Comprehensive Submission on Beryl Battery Energy Storage System (EXH-74953956)

Author: Dr Anne Suse Smith, Rainforest Reserves Australia

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1. Introduction

The Beryl Battery Energy Storage System (BESS) project, proposed for Gulgong, NSW, aims to store renewable energy generated by the adjacent Beryl Solar Farm, supporting grid reliability and addressing renewable energy intermittency. While the intention to support Australia's transition to renewable energy is commendable, a comprehensive analysis of the project reveals significant concerns regarding its environmental impact, compliance with legislative requirements, and potential threats to local communities, flora, and fauna.

As outlined in the **Environmental Planning and Assessment Act 1979 (NSW)** (EP&A Act) (NSW Government, 1979), all projects of this scale are required to balance development needs with environmental conservation. However, the Beryl BESS appears to fall short in this regard, presenting numerous risks that must be addressed before it can proceed. This submission aims to critically examine these risks, including breaches of environmental legislation, impacts on biodiversity, soil and water contamination risks, fire hazards, and community concerns, ultimately recommending that the project not proceed.

2. Project Overview

The Beryl BESS project proposes the construction of a 100 MW/2-hour lithium-ion battery storage facility in the Gulgong region. The project aims to store excess electricity generated by the Beryl Solar Farm, contributing to renewable energy integration (NSW Department of Planning, 2024). However, a deeper analysis reveals that the project poses significant environmental, ecological, and community risks, which are inadequately addressed in the project's documentation.

3. Environmental Impact Assessment

3.1 Habitat Loss and Fragmentation

The construction of the Beryl BESS will necessitate clearing substantial areas of native vegetation, leading to habitat fragmentation. This is especially concerning given that the project area is home to numerous threatened and endangered species, including the Greycrowned Babbler (*Pomatostomus temporalis*) and Eastern Pygmy Possum (*Cercartetus nanus*) (NSW Wildlife Atlas, 2023). According to the **Biodiversity Conservation Act 2016** (**NSW**), these species' habitats must be preserved and protected, and any destruction or modification of these habitats without adequate offsets is a clear legislative breach (NSW Government, 2016).

Fragmentation disrupts wildlife corridors and reduces genetic diversity, which is essential for species' long-term survival (Haddad et al., 2015). The project's documentation fails to outline how it will mitigate this impact or provide adequate offsets for the habitat loss, indicating a lack of compliance with the requirements of the **EPBC Act 1999** (Australian Government, 1999). Additionally, the construction will create physical barriers that prevent wildlife movement, which can lead to reduced reproductive success and increased mortality, further threatening the survival of already vulnerable species.

The project does not specify the exact extent of vegetation clearing but suggests that significant habitat destruction will occur. According to research by Laurance et al. (2018), such habitat loss can lead to long-term biodiversity decline, with the impact often becoming apparent years after the initial disturbance. The Beryl BESS project's failure to adequately address these concerns highlights a significant oversight in environmental planning.

3.2 Impact on Native Flora

The vegetation in the proposed project area includes several native plant communities, some of which are endangered or vulnerable. These plants provide crucial ecological functions, such as soil stabilization, nutrient cycling, and serving as a food source for native fauna (NSW Department of Planning and Environment, 2023). The NSW Vegetation SEPP (State Environmental Planning Policy) 2021 mandates the protection of native vegetation, particularly in areas of high environmental value (NSW Government, 2021). However, the Beryl BESS project does not adequately address how it will protect or restore native flora, leading to potential breaches of this policy.

Additionally, construction activities often result in the introduction and spread of invasive plant species, which can outcompete native vegetation and further degrade the habitat (Commonwealth of Australia, 2020). The Beryl BESS documentation does not provide an invasive species management plan, which is a critical oversight and potential breach of the **Biosecurity Act 2015 (NSW)** (NSW Government, 2015).

3.3 Soil and Water Contamination Risks

Lithium-ion batteries pose a significant risk of soil and water contamination, particularly in the event of a spill, fire, or leakage. They contain hazardous materials such as lithium, nickel, and cobalt, which can leach into the soil and water systems, causing long-term contamination (Battery University, 2022). The **Protection of the Environment Operations Act 1997** (**NSW**) mandates the prevention of soil and water pollution (NSW EPA, 1997). However, the project documentation does not outline a comprehensive spill prevention or containment strategy, which could lead to serious environmental breaches.

Given the site's proximity to the Cudgegong River, any contamination could have farreaching effects on aquatic ecosystems and downstream water quality, affecting agriculture and potable water supplies for local communities (WaterNSW, 2024). This potential for contamination raises significant concerns about the project's compliance with the **Water Management Act 2000 (NSW)**, which seeks to protect water quality in NSW (NSW Government, 2000).

The long-term accumulation of heavy metals in the soil could render the land unfit for agriculture or wildlife habitats, causing ecological damage that could take decades to remediate (Yuan et al., 2021). Despite these risks, the project does not provide adequate measures to prevent or manage soil and water contamination, indicating a failure to comply with environmental protection laws.

3.4 Fire Safety and Thermal Runaway Risks

Lithium-ion batteries are prone to thermal runaway, a process that can cause them to overheat and catch fire, releasing toxic gases and chemicals (Moss et al., 2020). The **Work Health and Safety Act 2011 (NSW)** requires that all industrial projects implement comprehensive fire safety measures (SafeWork NSW, 2011). However, the Beryl BESS project documentation provides only general fire safety precautions, without a specific plan for handling lithium-ion battery fires, which represents a significant oversight.

The release of toxic gases, such as hydrogen fluoride, poses severe health risks to nearby communities and emergency responders. Given that the project is located in a bushfire-prone area, the potential for a battery fire to spread is particularly concerning, and the lack of a detailed fire management strategy constitutes a breach of the **NSW Rural Fires Act 1997** (NSW Government, 1997).

The Beryl BESS's failure to provide a detailed fire response plan not only violates safety regulations but also poses a threat to biodiversity and the community, given the potential for such incidents to cause widespread environmental damage.

3.5 Heat Island Effect and Microclimate Alteration

The BESS facility will generate significant heat during operation, contributing to the heat island effect, which can alter local microclimates (CSIRO, 2023). This localized warming can affect plant growth, soil moisture, and potentially weather patterns over time. The **NSW Climate Change Policy Framework** requires projects to address their contributions to climate change, but the Beryl BESS documentation does not provide adequate mitigation strategies for the heat island effect, indicating non-compliance with this framework (NSW Government, 2020).

Localized warming can exacerbate drought conditions, making it more challenging for native vegetation and wildlife to survive. The lack of a plan to mitigate these impacts suggests that the project does not adequately consider its broader environmental responsibilities.

4. Community and Social Impacts

4.1 Noise Pollution

The Beryl BESS project will generate substantial noise from cooling systems, inverters, and battery operations, particularly during peak charging and discharging periods (NSW Department of Planning, 2024). Prolonged exposure to noise above 55 decibels can lead to adverse health effects, including sleep disturbance, stress, and cardiovascular problems (World Health Organization, 2018).

The Noise Policy for Industry (2017) sets acceptable noise levels for industrial projects, but the Beryl BESS documentation does not provide adequate noise mitigation strategies, indicating a breach of this policy (NSW EPA, 2017). Additionally, noise pollution can disrupt wildlife, particularly nocturnal species, which rely on sound for communication, navigation, and hunting (Shannon et al., 2016).

4.2 Visual Pollution

The industrial appearance of the BESS facility will significantly alter the landscape, impacting the visual amenity of the area. This change can affect residents' sense of place and attachment to their surroundings, potentially reducing property values and deterring tourism, which is a key economic driver for the region (Australian Tourism Research, 2022).

The Environmental Planning and Assessment Act 1979 (NSW) mandates the consideration of visual impacts, but the project documentation fails to outline any measures to minimize these impacts, representing another legislative breach (NSW Government, 1979).

5. Legislative Non-Compliance Summary

The Beryl BESS project documentation reveals multiple breaches and non-compliance with environmental legislation, including:

- Biodiversity Conservation Act 2016 (NSW)
- Environmental Planning and Assessment Act 1979 (NSW)
- Protection of the Environment Operations Act 1997 (NSW)
- Work Health and Safety Act 2011 (NSW)
- Waste Avoidance and Resource Recovery Act 2001 (NSW)
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6. Recommendations

- 1. **Reject the Beryl BESS Project**: Due to the significant environmental and community impacts, the project should not proceed.
- 2. **Reassess the Environmental Impact Statement (EIS)**: Conduct a more thorough assessment to address the inadequacies identified.
- 3. **Implement a Comprehensive Environmental Management Plan**: Develop strategies to mitigate the project's impact on biodiversity, water quality, and fire safety.

7. Conclusion

The Beryl BESS project presents significant risks to the environment, biodiversity, and local community well-being. Given the multiple breaches of environmental legislation and the lack of adequate mitigation strategies, it is recommended that the project not proceed in its current form.

8. References

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