

## Queiros J (Joao)

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**From:** Holland G (Gayle)  
**Sent:** 12 June 2014 10:56  
**To:** Queiros J (Joao)  
**Subject:** FW: Displacement rates for Seagreen  
**Attachments:** 2014 06 09 - Seagreen turbine spacings with ICOL, NnG, MORL & BOWL.xlsx;  
2013 12 19 - MFOWDG - Offshore Wind - Cumulative Impacts - Birds - turbine  
density and seabird displacement - JNCC and SNH comments - SENT.pdf

For Seagreen file  
Thanks  
Gayle

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**From:** John Uttley [mailto:John.Uttley@snh.gov.uk]  
**Sent:** 10 June 2014 17:21  
**To:** Tait A (Adrian) (MARLAB); Holland G (Gayle); Wilson J (Jared)  
**Subject:** Displacement rates for Seagreen

Hi Gayle

On 5<sup>th</sup> June you asked:

'Please could you advise on the SNCB view on a reduction in displacement rates (40% kittiwake, 60% others) for sites with greater turbine spacing, and what displacement rates would be most appropriate? The question relates to Seagreen but also ICOL.'

This is joint advice from SNH and JNCC.

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We gave advice to MS-LOT on 19 December 2013 with regard to puffin displacement and reduced turbine densities for the MORL and BOWL developments (attached). In summary we said:

- We would support an adjustment in numbers of displaced birds to account for a smaller wind farm footprint.
- We do not support a mechanistic approach to adjusting displacement rates to account for increases in turbine spacing.
- We originally advised a displacement rate for auk species as a range between 50-100% (JNCC / SNH request for preliminary analysis, 26 August 2011). We note that the lower limit of the range (50%) may be appropriate when considering wind farms with a wider turbine spacing.

We also said that:

- We are reviewing the assumption that one bird being displaced would result in one breeding unit failing to breed (i.e only one member of a pair is ever displaced). It may be possible to address this assumption via a probabilistic calculation. [Sue O'Brien and Finlay Bennet explored this but found there was little scope for progress]
- It may be possible to revise the assumption of 100% breeding failure by extracting further information from the displacement modelling project (Searle et al 2013). For example, if it was possible to calculate the proportion of birds that fail to breed or die from the number of birds that were either displaced or that had a barrier effect – this could be applied to the number of birds predicted to be displaced from the Moray Firth wind farms. [This would require further work by CEH for MSS]
- In respect of puffin, if it were possible to map densities across the wind farm sites (e.g. using kernel density estimation of boat survey data) then excluding development in areas of higher puffin density would result in disproportionately fewer birds being displaced. [This remains the most certain way to avoid or reduce displacement effects]

We have reviewed the information available, focussing on mean turbine density and minimum turbine spacing (attached). These appear to be the most relevant parameters and are also available for all the relevant scenarios for Seagreen, ICOL and also NnG, MORL and BOWL.

In summary:

- Optimised Seagreen A/B are less than half as dense as final MORL & BOWL scenarios
- ICOL MLS is less dense than MORL but still nearly twice as dense as Seagreen
- (Min) turbine spacing is similar for optimised Seagreen, MORL, and ICOL

In terms of knowledge and understanding of how seabirds respond to offshore wind turbines the situation remains as it did in December when we gave the advice above. We still have reservations about calculating exclusion radii around turbines and modifying displacement rates to calibrate effects between developments. As a result, and in the context of an appropriate assessment, we offer the same advice as we did in December 2013, but extending the principle to kittiwake, which is the key species of interest here. Given the very low turbine density of Seagreen, compared with other developments in the UK, and elsewhere in Europe, there is some logic in applying a lower displacement rate on the assumption that a less dense wind farm is more 'permeable'. Whereas the original range of displacement rates suggested for auks was 50-100%, and we advised that it may be appropriate to adopt a displacement rate at the bottom of this range, the original range of displacement rates for kittiwake was 0-50%, and the CEH model eventually adopted a rate of 40%. We do not think it would be safe to go right down to 0% displacement nor do Seagreen suggest this, but we advise that it may be appropriate to use a lower rate than 40%. In this particular case we are able to support a displacement rate of 30% for Seagreen, based on the very low turbine densities in Seagreen's proposal. We haven't considered the case for ICOL.

With regard to the applicability of these displacement rates to other wind farm developments (both current and future), our future advice on other projects will be based on up to date knowledge so may differ from this.

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Finally, we would like to encourage research and monitoring at Scottish wind farms to gather empirical evidence to support future assessments. For example, appropriate baseline and post construction survey could test the validity of exclusion radii, leading to improved wind farm layout and reduced consenting risk. For consented proposals, further discussion should be facilitated by the Regional Advisory Group in relation to project environmental monitoring programmes (see draft conditions for Neart na Gaoithe). We would welcome an early meeting with Marine Scotland Science to discuss and agree priorities for research and monitoring in relation to this and other issues.

Regards  
John

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