



AIR NAVIGATION, AIRSPACE AND AERODROMES BRANCH

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MERINO SOLAR FARM EIS - CASA COMMENTS

CASA received a request for advice from the Department in relation to the Merino Solar Farm. CASA has reviewed the EIS, including the Visual Impact Assessment, for the proposed Merino Solar Farm.

The proposal consists of 'about 870,000 single axis tracker (east-west) solar panels', 'treated with an anti-reflective coating'. The Northern Site PV Array 1 is adjacent to the south of the (main) runway 04/22 at Goulburn Aerodrome.

The EIS and the Visual Impact Assessment advise that the GlareGauge Solar Glare Hazard Analysis Tool (SGHAT) has been used to evaluate the glare risk from Goulburn Airport and the analysis is provided in Appendix H. Appendix H is titled "Flight paths-temp-1". Appendix H is difficult to comprehend. It appears that the receptors in Appendix H are not on a 3.0° approach flight path which would cross the threshold (end of runway) at a height of 15m.

Normally, if a solar farm is situated near a runway, a receptor will be the 3.0° Approach Flight Path. Following is a typical example (one of many) from our files:

Name: FP 1

Description:

Threshold height: 15 m

Direction: 308.4° (this example is Canberra ... CASA is happy to provide a sample)

Glide slope: 3.0°

Pilot view restricted? Yes

Vertical view: 30.0°

Azimuthal view: 50.0°

CASA is not worried about glare affecting take-offs due to the nose up attitude of the aircraft, pilot focus elsewhere and the panels would not be in line with a relatively low sun (or approximately in line allowing for the tilt). CASA is not worried about glare affecting pilots approaching on runway 22 (from the north east) due to the 2km+ distance between the panels and the aircraft, pilot focus on the runway ahead and the panels would not be in line with a relatively low sun. The southern location of the panels (as opposed to east, west or north), is in our favour. Also considered is the FAA advice below (there is no ATCT cab), the panels are anti reflective coated, and according to NASF Guideline E "The potential for risk from building glare is further attenuated by the use of sunglasses which

pilots normally wear in bright daylight.” Also, panels are designed to absorb light and reflect a small percentage.

However, depending on the tilt / angle of the panels it is possible that pilots approaching runway 04 (from the south west) could be affected in the morning (especially in winter). In this case there are a lot of panels quite close to the approach.

Under Section 182 of the Airports Act 1996, a "controlled activity" is defined as....

(e) operating prescribed plant, or a prescribed facility, that reflects sunlight, where:

- (i) the intensity of the reflected sunlight exceeds the level ascertained in accordance with the regulations; and
- (ii) the reflected sunlight is capable of blinding pilots of aircraft operating in the prescribed airspace;

However, aviation regulations do not provide a level of reflected sunlight to exceed as described in s182(e)(i). At this stage, there are no specific Australian standards that apply to solar panels near aerodromes and CASA does not have any “reflectivity standards”.

The NASF (National Airports Safeguarding Framework) Guideline E ‘Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports’ advises that CASA can require lights which may cause confusion, distraction or glare to pilots in the air, to be extinguished or modified.

The US Federal Aviation Administration (FAA) is relatively advanced in terms of solar farm glare evaluation. The FAA advises: *“in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass facade buildings, parking lots, and similar features. However, FAA has continued to receive reports of potential glint and glare from on-airport solar energy systems on personnel working in ATCT cabs. Therefore, FAA has determined the scope of agency policy should be focused on the impact of on-airport solar energy systems to federally-obligated towered airports, specifically the airport's ATCT cab.”*

It is acknowledged that the panels have been removed from the extended south west end of the runway, due to the possibility of a runway extension. There are other reasons to not have infrastructure close to, and in line with, a runway (short landings, engine fails etc).

In summary, CASA believes the EIS should incorporate a theoretical evaluation (eg SGHAT) of the glare for pilots approaching Goulburn Airport on runway 04 at 3.0°, aiming for 15m above the threshold. If that SGHAT shows no ‘yellow’ glare, CASA will not object to the proposed Merino Solar Farm.

Also, once the solar farm is installed, if pilot(s) observe glare, sections of the solar farm may need to be re-engineered / realigned / reconfigured. Also, if there are new transmission lines proposed near agricultural spraying areas or other low flying areas; the landowners or aviation operators should be consulted regarding the requirement for markers on the power lines.

Yours sincerely

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