

10 April 2015

Stephen Crowe
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Gisborne, VIC, 3437

Dear Stephen,

RE: LAL LAL WIND FARM: CHANGE IN HEIGHT OF WIND TURBINES - IMPACTS ON BIRDS
BL&A REF: 6150 (3.6)

This letter responds to your request to provide advice on the likely consequences for birds in the vicinity of the proposed Lal Lal Wind Farm as a result of the proposed modification of the planned development.

This advice is provided based on the information below.

- Data from Bird Utilization Surveys previously undertaken at Lal Lal Wind Farm during November 2006 and March 2007 seasons (Brett Lane & Associates 2008).
- Average data on bird flight heights for a number of proposed wind farm sites around southern Australia monitored by Brett Lane & Associates Pty Ltd in similar agricultural settings to the Lal Lal site, including a number of sites in south western Victoria;

I understand the following changes are proposed to the Lal Lal Wind Farm:

- Change in proposed height of the wind turbines and Rotor Swept Area (RSA):
 - Initial permit approval for 80 metre tower with an RSA between 40-120 metres (blade diameter 80 metres) (Brett Lane & Associates 2008).
 - WestWind Energy Pty Ltd is seeking approval to vary the turbine dimensions to a 100 metre tower – with an RSA between 39 – 161 metres (blade diameter 122 metres)
 - This represent as reduction in minimum height of the RSA by 1 metre and an increase in the maximum height of the RSA by 41 metres.
- Change in turbine number
 - A reduction in the number of turbines from 64 turbines to 60 turbines.

The change in rotor length also brings changes to the size of the rotor swept area (RSA). The new option would have an increase in RSA surface from the current planning permit as the blade length of the new turbines has increased, in line with technological advances in wind energy generation.

These larger turbines are proposed to be installed at the same locations as in the permitted wind farm however the total number of turbines is proposed to be decreased from 64 to 60 turbines. Impacts on birds and bats of the proposed changes are discussed below.

Impacts on Birds

During the bird utilization surveys, which were undertaken during November 2006, and March 2007, the height distribution of bird flights was studied and presented as birds flying below (0–39 m), at (40–120 m), and above (>120 m) rotor swept area (RSA heights) (Brett Lane & Associates 2008, and see table 1 below).

The table clearly showed that the majority of birds in both seasons flew below 39 metres (average of both seasons of 96.4 % of all birds observed flying at the observation points).

Birds that are likely to be affected by changes in turbine heights are those observed flying at RSA height and above. In table 1 below, this percentage amounted to 4.6% in November 2006 and 2.4% in March 2007 of the total birds observed during the bird utilization survey.

The data from the November 2006 bird utilization survey was further analysed to indicate the bird species more likely to be exposed to collide with turbines (table 2). The table demonstrates most birds identified were large and common farmland birds with few raptors and waterbirds. The table also showed that most of the birds recorded at RSA heights were flying at between 60 and 100 m above ground. In both tables 1 and 2, the majority of birds were flying below 40 m and none were recorded flying over 120 m. Although not recorded during the bird utilization surveys, some birds, particularly raptors may fly over the 120 m or even fly at heights above 200 m - however such flights are not common.

Based on the proposed change in the lower height to 39 meters above the ground, it is likely that slightly more birds may be at risk of collision with turbines. This increase is difficult to measure, since the one meter difference is within the margin of error in estimating heights by observers. In studies of bird flight heights conducted at eleven other wind farms in Victoria (Brett Lane & Associates; Unpubl. Data), the majority of birds recorded under 40 m (below RSA heights) were birds on the ground, and only a small percentage was recorded at height of 30–40 m above ground (average of 2.5% of all birds below RSA heights). Thus, if this percentage was applied for a 1 meter change it would indicate a potential increase of 0.25% per meter – a figure once again within the margin of error. Thus it is considered that the decrease in minimum RSA would not significantly elevate the risk of collision by birds utilizing the wind farm site.

It is noteworthy that none of the bird species observed during the systematic bird utilisation surveys of the Lal Lal wind farm site were listed rare or threatened species, so this discussion relates to risks to common farmland birds that are widespread across agricultural landscapes in south eastern Australia.

At the upper end of the RSA, the proposed revised height is 161 m above ground. This change would produce no noticeable change in risk to birds based on the

surveys as no birds were seen regularly flying at this height in the two studied seasons (Table 1). However, the possibility remains for interaction with raptors as indicated in the Bird and Bat Management Plan.

Conclusions

Based on bird observations at the Lal Lal wind farm site, the percentages of birds expected to fly below, at and above the proposed new RSA height (39–161 m) has been estimated to be approximately 96.4% below, 3.6% at, and 0% above RSA heights based on survey data using the existing data. The decrease of 1 meter in minimum RSA height may potentially impact on 0.25% of total number of birds for will not significantly increase potential interactions. The percentage of birds at RSA height did not increase (a figure with the current margin for height calculations - see above).

The proposed increase in the maximum height to 161 m or decrease of lower height to 39 m will not lead to a significant additional risk to birds at the wind farm site. Any change in risk will affect common farmland bird species that are widespread across farmland in south eastern Australia and will not lead to any change in risk to rare and threatened bird species, which is considered to be negligible at this site.

Finally, a decrease in the number of turbines from 64 to 60 is a 6.25% decrease in the number of turbines and will have a corresponding reduction in the risk of collision.

References

Brett Lane & Associates 2008, proposed Lal Lal Wind Farm, flora and fauna investigations, A report presented to WestWind Energy Pty Ltd, Report No., 6150 (3.5), February 2008.

Table 1: Number and percentage of birds observed flying below, at and over RSA heights during November 2006 and March 2007 seasons (Reproduced from Brett Lane & Associates 2008).

Bird utilization surveys	Number of birds and their percentages at						Total
	0 – 39 m		40 – 120 m		> 120 m		
March 2007	1,463	97.6%	36	2.4%	0	0%	1,499
November 2006	1,723	95.4%	83	4.6%	0	0%	1,806
TOTAL	3,186	96.4%	119	3.60%	0	0%	3,186

Table 2: The distribution of flight heights of birds flying at RSA heights at Lal Lal Wind farm (Reproduced from Brett lane & Associates 2008).

Species	Birds flying at RSA heights (m)						Total
	0-39	40-59	60-79	80-99	100-119	>120	
Raven spp.			3	25	2		30
Australian Shelduck		2	10	10			22
Eurasian Skylark			4	5			9
Tree Martin			2	2	2		6
Long-billed Corella				1	2		3
Straw-necked Ibis					2		2
Common Starling			2				2
Wedge-tailed Eagle			1	1			2
Welcome Swallow				2			2
Brown Falcon			1				1
Brown Songlark			1				1
Swamp Harrier					1		1
Australian Pelican					1		1
Little Black Cormorant					1		1
Total birds	1,723	2	24	46	11	0	83
% at RSA heights	0.0	2.4	28.9	55.4	13.3	0.0	100.0
% of all birds	95.4	0.1	1.3	2.5	0.6	0.0	4.6

I hope the foregoing information is helpful. Please do not hesitate to contact me if you have any questions.

Yours sincerely,



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