BEFORE THE COMMISSIONER ON BEHALF OF THE DUNEDIN CITY COUNCIL

UNDER	the Resource Management Act 1991
IN THE MATTER	an application for resource consent of LUC-2015-469
BY	Blueskin Energy Limited
	Applicant

BRIEF OF EVIDENCE OF JOHN LAURENCE CRAIG RESPONDING TO SUBMITTERS AND GUIDANCE FROM HEARING PANEL

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Introduction

1. My full name is John Laurence Craig. My expertise and experience has been set out in my Evidence in Chief dated May 2016. I also confirm that I agree to comply with Code of Conduct for Expert Witnesses.

Ecological Effects:

2. Issues in agreement:

   (a) There is minimal site specific data for bird traffic at the application site.

   (b) Site specific data would enable a site specific analysis of bird strike risk to be undertaken.

3. Issues in contention:

   (a) That the only way forward for protecting birds is to gather site specific data

   (b) That suggestions of what "could" be possible is personal opinion that requires some supporting data to require further action. All things have a likely probability of happening and proposing the highly unlikely when it conflicts with other evidence is irresponsible.

   (c) Information from other windfarms allows predictions of likely bird effects at Porteous Hill.

Evidence

4. Mr Onley is a local resident and suggests in his evidence that few birds of any consequence will use the proposed windfarm area. In his note to the hearing, he is very careful not to claim that any of the species at risk use the area but would like counts to confirm the low risk. Dr McClennan provides count data from areas nearby and these do not support her contention that the area could be used by black billed gulls, oystercatchers and others. Indeed they largely confirm the suggestions of Mr Onley.

5. Both Dr McClennan and Mr Onley say that preconstruction counts must be done. The key question is what do you do with the numbers once they have been collected? Mr Onley provides some calculations that suggest he does not understand how they are used and Dr McClennan says that using the Band model for estimating collision risk "is a complex undertaking" and that there is not always agreement on inputs (para 51). In reality the model is basically simple and the error differences are small. The model is the mechanism used at most windfarms in New Zealand and internationally. It is also the model that would be used with any data collected at Porteous Hill. The best way to illustrate the likely outcome of undertaking count is to take two of the species mentioned by both Mr Onley and Dr McClennan as being of concern.

Eastern Falcon

6. Both Dr McClennan and Mr Onley record that Eastern Falcon have been reported in the area but that its use of Porteous Hill is unknown. Dr McClennan provides counts from 50 bird counting stations in the general area and none record hearing or seeing a falcon. In contrast, at Mahinerangi and Puketoi, they were seen and heard daily when we were on site. In addition potential nest site areas were common within these wind farm sites and nests were found. I did not see any likely nest sites at Porteous Hill.

7. Mahinerangi has been built and no falcon deaths have been recorded. Puketoi did counts and applied the Band Model. With clear daily presence and 52 turbines, the model predicted that the turbines would need to run for at least 100 years to record one death. For a 3 turbine windfarm with a known Falcon population (unlike the application site in this case), this becomes one death in about 2000 years.

Black-Billed Gulls

8. Both Mr Onley and Dr McClennan raise this threatened gull as a species of potential concern. Dr McClennan records 7000 in Blueskin Bay (Table 3) but despite comments that they may use or fly over areas such as Porteous Hill gives land counts from 50 stations that fail to record any sight or sound of this gull. Mr Onley records numbers

regularly around 700 in Blueskin Bay and suggests that "it is not inconceivable that they fly overland" in the vicinity of Porteous Hill.

9. This gull is slightly smaller than South Island Pied Oystercatcher (SIPO) and able to fly slightly faster so is likely to have a lower risk of being killed by turbine blades. Modelling based on three years of data from HMR can be used to demonstrate the likely predictions after undertaking counts that show a presence of this gull at Porteous Hill. At HMR a twice annual migration of up to 70,000 SIPO past the proposed 168 turbines with a reduced avoidance rate produced an overestimate of 27 deaths a year. If the international figure had been used, the predicted death rate falls to around 10 per year. If we take the higher estimate, the 7000 black-billed gulls mentioned by Dr McClennan that may be in the vicinity of 3 turbines at Blueskin Bay, this would give an annual predicted death rate of less than 0.05 gulls a year. If we take the 700 figure from Mr Onley the predicted death rate becomes less than 0.005 birds a year.

10. The main message from these calculations is that even if the applicant was required to undertake preconstruction counts, the predicted death rate from the turbines can only be termed less than minor. This is demonstrated by the scenarios above where I have used high bird numbers within the application site despite what we know about the environment surrounding Porteous Hill. This then begs the question of whether it is reasonable or useful to require preconstruction counts with their associated costs. In my opinion it will garner no useful information.

Proposed Mt Cass Windfarm

11. This example further demonstrates the futility of following worst case scenarios of bird movements that "could" happen. This windfarm is 4km from the coast and inland there are braided rivers where SIPO and other waders are known to breed. Concern was raised that these birds may migrate over the range rather than up the valleys so considerable pre-consent monitoring was undertaken.

12. The results showed that birds did use that pathway but the total detected over the two seasons was only 10 birds. When data were put into the Band model, the prediction for the potential 90 turbines was

one kill every 15 - 45 years. Reducing this to a 3 turbine windfarm would make the time frames even longer. Clearly a less than minor effect.

Why are the mortality predictions so low?

13. Just because a bird uses an area that will hold turbines does not mean that they will be killed. Modern turbines are large and are spaced well apart. This means that most birds will not encounter blades because they will fly between turbines or under the blades. Even those that fly through the blades have a higher probability of being unharmed than being hit because the blades turn slowly (except the tip) and hence there are large gaps between the blades.

14. In addition, all birds take avoidance action. Some avoid the windfarm altogether, some avoid individual turbines and some avoid the blades. An international comparison of preconstruction predictions with actual deaths when the windfarm has been built show that the correction factor needed in the Band model varies between 98 - 99.7%. The figure below from Denholm (2006) demonstrates this. The red dots are turbines and the black lines are radar trails of bird flocks. Prior to construction, the area comprising the wind farm was as black as it remains outside the windfarm but once turbines appeared, the birds altered their flight paths.

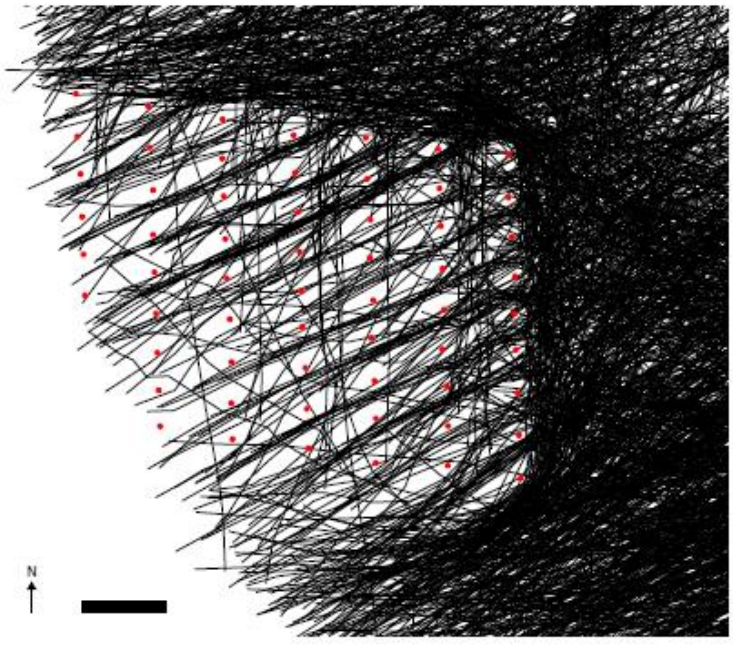

Figure 12. Map showing the south-west orientated flight paths of autumn migrating waterbirds during the period of initial operation (Adopted from Paper V).

15

Concluding comment:

15. Given what is known about bird avoidance of wind farms and of turbines, a small 3 turbine farm will not kill a significant number of birds even if they currently use the area. There is adequate evidence from many other wind farms to be certain of this. Suggestions by others that many birds could use the area lacks evidence and even if they did, experience with collision risk modelling shows that the death rate from 3 turbines will always be less than minor.

16. Gaining the necessary information for the model is costly in time and money and will not benefit the birds. For these reasons, I recommended spending money on pest control rather than collecting information to demonstrate what is already clear from other windfarms which have considerable data.

J L Craig

2 June 2016