

Appendix 4A - Avifauna

Response to s92 requests from Waitomo District Council

Introduction

This proposed windfarm has already been consented. Hence the factors needing consideration are any change to the layout or size of turbines and how this may affect indigenous species and ecosystems.

Ecology

Like most of the landmass of New Zealand, ecological conditions will only have deteriorated since the original application was made and consent granted. The area has little native forests and there is no pest control meaning most native species will have declined, at least, a little. The AEE records that the forest below the ridge has a heavily grazed and open understorey and limited bird life.

The site is largely devoid of native ecosystems and the land contours mean that apart from birds that live near as well as hunting harriers, few birds will cross the site. There is nothing for them to fly too on the tops and the shortest distance involving the lease metabolic cost will be to fly around the site.

The change in the number of turbines and the proposed increase in the size of the rotor swept area (RSA) has the potential to change the risk to resident and migratory birds. Halving the number of turbines, from 22 to 11, and increasing the height of the lowest point of the RSA from 10m to 17.5m offer reduced risk to birds flying in the area. In contrast, increasing the RSA of each of the remaining turbines has the potential to increase the risk of each turbine slightly.

Table 1

Original (2008) combined RSA for 22 turbines	172,788m ²
Modified combined RSA for 22 turbines (2011 consent)	214,814 m ²
New combined RSA for 11 turbines	207,561m ²
Overall change in RSA from 2008 original	+16.8%
Overall change in RSA from 2011 modified consent	-3.4%

Table 1 shows that the cumulative change in RSA with the halving of turbine numbers and the increase in blade length results in a 17% increase on the original consent but virtually no

change in RSA from the 2011 consented change. This likely means that the minimal risk to birds remains unchanged.

Effects on birds

(Q16) The turbines will all be sited on an open grassed ridge and will hence have minimal impact on native vegetation. Forest birds such as grey warbler, tomtit and possibly whitehead (doubtful presence) are unlikely to ever fly over the ridge and never fly 17.5m above the ridge. As a consequence, the risk to these birds is not measurably different to zero. Birds that will fly over the ridge are tui, kereru, kingfisher, harrier and introduced species such as magpie, chaffinch and other finches. Flights for the native species other than harrier are rarely likely to reach 17.5m and hence will not enter the RSA.

The Band model is typically used to calculate the possibility of death from blade strike and the overwhelming part of this calculation is the Avoidance Rate. For species where this has been calculated, this avoidance rate is typically as between 98% and 99.9%. This means that death rates for species flying through the RSA is extremely low. This means that at a between 2 in every 100 and 1 in 1000 flights at RSA could result in a strike. Given the low probability of native species even flying at RSA, this certainly means the likelihood of a fatality is low enough to be of no consequence to local population viability.

Despite this, there are 2 records of harrier being killed at wind farms in New Zealand and there is a very low probability that one will be killed here. This will have no population consequences. In contrast, introduced species such as magpie and chaffinch are likely to have occasional kills each year but this is still unlikely to have any effect at the population level.

It is important the turbines are not sited in areas of known bird migration. The site is near to the proposed and consented Taharoa C Wind Farm where extensive radar work was done to measure flight paths of migrating shorebirds. Superimposing the site of the proposed turbines of Taumatotara onto flight path maps from Taharoa¹ show that the turbines are outside the flightpaths of migrating shorebirds (Figure 1). As a consequence, there will be no effect on migratory birds.

Q18: The AEE and the report from Taharoa record falcon in the area. Falcon are found at many wind farms but are typically infrequent visitors. They are known to nest within the footprint of Mahinerangi and Puketoi windfarms and despite Stage 1 of Mahinerangi generating power since 2011, no falcon deaths have been recorded. At Puketoi, use of the Band Model has shown that more than 36,000 flights of falcon at the height of the RSA are needed in order for 1 death to occur.

¹ Fuller, S. A., McLennan, J., Dowding, J. E., Barea, L., & Craig, J. (2009). *Assessment of potential avian mortality at the proposed Taharoa Wind Farm, Taharoa Beach, Kawhia, Waikato*. Unpublished report to The Proprietors of Taharoa C, Department of Conservation and Waitomo District Council.

Falcons are small agile fliers unlike the raptors most at risk worldwide. They fly over large areas every day and the wind farm would be only a very small part of their feeding range. At some wind farms they have been observed playing around the moving blades. It is likely that if pest control is undertaken and falcons increase that a death occurs then there is a low probability that one death every 100 years could be expected.

Wetland birds (Q17)

S92 request suggests that bittern and spotless crane are known in the wider landscape and information is required about the possible network of wetlands that may be used. The turbines will sit along a ridge that has a 200m near cliff on the southern side and a very steep drop on the other. My frequent observations of bittern would suggest that there is a zero probability that the birds would fly over this ridge. Their preference is to fly around hills and where I have observed them cross a saddle, they were always less than 10m above ground level. The physical structure of the site also means that most birds crossing the site will do so within the maximum of 10m above ground. RSA does not start until 17.5m above ground level in the modified plan and hence the risk to these birds is close to zero.

Proposed population enhancement

Despite there being no measurable effects on birds (or bats), the applicant has proposed that they will provide pest control in the adjacent bush patches. More detail is provided in the response by Simon Chapman of Ecology New Zealand. This is offered as a responsible land user and not as mitigation as no mitigation is required.

Should you require further information, please contact me on 027 4411091 or at john@greeninc.co.nz.

John L Craig

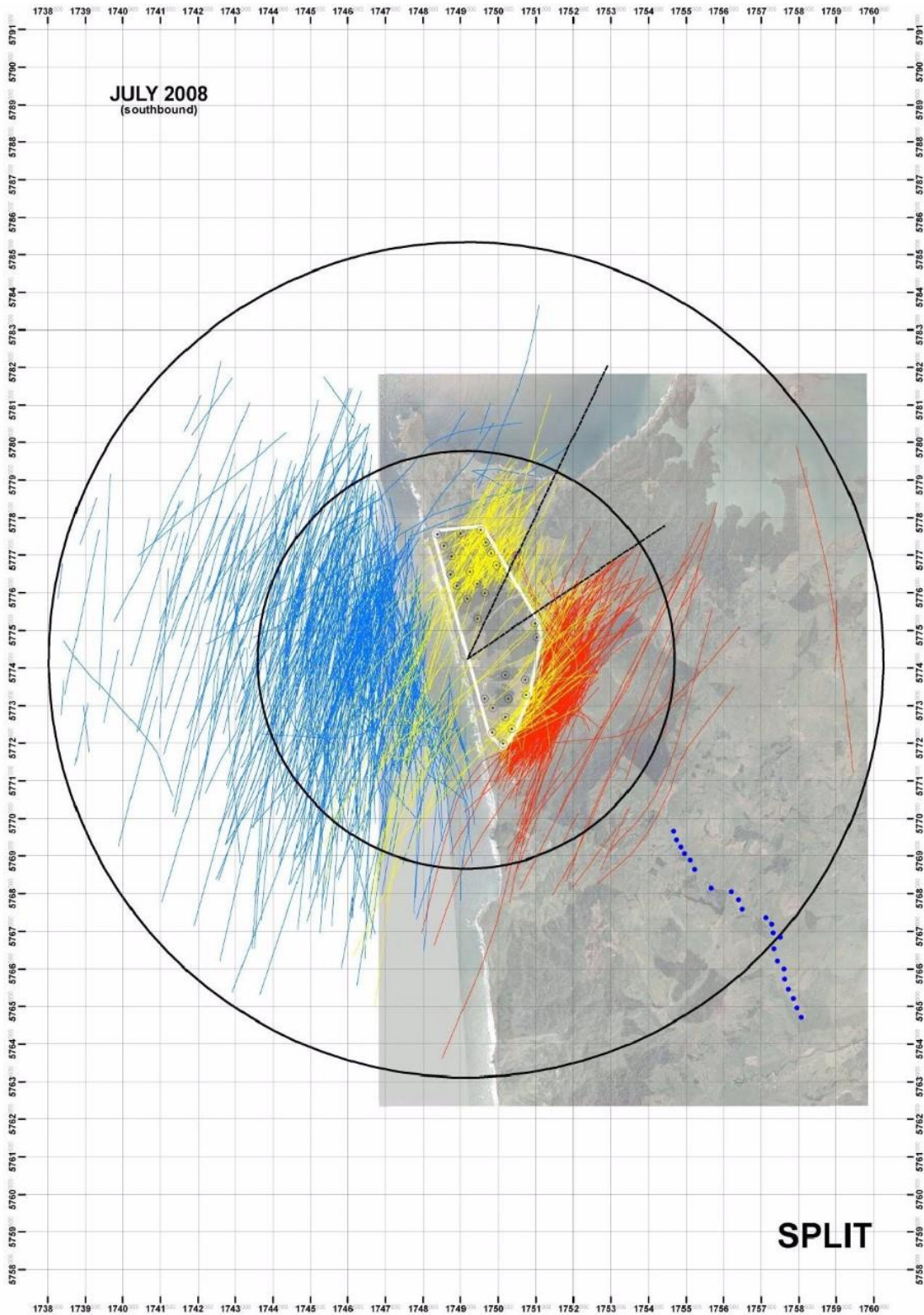


Figure 1 Shorebird flightpath lines with proposed Taumatotara turbines in purple.

John L Craig

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