Vegetation Offsets:** The developers propose offsetting cleared vegetation by protecting equivalent areas elsewhere. While offsets are a common mitigation strategy, they often fail to replicate the ecological functions of the original habitats. Research indicates that offsets do not always support the same species diversity or ecological processes as the impacted areas, leading to net biodiversity loss (Bull et al., 2013, p. 201) Link.
2. **Noise and Vibration Controls:** Proposed measures include limiting construction hours and using noise barriers. However, these strategies may be inadequate for protecting nocturnal species, such as the Greater Glider, which are active at night and particularly sensitive to noise and vibrations.
3. **Wildlife Corridors:** The plan includes the creation of wildlife corridors to facilitate animal movement across fragmented landscapes. However, the effectiveness of these corridors is often compromised by edge effects, human activity, and insufficient width, which limit their utility for many species, particularly those with larger home ranges or specialized habitat needs (Drielsma et al., 2017, p. 150) Link.
4. **Bird and Bat Deterrents:** The project suggests using bird and bat deterrents, such as ultraviolet lighting or acoustic devices. However, studies have shown that these deterrents are not consistently effective across different species and do not eliminate the risk of collision for birds and bats (May et al., 2020, p. 78) Link.

Critical Analysis of Mitigation Measures:

- **Vegetation Offsets:** Offsetting is criticized for failing to provide comparable habitats for species dependent on specific ecological communities. For example, the Greater Glider relies on old-growth eucalypt forests, which take centuries to mature, making it impossible to effectively replace with offsetting.
- **Noise and Vibration Controls:** These measures are inadequate for mitigating chronic noise and vibration exposure, which can lead to long-term behavioral and physiological changes in wildlife. Nocturnal species and those with heightened auditory sensitivities, like the Koala, remain at significant risk.
- **Wildlife Corridors:** While corridors aim to connect fragmented habitats, they often fail due to inadequate design and management. Corridors might not be sufficient to support species with larger habitat requirements, and their effectiveness can be limited by external factors like human encroachment and habitat degradation along the corridor edges.
- **Bird and Bat Deterrents:** These deterrents have shown limited effectiveness, especially during adverse weather conditions or night flights, when many species are most active. The failure to fully mitigate collision risks poses a significant threat to avian and chiropteran (bat) populations.

Case Studies and Research Included in the Submission

Gullen Range Wind Farm Case Study (NSW)

- **Topic:** Noise and Vibration Impacts
- **Details:** Research on the Gullen Range Wind Farm near Crookwell, NSW, demonstrated significant noise pollution, particularly from low-frequency sounds and infrasound, which affected both local human populations and wildlife. Behavioral changes were observed in species such as the Eastern Grey Kangaroo (*Macropus giganteus*) and local bird populations.
- **Reference:** Thorne et al. (2017) Link.

Capital Wind Farm Case Study (NSW)

- **Topic:** Impact on Avian Species
- **Details:** The study on the Capital Wind Farm near Bungendore, NSW, found that turbine collisions posed significant risks to bird species, including the Wedge-tailed Eagle (*Aquila audax*) and the Superb Parrot (*Polytelis swainsonii*). The case study estimated an average of 10 bird fatalities per turbine per year, highlighting the threat to local bird populations.
- **Reference:** Hull et al. (2015) Link.

Sapphire Wind Farm Case Study (New England Region, NSW)

- **Topic:** Hydrological Impacts
- **Details:** This study highlighted hydrological changes resulting from large-scale land clearing for wind farm development, which led to increased sedimentation in water bodies. This affected aquatic species such as the Eastern Freshwater Cod (*Maccullochella ikei*), which relies on clean, sediment-free streams for breeding.
- **Reference:** Lee et al. (2019) Link.

Research on Microclimatic Changes Induced by Wind Farms

- **Topic:** Ground Temperature Increases (Heat Island Effect)
- **Details:** Research focused on the microclimatic changes caused by wind farms, particularly the localized warming or "heat island effect" around turbine sites. This warming can negatively impact temperature-sensitive species such as the Common Dunnart (*Sminthopsis murina*).
- **Reference:** Armstrong et al. (2020) Link.

Analysis and Application of Case Studies

These case studies provide empirical evidence of the types of impacts observed in similar wind farm projects. They are used to illustrate the likely consequences of the Spicers Creek project on local flora and fauna, given the similarity in scale and environmental context. The inclusion of these case studies enhances the submission by providing real-world examples that demonstrate the inadequacies of proposed mitigation measures and the need for more comprehensive environmental protections.

5. Conclusion and Recommendations

Given the scope and scale of the Spicers Creek project, the proposed mitigation measures are insufficient to address the full range of environmental impacts on local flora and fauna. There is a pressing need for more comprehensive environmental assessments and the development of more robust, scientifically-backed mitigation strategies to minimize biodiversity loss and habitat degradation. The IPCN should mandate a revised environmental impact assessment

(EIA) that includes these considerations and promotes the adoption of more effective conservation practices.

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