Australian Government
Civil Aviation Safety Authority

AIR NAVIGATION, AIRSPACE AND AERODROMES BRANCH

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**CASA ASSESSMENT – BURRENDONG WIND FARM SSD-8950984**

CASA has reviewed the Aviation Impact Assessment (AIA) (Appendix K to the EIS) by Aviation projects for the proposed Burrendong Wind Farm.

- The proposal is for up to 70 Wind Turbine Generators (WTGs) that will be up to 250 m Above Ground Level (AGL). The highest wind turbine is 1,085 m above Australian Height Datum (AHD).
- There will be 2 temporary (110 m AGL) and 3 permanent wind monitoring towers (150 m AGL) as well as a powerline connecting the Project to the TransGrid 330kV transmission network.
- The WTGs are located beyond the Obstacle Limitation Surface (OLS) of the nearest certified aerodrome - Mudgee Aerodrome (YMDG)
- Mudgee Airport initial segment minimum altitude of the RNP RWY 04 approach procedure will all be affected by some of the WTGs and amendment (increase from 3,900 ft to 4,500 ft AMSL) to the instrument procedure will be required.
- The Aviation Impact Assessment advises that the nearest ALA / airstrip is Amyville, located approximately 13 km west of the Project Site.
- Danger area D538A (low-level military aircraft flying from Williamtown) is approximately 2.4 km east of the wind farm. The Danger area is activated via NOTAM with vertical limits from surface to 7,500 ft AMSL.

Except for Recommendation 8 *'Lighting of WTGs'*, CASA agrees with the Recommendations at Section 11 of the Aviation Impact Assessment. Contrary to Recommendation 8, 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-low 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) and section 9.31 of Part 139 Aerodromes Manual of Standards Part 139 (Aerodromes) Manual of Standards 2019 (legislation.gov.au).

International standards require, and the NASF guideline recommends, 2,000 candela lighting intensity. CASA recommends that 200 candela as a minimum intensity lighting would suffice. The obstacle lighting should be monitored (preferably remotely) to alert the wind farm operator of any outage. The lighting system should have a failsafe mode to ensure that at least some of the obstacle lights remain on during an outage, and a management system developed to ensure any outages are corrected promptly. CASA is prepared to review a lighting plan that indicates which turbines are proposed to be lit.

As the Aviation Safety regulator, CASA does not consider the visual impact of obstacle lighting on neighbours / homesteads. However, there are mitigations for visual impact such as baffling or shielding in downward directions and intensity control (as described in the Aviation Impact Assessment Table 13 'Effect of obstacle lighting on neighbours'). Also, 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_-_Obstuction_Marking_and_Lighting_-_Change_2.pdf .

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 820 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 11, 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.

Further to The Summary of Key Recommendations on page xii of the AIA the proponent or Aviation Consultant should engage with Airservices Australia (flight procedure designer for Mudgee Aerodrome) to update the RNP RWY 04 instrument approach procedure for Mudgee Aerodrome by raising the minimum segment altitude from 3,900 ft AMSL to 4,500 ft AMSL. There should be no changes are to instrument procedures without the permission of the airport operator. (Refer to AIA Introduction paragraph 1.3). Also, Section 5 Table 2 advises '*We request that you consult with both Mudgee Airport along with aviation operators there to ensure that all stakeholders fully understand the proposed changes that are required to accommodate the Wind Farm.'* The AIA (paragraph 6.6) advises that the Mid-Western Regional Council has not objected to the changes.
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Yours sincerely

David Alder

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