

## **Helios Renewable Energy Project**

**EN010140**

### **Burn Gliding Club IP 20050600**

Response to:

- a. Solar Photovoltaic Glint and Glare Study
- b. High-Level Investigative Report
- c. Cumulative Impacts

#### **a. Solar Photovoltaic Glint and Glare Study**

Burn Gliding Club welcomes the more detailed and thorough report which acknowledges that mitigation is required in order to reduce the risk of the proposed solar panels creating glint and glare that could adversely impact on the safety of glider pilots using Burn Gliding Club's infrastructure at Burn Airfield.

Burn Gliding Club notes that solar reflections with 'potential for temporary after-image' are predicted towards the circuits for runways 01, 19, 25 and 33 and therefore mitigation is required for all four runways.

The principle of fixing the Single Access Tracker System at an appropriate angle is acceptable.

As the operating hours of Burn Gliding Club may vary the Single Access Tracker System resting angle should take account of all and any predicted glare towards the circuit paths which Burn Gliding Club provided to Pager Power.

It is recognised and accepted that the scope of this will be determined by final detailed design.

This arrangement will only be acceptable if further engagement takes place with Burn Gliding Club in the preparation of the Glint and Glare Mitigation Strategy.

**b. High-Level Investigative Report**

Burn Gliding Club welcomes the more thorough examination of glider launch failure (GLF) and engine failure on take-off (EFATO) and wind shear, updraft and turbulence.

Burn Gliding Club wishes to correct two errors in the Pager Power report.

i. Paragraph 4.3 asserts that

*'The available areas for an emergency landing following GLF are not secured by landowner agreements. Therefore, the loss of land can be considered (in the worst case) comparable to a development other than a solar farm, such as livestock or industrial buildings which will pose a greater constraint than a solar panel.'*

This is incorrect. Gliders do not require permission from landowners to land in an emergency.

In addition, any change of use of the land would require planning permission and, as Burn Gliding Club has a safeguarding arrangement with the local planning authorities it would be able to address any safety implications through the planning process.

ii Section 5.2.1, in the fourth paragraph states that the proposed development is '*..over 600m away from runway 01/19 at its closest point...*'

This is incorrect, the distance is approximately 350m

Aside from these corrections, the more important issue is that the proposed development impinges on Glider Launch Failure / Engine Failure on Take-Off areas for runways 07 and 15.

The presence of solar panels in these areas has both direct and indirect implications for gliding activity which cumulatively create a risk to aviation safety.

The direct risk arises from the proposed sterilisation of part of the areas of land currently available for launch or engine failures.

The indirect risk would arise from the known but currently imprecise implications of differential heating of the solar panels and the nature and scale of thermal updrafts generated by a large complex of solar panels.

The safety critical areas are at the ends of Runways 07 and 15.

Pager Power has asserted that the panels would generate a constant heat source of 25 degrees C. This assertion is not supported by documentary evidence of the temperatures generated around solar installations nor by the first-hand experience of aviators.

Burn Gliding Club accepts there is currently no specific UK guidance on thermal effects from large solar installations.

However, the CAA's document '*Renewable energy developments: solar photovoltaic developments*', CAST Aerodrome Safeguarding Guidance Note July 2023 states:

*‘...developers should provide the aerodrome operator and / or ATS provider with adequate technical and safety assurance documentation which addresses the safety impacts provided in sections 3.1 to 3.6. Further consideration may be given to the following....*

- *turbulence*
- *thermal plume’*

The ‘precautionary principle’ set out above should be applied.

There are also accounts from the USA of turbulence generated by commercial solar generation schemes. The following relates to Wyandotte Airport in Upper Sandusky:

*“On a warm, sunny day with a light east or west breeze, the solar panels create heat and a thermal will flow with the breeze and it'll carry those thermals across the runway,” said Mitchel Grenwalt, a pilot and manager of the Wyandotte Airport. “As an airplane is coming into land and it goes to flare, it will all of a sudden be picked up 30, 40 feet. And then about the time it gets to the end of the solar panels, that extra lift is gone and it drops the plane back down.”*

BGC appreciates that local climatic circumstances may differ, but there have been reports of solar generated turbulence in the UK (for example in the Nene Valley and at Manston) and there is little research into the implications on large solar farms.

It is essential that Pager Power fully reviews and tests the assertion of a constant heat source of 25 degrees C. In the light of the above comments, it is clear that a constant heat source is a simplistic assertion. The absolute upper limit of the temperature of the panels should be identified or assessed and the implications of varying temperatures for thermal uplift and turbulence should be fully examined.

Dependent upon the outcome of these assessments, Burn Gliding Club would be prepared to enter into discussions about the necessary mitigation measures.

In the absence of this information, it would be imperative that no solar panels are positioned within the GLF / EFATO areas at the end of Runways 07 and 15.

**c. Cumulative Impacts**

It should be noted that, to date, only the Helios project has been addressed in this initial assessment of potential impacts on aviation safety. Pager Power has not examined the potential cumulative impacts on gliding activity arising from approved solar schemes in combination with the Helios project.

One solar farm may have limited glare impact, but several in proximity can create overlapping periods of glare, increasing the risk of temporary visual impairment for pilots.

The proximity of several solar energy generation sites near different parts of the airfield or along various flight paths, may generate a cumulative glare risk which could cover multiple critical phases of a flight (i.e. approach, departure, circuit patterns).

Persistent effects: The combination of reflections from several sites may extend the duration and intensity of glare events throughout the day/year.

While individual solar energy generation sites can introduce mitigation (for example anti-glare coating or buffer zones), multiple projects may overwhelm mitigation measures, making cumulative management impractical or less effective.