Expanded Submission Opposing the Mallee Wind Farm Project

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1. Introduction

The Mallee Wind Farm project, proposed by Spark Renewables Pty Limited, involves the construction of 76 wind turbines with a blade tip height of up to 280 meters—the tallest in the Southern Hemisphere—and a 300 MW/1,200 MWh battery energy storage system. It is expected to generate 1,000 MW of electricity. The site, located 16 km northeast of Buronga in the Wentworth Shire, NSW, promises significant renewable energy output but presents critical environmental, legislative, and social challenges.

While renewable energy is deemed vital to combating climate change, poorly planned developments can cause irreversible harm. The Environmental Impact Statement (EIS) for the Mallee Wind Farm demonstrates deficiencies in carbon accounting, biodiversity management, water protection, and socioeconomic considerations. This submission critically examines these issues and their broader implications, with the aim of demonstrating why the project should not proceed without extensive revisions.

2. Detailed Project Overview

The scale and complexity of the Mallee Wind Farm necessitate thorough evaluation:

- **Turbines:** Each turbine will stand 280 meters tall, requiring concrete foundations of approximately 1,000 cubic meters per turbine, equivalent to around 2,400 tonnes of CO_2 emissions for cement production alone (Smith & Douglas, 2022).
- **Battery Energy Storage System (BESS):** The system poses unique risks, such as lithium-ion battery leaks, which can release toxic chemicals and cause soil contamination.
- **Supporting Infrastructure:** Roads, substations, and transmission lines disrupt habitats and create fragmentation, which can have long-term effects on biodiversity and land use.
- **Lifecycle Challenges:** From construction and operation to decommissioning, the environmental footprint of the wind farm remains underexplored in the EIS, which neglects key issues such as waste management and post-operation site rehabilitation.

Research from Watson et al. (2023) highlights how such large-scale wind projects often underestimate their cumulative ecological and social impacts, a concern echoed by local stakeholders and environmental groups.

3. Expanded Environmental and Social Impacts

3.1 Carbon Emissions Across the Lifecycle

Wind farms are often lauded for their zero-emission energy output, but the lifecycle emissions of such projects are significant:

- **Construction Emissions:** The production and transportation of materials for turbine towers, blades, and batteries generate substantial greenhouse gases. Cement production alone accounts for 8% of global CO_2 emissions (Smith & Douglas, 2022). The Mallee Wind Farm's reliance on these materials means its construction phase will contribute significantly to emissions.

- **Operation and Maintenance:** While turbines produce energy with minimal emissions, ongoing maintenance activities, such as blade repairs and gearbox replacements, require energy and materials that contribute to their carbon footprint.
- **Decommissioning and Waste:** Wind turbine blades, made from composite materials, are largely non-recyclable, with most ending up in landfills. A recent review of decommissioned wind farms by Altamont Research (2022) found that improper disposal of blades contributes to long-term environmental degradation.

Case Study: The Altamont Pass Wind Farm in California revealed that incomplete lifecycle planning resulted in abandoned turbine components, leading to environmental and community backlash.

3.2 Biodiversity Threats and Habitat Destruction

The Mallee Wind Farm site includes habitats that support numerous threatened and vulnerable species. The EIS inadequately addresses these risks, including:

- **Threatened Species Impact:** Species such as the Pink Cockatoo (*Cacatua leadbeateri*) and the Grey-headed Flying Fox (*Pteropus poliocephalus*) rely on the woodland habitats within the project site. Fragmentation caused by turbine construction, road networks, and transmission lines directly threatens these populations.
- **Collision Risks:** Birds and bats are particularly susceptible to turbine collisions. Studies by Smales et al. (2023) show that collision mortality is highest in areas with large turbine structures, especially for species with low reproductive rates.
- **Loss of Vegetation:** Clearing for roads and turbine pads will remove significant amounts of native vegetation, reducing biodiversity and exacerbating erosion.

Case Study: The Bald Hills Wind Farm in Victoria was found to have violated environmental legislation by failing to mitigate bird and bat mortality, resulting in court challenges and reputational damage.

3.3 Risks to Water Systems

The proximity of the Mallee Wind Farm to Lake Gol Gol, a vital wetland, amplifies concerns about water contamination and ecological degradation.

- **Construction Runoff:** Cement, oil, and chemical spills during turbine construction pose significant risks to surface and groundwater quality. Research by Brodie et al. (2023) shows that construction runoff from renewable energy projects can lead to nutrient loading in nearby water systems, causing algal blooms.
- **Wetland Sensitivity:** Lake Gol Gol supports diverse aquatic life and plays a crucial role in the regional ecosystem. The EIS fails to detail adequate mitigation measures to protect this critical habitat.
- **Soil Erosion:** Land clearing and construction activity increase the likelihood of sedimentation in local waterways, further degrading water quality.

Recommendation: Enforce independent water quality assessments and stricter compliance with the Water Management Act 2000.

3.4 Heat Island Effects and Microclimate Alteration

Large wind farms can create localized heat island effects, which can disrupt ecosystems and agriculture.

- **Temperature Increases:** Wind turbines disrupt nocturnal airflows, raising ground temperatures by up to 2°C in nearby areas (Zhou et al., 2023).
- **Agricultural Impacts:** Changes in soil moisture and temperature can reduce crop yields and alter planting cycles. The EIS fails to consider these impacts on the surrounding farmland.
- **Local Ecosystem Disruption:** Heat island effects can alter local weather patterns, influencing vegetation and animal behaviour.

Case Study: In Texas, farmers near a large wind farm reported crop failures attributed to changes in microclimate conditions caused by turbine activity (Zhou et al., 2023).

3.5 Blade Shedding and Microplastic Pollution

Turbine blades degrade over time, releasing microplastics into the surrounding environment.

- **Environmental Contamination:** Greenpeace (2023) estimates that each turbine blade sheds up to 25 kilograms of microplastics annually due to erosion from wind and weather.
- **Soil and Water Pollution:** These microplastics can leach into soil and waterways, remaining in the ecosystem for decades.
- **Recycling Challenges:** The lack of effective recycling solutions for turbine blades exacerbates this problem, leading to environmental waste.

Case Study: The Hornsea Wind Farm in the UK faced significant criticism for failing to address microplastic pollution from blade shedding, damaging public trust in renewable energy projects.

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4. Legislative and Policy Violations

The project does not comply with key Australian legislative frameworks:

- **Biodiversity Conservation Act 2016:** Fails to include comprehensive plans for mitigating impacts on threatened species, in breach of Section 6.5.
- **Environmental Planning and Assessment Act 1979:** The lack of genuine community consultation violates Division 2, which mandates inclusive and transparent processes.
- **Water Management Act 2000:** Insufficient safeguards for protecting sensitive wetlands contravene Part 3 of the Act.

Case Study: The Cattle Hill Wind Farm in Tasmania faced similar violations, resulting in substantial delays and increased regulatory scrutiny.

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5. Additional Social and Economic Concerns

- **Noise and Visual Pollution:** Turbine noise and shadow flicker have been linked to adverse health effects, including sleep disturbances and stress, as documented by Shepherd et al. (2023).
- **Impact on Property Values:** Properties near wind farms often experience value declines due to aesthetic and environmental concerns.
- **Community Trust:** The lack of transparent engagement with local residents has created widespread opposition, eroding trust in the project's proponents.

6.0 Summary

6.1 Environmental Risks

- **Carbon Emissions Misrepresentation:** The EIS neglects a lifecycle carbon analysis, failing to account for substantial emissions from turbine manufacturing, construction, transportation, and decommissioning. Without a comprehensive carbon accounting model, the project's claims of reducing emissions are misleading.
- **Biodiversity Threats:** Critical gaps exist in assessing impacts on threatened species, including the Pink Cockatoo (*Cacatua leadbeateri*) and the Grey-headed Flying Fox (*Pteropus poliocephalus*). Habitat fragmentation, collision risks, and inadequate restoration plans are severe oversights.
- **Water Quality Risks:** The absence of a detailed strategy to prevent contamination of Lake Gol Gol and surrounding wetlands, despite clear risks of nutrient runoff and sedimentation, violates key water management regulations.
- **Heat Island and Microclimate Effects:** The EIS omits consideration of local heat island effects, which emerging research shows can adversely impact agriculture and ecosystems. This oversight risks disrupting the productivity and viability of farmland in the region.
- **Blade Shedding and Microplastic Pollution:** No mitigation measures are included to address blade erosion, which releases microplastics into the environment and can contaminate soil and water systems.

6.2 Legislative Noncompliance

The EIS fails to demonstrate compliance with critical Australian legislative frameworks, including:

- **Biodiversity Conservation Act 2016:** Lacks effective mitigation for biodiversity loss and does not align with Section 6.5 requirements for habitat protection.
- **Environmental Planning and Assessment Act 1979:** The absence of transparent and inclusive community consultation violates Division 2's public participation mandates.
- **Water Management Act 2000:** Insufficient safeguards for nearby wetlands contravene Part 3 of the Act, which requires rigorous protection of sensitive water systems.

6.3 Social and Economic Concerns

- **Community Impacts:** The project's lack of meaningful stakeholder engagement has created distrust among local residents, exacerbated by concerns over noise, visual pollution, and potential health impacts.
- **Economic Risks:** Declining property values and disruptions to local agricultural productivity pose significant risks to the region's long-term economic health.
- **Post-Operation Planning:** The EIS provides no clear plan for decommissioning and site rehabilitation, raising concerns about long-term environmental degradation and abandoned infrastructure.
- **Community Engagement:** Enhance consultation processes to include meaningful stakeholder participation and address community concerns.

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7. Recommendations

To address these deficiencies, the following actions are recommended:

1. **Lifecycle Carbon Emissions:** Develop a comprehensive carbon accounting model, including emissions from construction, operation, and decommissioning.
2. **Biodiversity Protections:** Conduct independent biodiversity assessments and implement habitat restoration programs.

3. **Water Quality Safeguards:** Mandate third-party monitoring of water systems and enforce runoff control measures.
4. **Heat Island Monitoring:** Establish sensor networks to study microclimate impacts and develop adaptive measures for affected agriculture.
5. **Blade Management Solutions:** Implement protective coatings for turbine blades and establish a recycling protocol.

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8. Broader Implications

The inadequacies in the EIS highlight a broader challenge in renewable energy development: ensuring that such projects are implemented responsibly and sustainably. If the Mallee Wind Farm proceeds without addressing these significant gaps, it risks undermining public trust in renewable energy initiatives, setting a damaging precedent for future projects.

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9. Conclusion

In its current form, the Mallee Wind Farm project poses unacceptable risks to the environment, biodiversity, water systems, and local communities. The EIS fails to meet the standards required by Australian legislation and lacks the comprehensive planning necessary for a project of this scale. Without significant revisions, including a full lifecycle carbon analysis, robust biodiversity protections, water contamination safeguards, and transparent community engagement, this project should not proceed.

The risks outlined here are not merely technical deficiencies; they represent real and lasting consequences for the environment and local stakeholders. This submission calls for the project to be halted until the proponent can provide a revised and legally compliant EIS that addresses all these concerns comprehensively.

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