



Melanie Robertson  
WestWind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre,  
12-14 Prince Street,  
Gisborne, VIC, 3437

Dear Melanie

## **RE: LAL LAL WIND FARM: CHANGE IN HEIGHT OF WIND TURBINES - IMPACTS ON BIRDS**

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 of a further increase in height of the wind turbines to be constructed.

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 that the original planning permit was for turbines not exceeding 120 m in height. The lowest height of the rotor swept area was 40 metres above the ground (Brett Lane & Associates 2008).

WestWind Energy Pty Ltd is seeking approval to vary the turbine dimensions specified earlier. The maximum turbine height for the new option is 150 m and for the lower rotor swept area height above ground is 36 m. The new heights are based on a new tower height of 97 m and a blade length of 57 m.

The change in the turbine height 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. 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 96.5 % 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 analyzed to show the bird species more likely to be exposed to collide with turbines (table 2). The table demonstrated that most of the birds 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 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 36 metres over ground, it is likely that slightly more birds may be at risk of collision with turbines. This increase is difficult to measure, since the four metres 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).

At Lal Lal Wind farm, the total number of birds recorded below RSA heights was 1463 (97.6%) in March 2007 and 1723 (95.4%) in November 2006, or an average of 96.5 % of all birds observed at the wind farm during the surveys. When the average percentage of birds flying between 30 and 40 metres (2.5%) recorded from the other wind farm applied to Lal Lal wind farm; the maximum total of birds that could be added to the RSA birds would amount to 36 individuals in March 2007 and 43 in November 2006. Since the new lower heights adds four meters only, it could therefore be concluded that the maximum number of birds added to the RSA heights may be half the numbers stated above. Such an increase 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 survey 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 150 m above ground. This change would produce no noticeable change in risk to birds as no birds were seen regularly flying at this height in the two studied seasons (Table 1).

## 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 (36–150 m) has been estimated to be approximately 94.0% below, 6.0% at, and 0% above RSA heights (see above). This data on the height distribution of birds at Lal Lal is comparable with that from other Australian wind farm sites studies by us (n = 11). On average, 5.47 percent of birds observed flew at rotor swept area (RSA) height, usually between 40 and 120 metres above the ground. On average, 0.32 percent of birds were observed flying above RSA height.

The new estimate is not significantly different from the data obtained before for the two seasons surveys and therefore, based on the foregoing discussion, the proposed increase in the maximum height to over 150 m or decrease of lower height to 36 m will not lead to a significant additional risk to birds at the wind farm site. This 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.

## 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	1463	97.6	36	2.4	0	0	1499
November 2006	1723	95.4	83	4.6	0	0	1806

**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
<b>Total birds</b>	<b>1723</b>	<b>2</b>	<b>24</b>	<b>46</b>	<b>11</b>	<b>0</b>	<b>83</b>
<b>% at RSA heights</b>	<b>0.0</b>	<b>2.4</b>	<b>28.9</b>	<b>55.4</b>	<b>13.3</b>	<b>0.0</b>	<b>100.0</b>
<b>% of all birds</b>	<b>95.4</b>	<b>0.1</b>	<b>1.3</b>	<b>2.5</b>	<b>0.6</b>	<b>0.0</b>	<b>4.6</b>

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

Yours sincerely,



**Brett Lane**  
Principal Consultant  
Brett Lane & Associates Pty Limited  
blane@ecologicalresearch.com.au  
Mobile: 0418 110 324