

20 December 2021



Mr Sam Mason
Acting Manager | Development Approvals and Design, Renewables
Development Approvals & Design | Planning
Department of Environment, Land, Water and Planning
Level 8, 8 Nicholson Street
EAST MELBOURNE Victoria 3002

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Attention: TOM GALLAGHER

Dear Sam,

**Application to Amend Planning Permit No.: PL-SP/05/0461/C
Lal Lal Wind Farm**

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We refer to your letter dated 11 November 2021 (**DELWP Letter**) requesting further information regarding the application to amend Planning Permit PL-SP/05/0461-2 dated 14 October 2021 (**Application**).

This letter sets out the information requested in the DELWP Letter in relation to the operation of the aviation detection lighting system (**ADLS**).

1 Background to the ADLS

Vestas – Australian Wind Technology Pty Limited (**Vestas**) is the contractor engaged by Lal Lal Wind Farms Asset Co Pty Limited (atf the Lal Lal Wind Farms Asset Trust) (**LLWF**) to supply the wind turbines and the ADLS at the Lal Lal Wind Farm in Moorabool Shire.

Vestas activated the ADLS in late 2019, and commissioning works were carried out into 2020. The ADLS comprises a radar which continuously scans the surrounding area to detect movement (including aircraft, traffic on local roads and passing flocks of birds), and a filter which assesses whether to activate the lights based on the type of movement recorded. The ADLS is designed to activate the lights as warnings to incoming aircraft in the vicinity of the Lal Lal Wind Farm, while filtering out other movement (e.g., passing road traffic). It is a dynamic system that is operated automatically based on software and trigger events (compared to a manual activation system).

2 Operation and limitations of the ADLS

Vestas has advised LLWF that due to the park size and layout of the Lal Lal Wind Farm, the radar tuning and filter design of the ADLS is challenging and, not all detections from events other than aircraft are filtered. As such, false warnings are not completely avoidable where movement that is not filtered is detected by the radar. This is not unique to LLWF, and Vestas have explained that all dynamic aviation light systems experience false trigger events so as to maintain sufficient tolerance in filtering to activate any aviation related activity.

Further, Vestas has explained that the ADLS has a fail-safe mechanism that activates the aviation lights whenever any of the ADLS modules are unreachable (e.g., when the system experiences power or network outage, as happened during the commissioning/servicing of the wind turbine generators or substation). These 'auto-flashing' events can lead to the lights being on for extended periods.

As further detailed in paragraph 3, the majority of detections which activated the aviation lights in July 2020 and March 2021 were false positives (predominantly ground-based movements), and not in response to passing aircraft.

In October 2020, Vestas advised LLWF of a separate system performance issue with the ADLS, which caused the aviation lights to go into 'auto-flashing' mode, resulting in the lights remaining switched on over the evenings of 14 and 15 October 2020. The aviation lights were deactivated on 16 October 2020 in order for Vestas to deploy a safety feature to address this issue. A Notice to Airmen was first issued in relation to the deactivation of the lights in 16 October 2020, and has been renewed on an ongoing basis since (with the next expiry date on 27 January 2022).

Since the lights were deactivated in October 2020, Vestas has conducted software updates and filter modifications to the ADLS to mitigate and reduce the incidence of false positive detections. As a result of such works, there has been a reduction in the number of detections from non-aircraft events (e.g., train and road traffic), however the inherent limitations of the system mean that the ADLS continues to operate in a manner that results in false positive detections, which would trigger the lights to switch on if re-activated. It is understood from Vestas that any further improvements in software updates and filter modifications from here would be marginal to performance.

3 Frequency of aircraft detection and duration of activation

This paragraph responds to the further information request at paragraph 1(a) of the DELWP Letter, which requested information regarding:

The frequency of aircraft detection that activates the obstacle lights and the duration of time that the lights are activated.

The information below is for the periods of July 2020 (prior to software updates and filter modification works) and March 2021 (after such works). By providing data from these two periods, we have summarised the performance of the ADLS, in particular the frequency of detection and light activation, prior to and after the updates and modifications were undertaken.

Frequencies of detection – July 2020

At Yendon, 107 detected tracks triggered light activation. The aviation lights were active for an additional 0.2% of July targets due to fail-safe operation events (e.g., caused by network issues due to testing during commissioning), resulting in the ADLS going into 'auto-flashing' mode.

At Elaine, 89 detected tracks triggered light activation. The aviation lights were active for additional 0.6% of July targets due to fail-safe operation events.

Frequencies of detection – March 2021

At Yendon, the radar system detected 75 tracks that triggered light activation (down from 107 in July 2020). At Elaine, the radar system detected 38 tracks that triggered light activation (down from 89 in July 2020).

The tables below indicate the number of tracks per category that triggered light activations, as compared between July 2020 and March 2021.

Table 1: Yendon

Supposed track origin	July 2020	March 2021
Trees/Birds		
- SW	4	
- SE	2	1
- W		1
- Inside WZ	2	1
Aircraft	20	20
Severe weather events	58	50
Airborne Particle Matter movement	4	
Road traffic	7	1
Other land movement	10	1
Total	107	75

Table 2: Elaine

Supposed track origin	July 2020	March 2021
Trees/Birds:		
- SW	2	
- S	1	
- W	8	6
- NW	17	18
- NE	4	
- Inside WZ	4	
Aircraft	6	13
Severe weather events	27	
Airborne Particle Matter movement	2	
Road traffic	10	1
Train traffic	3	
Other land movement	5	
Total	89	38

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Duration of time the that lights are activated – July 2020

(a) Yendon

In July 2020, the percentage of the night time periods when the lights were on ranged between 0.0% and 6.9%, with an average time of 1.4%.

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(b) Elaine

In July 2020, the percentage of the night time periods when the lights were on ranged between 0.0% and 12.5%, with an average time of 2.0%.

Note that there is no data available for the March 2021 night time periods, as the lights were deactivated in accordance with the Notice to Airmen referred to above.

4 Visual impacts and disturbances from obstacle lights

This paragraph responds to the further information request at paragraph 1(b) of the DELWP Letter, which requested information regarding:

The type, severity and frequency of visual impacts and disturbance occurring to nearby properties and the community including, if possible, supporting documents or graphics such as photos.

Community complaints regarding the activation of the ADLS aviation lighting at night appear to relate to the presence of the lights in the landscape regardless of their utility, potentially exacerbated by the ADLS lighting being activated at times in response to non-aircraft movements and auto-flashing mode (refer to paragraph 2 above). Although the lights were operational for a small percentage of the night time during the period in which complaints were made (refer to paragraph 3 above), Moorabool Shire Council advises that multiple complaints were made. In relation to reported complaints received from the community, Moorabool Shire Council has advised that:

“Complaints were consistently received from residents in the vicinity of the Elaine and Yendon sections of the wind farm, dating from 23 May 2019 and most recently on 1 June 2021.

Complainants have reported the aviation lights were on for several hours during the evening and in some instances overnight, having considerable negative impact on normal sleep patterns and causing persistent distress to residents. The lights were also a source of disruption in their enjoyment of the night sky, which is otherwise uninterrupted.”

A copy of the letter from the Moorabool Shire Council is attached to this letter as **Attachment 1**.

It is noted that complaints are generally made based on the subjective view of the complainant and although the complaints indicate that there is a visual impact, LLWF does not concede that activation of the lights constitutes disturbance or an inappropriate amenity impact. Rather, on the basis of the advice received by LLWF that the ADLS is not required by law or regulation or to manage aircraft safety, removal of the lighting requirement would mean that the visual impact of the ADLS lighting at night can be removed.

5 Activation for non-aircraft movements

This paragraph responds to the further information request at paragraph 1(c) of the DELWP Letter, which requested:

Clarification on why the aviation detection system is being activated at a rate to cause visual impacts and disturbance if aircraft are not generally permitted to fly within 1000ft of the tallest point of the wind turbines when flying at night

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As noted in paragraph 2, the radar of the ADLS continuously scans for movement in the vicinity of the Lal Lal Wind Farm. While the vast majority of the non-aircraft detections are suppressed by the ADLS, in order to ensure that the system does detect aircraft, it is calibrated at a level that sometimes activates the lights for non-aircraft movement, including ground-based vehicular traffic, birds, trees, and airborne matter.

Therefore, although the false activation rates are not significant, the ADLS will still activate the lights in circumstances where an aircraft is not flying directly over the wind turbines at night. Again, LLWF does not concede that the visual impact of the ADLS constitutes disturbance or an inappropriate amenity impact, however continued operation of the ADLS would likely result in a visual impact, including arising from the performance limitations of the ADLS.

6 Conclusion

Despite the software and filter upgrades that have been conducted, LLWF expects that there would be ongoing complaints from the community due to the inherent limitations in the ADLS noted above once the lights are reactivated.

In its letter at **Attachment 1**, the Moorabool Shire Council has stated:

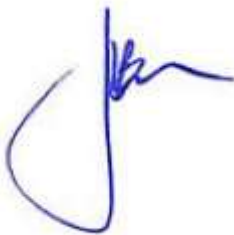
“An amendment to the Lal Lal Wind Farm planning permit, which would prevent the aviation lights being triggered unnecessarily and causing ongoing disruption to residents, is supported.”

As noted in the Application, aviation safety lighting at Lal Lal Wind Farm is not required by CASA, law or regulation nor is it required for aircraft safety at night or in conditions of low visibility.

We trust that this submission is to your satisfaction but please do not hesitate to contact Jon Brock on 0411 237 789 or jon.brock@erm.com, should you have any questions.

Yours sincerely,

Jon Brock



Senior Advisor

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APPENDIX A

**Letter from Moorabool Shire Council dated 25
November 2021**

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Tracey Ward
Community Engagement Manager
Lal Lal Wind Farms
P.O Box 669
Buninyong VIC 3357

25 November 2021

Dear Tracey

Re: Community complaints received regarding aviation lights at Lal Lal Wind Farm

I write to confirm and outline the extent of community complaints received by Moorabool Shire Council regarding the night-time operation of aviation lights at Lal Lal Wind Farm.

Complaints were consistently received from residents in the vicinity of the Elaine and Yendon sections of the wind farm, dating from 23 May 2019 and most recently on 1 June 2021.

Complainants have reported the aviation lights were on for several hours during the evening and in some instances overnight, having considerable negative impact on normal sleep patterns and causing persistent distress to residents. The lights were also a source of disruption in their enjoyment of the night sky, which is otherwise uninterrupted.

An amendment to the Lal Lal Wind Farm planning permit, which would prevent the aviation lights being triggered unnecessarily and causing ongoing disruption to residents, is supported.

Yours sincerely,

Vanessa Osborn
Coordinator Major Developments

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