



**Australian Government**  
**Civil Aviation Safety Authority**

Air Navigation, Airspace and Aerodromes

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Dear Mr. Crinnion,

**THUNDERBOLT WIND FARM, NSW, STAGE 1, SSD-10807896**

CASA has reviewed the Aviation Impact Assessment by Aviation Projects (Appendix 16 to the EIS) for the proposed Thunderbolt Wind Farm near Bendemeer.

The proposed wind farm will comprise approximately 32 wind turbines with a maximum tip height of approximately 260 m (853 ft) AGL or 1347 m above AHD and up to 6 permanent wind monitoring towers with a maximum height of up to 170 m AGL. There is one existing wind monitoring tower. It is possible that there will be overhead transmission lines installed.

Except for Recommendation 7 '*Lighting of Turbines*', CASA agrees with the Recommendations at Section 11 of the Aviation Impact Assessment. In contrast to Recommendation 7, CASA considers the proposed wind farm will be a hazard to aviation safety and recommends that the wind farm is obstacle lit with steady medium intensity red obstacle lighting in accordance with the National Airports Safeguarding Framework Guideline D *Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation* [National Airports Safeguarding Framework Principles and Guidelines \(infrastructure.gov.au\)](http://infrastructure.gov.au) and section 9.31 of Part 139 *Aerodromes Manual of Standards* Part 139 (Aerodromes) Manual of Standards 2019 ([legislation.gov.au](http://legislation.gov.au)).

As the Aviation Safety regulator, CASA does not consider the visual impact of obstacle lighting on neighbours, as described in the EIS Section 6.2.6. However, mitigations for visual impact such as baffling or shielding in downward directions, intensity control (as described in the Aviation Impact Assessment Table 15 'Effect of obstacle lighting on neighbours') and radar activation could be available. Aircraft Detection Lighting Systems are described in the United States Federal Aviation Administration Advisory Circular AC70/7460-1L

[https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_70\\_7460-1L\\_-\\_Obstruction\\_Marking\\_and\\_Lighting\\_-\\_Change\\_2.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_-_Obstruction_Marking_and_Lighting_-_Change_2.pdf).

While international standards require, and the NASF guideline recommends 2,000 candela lighting intensity, CASA would accept 200 candela lighting intensity. If the lighting fails, it should fail in the 'on' condition until it can be rectified. CASA is prepared to review a lighting plan that indicates which turbines are proposed to be lit.

Aircraft are restricted to a height of 500 ft above the highest point of the terrain and any object on it during the day and a height of 1,000 ft above the highest obstacle at night. The turbines will reach a height of 853 ft above ground level. While pilots are required to fly no lower than 1000ft above the highest obstacle at night, a pilot could be off track or at a low level due to weather related events, stress from weather conditions, unawareness of a wind farm, navigation difficulties and other circumstances including controllability issues and the pilot exceeding limits. Pilots could be required to navigate around the project site in low cloud conditions. Also, in future there is a possibility of night aerial fire fighting operations using night vision apparatus. The charting of a wind farm is a mitigator but does not eliminate the risk to aircraft.

Further to Recommendation 10, and as recommended by the Aerial Application Association of Australia, CASA recommends that the following Australian Standard be considered regarding overhead transmission lines:

- AS 3891.2, Air navigation — Cables and their supporting structures — Marking and safety requirements, Part 2: Low-level aviation operations.

Yours sincerely,



David Alder  
Aerodrome Engineer