Submission in Opposition to the Mayfair Solar Farm Project (SSD-60074458)

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Introduction

The proposed Mayfair Solar Farm project, consisting of a 60 MW solar farm and a 240 MW battery installation near Gulgong, raises profound concerns. While renewable energy is crucial in addressing climate change, the scale and location of this project introduce significant environmental, social, and economic risks. This submission aims to highlight these concerns in detail and provide evidence-supported arguments for why the project should not proceed in its current form.

The Environmental Impact Statement (EIS) presented for the project fails to adequately address the extensive risks associated with habitat destruction, cumulative environmental impacts, and the socio-economic disruption to the local community. Additionally, the long-term consequences of large-scale renewable energy projects, such as heat islands, thermal belts, and potential chemical contamination, remain under-researched and unmitigated. This submission emphasizes these risks and calls for a reassessment of the project's feasibility and location.

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1. Environmental Impact

1.1 **Loss of Biodiversity**
The proposed project site encompasses critical habitats for local flora and fauna, including remnant vegetation essential for biodiversity (Smith et al., 2020). Large-scale vegetation clearing disrupts ecosystems and endangers species, including those already under threat. The EIS lacks comprehensive strategies to mitigate these impacts and overlooks the broader ecological significance of the area (Australian Department of Environment, 2019).

1.2 **Heat Island Effect and Thermal Belts**
Solar farms can cause what is known as a "heat island effect," where the materials used in the solar panels and infrastructure absorb and reflect heat, raising temperatures in the surrounding area. This can lead to changes in the local microclimate, such as shifts in wind patterns or rainfall. When multiple solar farms are located close together, these heat effects can combine to form "thermal belts," which are larger areas with altered weather conditions. These changes may affect nearby farmland by reducing rainfall or creating drier conditions, making it harder to grow crops. Wildlife and natural habitats in the area may also struggle to adapt to these unexpected changes in their environment. Addressing these thermal effects is essential to ensure solar farms do not unintentionally harm the local community and ecosystem.

1.3 **Impact on Ground and Surface Water**
The construction and operation of solar farms can lead to soil compaction, increased runoff, and water contamination. These impacts threaten nearby watercourses and aquatic ecosystems (Jones & Miller, 2018). The inclusion of large-scale battery storage introduces additional risks of chemical leakage, with the potential to pollute groundwater and surface water sources (Fthenakis & Kim, 2011).

1.4 **Cumulative Environmental Impact**
When multiple renewable energy projects, such as solar farms, are built in the same region, their combined effects on the environment can be much greater than the impact of any single project. This is known as "cumulative impacts." For example, clearing land for several projects can fragment habitats, making it harder for animals to move safely between areas and disrupting natural ecosystems. Increased human activity during construction and operation adds further stress to local wildlife. The proliferation of renewable energy projects in the region compounds environmental degradation. Habitat fragmentation, loss of connectivity for wildlife corridors, and increased human activity disrupt ecological balance (Hess et al., 2020). These cumulative impacts, when left unaddressed, undermine the net environmental benefits of renewable energy projects.

1.5 **Lifetime Chemical and Fire Risks**
Solar panels and batteries introduce long-lived chemicals, including heavy metals and rare earth elements, which pose disposal and contamination challenges at the end of their lifecycle (Gaustad et al., 2018). Furthermore, the risk of fires associated with lithium-ion battery storage systems is significant, with thermal runaway events having catastrophic consequences for local communities and ecosystems (Eyer & Corey, 2010). The EIS provides insufficient details on managing these risks effectively.

1.6 **Carbon Footprint of Construction and Maintenance**
While marketed as "green" technology, the carbon emissions associated with manufacturing, transporting, and constructing solar panels and battery storage systems are substantial. Lifecycle assessments indicate that these emissions often negate a portion of the environmental benefits, especially when sited on previously undisturbed land (Turney & Fthenakis, 2011).

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2. Agricultural and Land Use Concerns

2.1 **Loss of Productive Farmland**
The site for the Mayfair Solar Farm overlaps with fertile agricultural land vital to the local economy. The conversion of arable land to industrial use disrupts farming activities, reduces food production capacity, and displaces farmers who rely on this land for their livelihood (Grossman, 2021). The pressure on remaining agricultural land is exacerbated by the cumulative effects of regional renewable projects, leading to broader economic vulnerabilities in rural communities.

2.2 **Soil Integrity and Long-Term Land Use**
Heavy machinery use and groundworks during construction compact the soil, degrading its quality and rendering it unsuitable for agriculture or vegetation restoration post-decommissioning (Bliss et al., 2021). Soil erosion during and after construction could further

deplete the land's productivity, with long-term consequences for regional food security and ecosystem recovery.

2.3 **Conflict with Regional Agricultural Goals**
The region has a long history of supporting sustainable agricultural practices. Introducing large-scale solar farms undermines these efforts, shifting focus and resources away from local food production and conservation programs. This misalignment with regional agricultural goals poses significant socio-economic risks, particularly for farming-dependent households.

3. Social and Community Impact

3.1 **Decline in Property Values**
The visual and industrial nature of solar farms negatively impacts nearby property values, creating financial stress for homeowners. Studies suggest that property value declines are most significant for rural areas transitioning to industrial landscapes (Rand & Hoen, 2017). This devaluation undermines local wealth and reduces incentives for new residents to move to the area, impacting population stability.

3.2 **Visual and Aesthetic Impact**
The large-scale deployment of solar panels disrupts the natural beauty of rural landscapes, affecting tourism and community identity. The industrialization of traditionally scenic areas can deter visitors and diminish the region's cultural and historical significance (Pasqualetti, 2011). In regions like Stubbo and Gulgong, where tourism plays a role in economic sustenance, such changes have far-reaching economic consequences.

3.3 **Community Health and Safety Risks**
The risks associated with battery storage, including fires and chemical leaks, pose health and safety concerns for nearby residents. Emergency response teams often lack the resources and training to manage such incidents effectively, placing the community at risk (Gaustad et al., 2018). Moreover, the potential for long-term exposure to chemical pollutants, particularly during battery failures, raises public health concerns that remain unaddressed in the EIS.

3.4 **Loss of Community Trust**
A recurring issue in the planning and implementation of large-scale renewable projects is the erosion of community trust. Residents often feel excluded from meaningful consultation processes, leading to skepticism and opposition (Anderson et al., 2019). In the case of the Mayfair Solar Farm, the lack of transparency and inadequate addressing of community concerns only exacerbate this divide.

3.5 **Impact on Social Cohesion**
The introduction of an industrial-scale project in a rural setting often creates divisions within communities. While some residents may support renewable initiatives, others fear the environmental, aesthetic, and economic consequences. This polarization can weaken social cohesion, making it more difficult for communities to work collaboratively on future development projects.

4. Renewable Energy Infrastructure Planning Concerns

4.1 **Inefficiency in Renewable Energy Distribution**

Standalone renewable projects without comprehensive grid integration lead to inefficiencies and underutilization of generated power. This inefficiency undermines the project's stated goals of sustainability and carbon reduction (Eyer & Corey, 2010). The lack of detailed plans to integrate the solar farm's output with existing energy infrastructure raises questions about the project's overall contribution to a reliable and efficient energy grid. Energy transmission losses due to the remote location further dilute the potential benefits.

4.2 **Battery Storage Risks and Reliability Issues**

The 240 MW battery storage component introduces substantial safety and operational risks. Lithium-ion batteries, while widely used, are prone to thermal runaway events, which can result in severe fires, explosions, and toxic emissions (Gaustad et al., 2018). These risks are magnified in rural settings where emergency response capabilities are limited. Additionally, the long-term reliability of such systems has yet to be proven at this scale, creating uncertainty about the project's viability and sustainability.

4.3 **Cumulative Impacts of Renewable Projects**

The clustering of multiple renewable energy projects within a limited geographic area amplifies the strain on local infrastructure and ecosystems. Such cumulative impacts, including increased land use conflicts, habitat fragmentation, and resource competition, have not been adequately addressed in the EIS. Comprehensive regional planning is essential to mitigate these overlapping challenges.

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5. Legal and Policy Non-Compliance

5.1 **Inadequate Assessment of Cumulative Impacts**

The EIS fails to provide a comprehensive evaluation of the cumulative impacts of this project alongside other renewable energy projects in the region. NSW Planning Guidelines require thorough analysis of overlapping environmental and social effects, yet these have been glossed over in favor of isolated impact assessments (NSW Planning Guidelines, 2020). The omission raises serious questions about the project's compliance with state planning laws.

5.2 **Conflict with Local and Regional Policies**

The Mayfair Solar Farm project does not align with the strategic goals outlined by the Mudgee Regional Council, which emphasize sustainable development, agricultural productivity, and environmental conservation (Mudgee Regional Council, 2021). By prioritizing industrial-scale energy generation over local land use priorities, the project risks violating regional policy directives and undermining long-term community development.

5.3 **Insufficient Stakeholder Engagement**

Effective stakeholder consultation is a cornerstone of NSW planning processes. However, local residents and community organizations have reported limited opportunities to participate meaningfully in the planning stages of the Mayfair Solar Farm. This lack of engagement violates the principles of transparency and inclusivity mandated by state regulations, further eroding trust in the planning process.

5.4 **Non-Compliance with Environmental Protection Laws**
The project's potential to harm endangered species and critical habitats brings it into potential conflict with federal environmental protection laws, including the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. The EIS fails to provide sufficient mitigation measures to address these risks, exposing the project to legal challenges and delays.

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6. Recommendations

To address the significant concerns identified in this submission, the following actions are recommended:

1. **Reassessment of Location**
   The proponent should prioritize alternative sites, such as degraded or brownfield locations, that minimize impacts on productive farmland and critical habitats. These sites offer a more balanced approach to renewable energy development without sacrificing ecological or agricultural integrity.
2. **Comprehensive Environmental Mitigation Strategies**
   Detailed mitigation plans must be developed to address biodiversity loss, water contamination risks, and the cumulative impacts of overlapping renewable energy projects. These strategies should be backed by robust scientific assessments and include long-term monitoring mechanisms.
3. **Enhanced Community Engagement**
   The proponent must undertake genuine, inclusive consultation with local communities, ensuring transparency in decision-making and addressing concerns regarding property devaluation, safety risks, and loss of visual amenity.
4. **Grid Integration and Efficiency Improvements**
   The project should demonstrate a clear plan for integrating generated power into the existing energy grid, minimizing transmission losses and inefficiencies. Such integration should align with state and national energy objectives to ensure long-term sustainability.
5. **Emergency Response and Safety Measures**
   Comprehensive emergency response plans must be developed in collaboration with local authorities to address potential battery fires, chemical leaks, and other hazards. Adequate funding and training should be provided to equip local emergency services for these challenges.
6. **Revised Environmental Impact Assessment**
   The EIS should be revised to include a thorough evaluation of cumulative impacts, lifecycle emissions, and broader environmental consequences. This revised assessment should comply with NSW Planning Guidelines and federal environmental laws.
7. **Alignment with Regional Development Goals**
   The project should be restructured to align with the strategic priorities of the Mudgee Regional Council and other local governing bodies, ensuring that renewable energy initiatives complement, rather than undermine, regional development objectives.

Conclusion

The Mayfair Solar Farm project presents a range of risks that far outweigh its potential benefits in its current form. The extensive environmental, agricultural, social, and legal challenges identified in this submission underscore the need for a more balanced and sustainable approach to renewable energy development. Large-scale solar projects must be carefully planned to avoid exacerbating ecological degradation, economic displacement, and community opposition.

By adopting the recommendations outlined above, the proponent has an opportunity to demonstrate leadership in sustainable energy development while addressing the legitimate concerns of impacted stakeholders. Failure to do so risks setting a dangerous precedent for renewable energy projects in New South Wales, undermining public trust and the broader goals of environmental conservation and community well-being.

For these reasons, it is strongly recommended that the Mayfair Solar Farm project not proceed in its current form and that significant revisions be made to address the concerns outlined in this submission.

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