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3<sup>rd</sup> July 2015

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For the attention of Adrian Tait, Joao Queiros and Roger May

Dear Sirs

### **Hywind Scotland Pilot Park Project - JNCC and SNH advice on application**

Thank you for consulting JNCC and SNH on the application submitted for the *Hywind Scotland Pilot Park Project*. The application is made under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 and supporting regulations. Within the marine environment, JNCC is the statutory nature conservation adviser for development proposals from 12 nautical miles (nm) offshore out to the edge of the continental shelf. SNH is the statutory adviser for proposals within 12 nautical miles of the coast. We have been liaising closely to provide joint advice on the Hywind demonstration project.

The Hywind demonstration project consists of five offshore floating turbines installed in offshore waters (beyond 12nm), which will generate a maximum of 30MW and will be connected ashore by an export cable to Peterhead. The Agreement for Lease Area (AfL) covers 75 km<sup>2</sup>, however Hywind have confirmed that the project will only be developed within the *northern development area*. Therefore, the total area to be occupied by the turbines will be 15 km<sup>2</sup>, including 15 moorings and suction anchors. Five inter-array cables (up to 3km long) will be installed, with buoys being used to maintain their configuration. The inter-array cables could be partially covered by protection materials (up to 7.5km), buried or laid onto the seabed. The export cable (35km long) will be buried and could be partially covered by protection materials (up to 2km).

Our advice below contains and updates previous advice on the Hywind demonstration project.

#### **KEY ADVICE**

##### **Ornithology**

From our review of both the Environmental Statement (ES) and Habitat Regulations Appraisal (HRA) reports we conclude that for the Hywind development alone there is no adverse effect on site integrity for bird interests, as it is a small offshore development of five turbines.

However, when we consider the Hywind proposal in combination with other developments, specifically other wind farms consented for the east coast (i.e. Moray Offshore Renewables Limited (MORL), Beatrice Offshore Windfarm Limited (BOWL), the three Forth and Tay offshore wind farms (Neart na Gaoithe, Seagreen and Inch Cape), the European Offshore

Wind Deployment Centre (EOWDC) in Aberdeen Bay, and proposed tidal developments within species' mean-max foraging range (mmfr), we cannot advise that there will be no adverse effect on site integrity with respect to:

- northern gannet (Forth Islands Special Protection Area (SPA))
- black-legged kittiwake (Fowlsheugh SPA)
- Atlantic puffin (Forth Islands SPA).

Furthermore, a large number of auks were found on site during post-breeding dispersal and we do not agree with the ES conclusion that disturbance by shipping is negligible. We suggest some mitigation options to address this issue in Annex VI.

Please refer to Annex I for our detailed ornithological assessment.

### **Marine mammals**

Within inshore waters, SNH do not agree with the conclusion of no Likely Significant Effect (LSE) on bottlenose dolphins from the Moray Firth Special Area of Conservation (SAC) due to the cable-laying activities close to the coast. The HRA for this project should therefore consider this. However, due to the temporary nature of the activity and the relatively localised nature of the disturbance (and low risk of injury), SNH advise that there would be no adverse impact on site integrity. SNH also advise the developers to apply for an EPS licence.

Please refer to Annex II for our detailed assessment on marine mammals.

### **Environmental Management and Monitoring**

We support the commitment provided in the ES (Section 21) to agree and implement a Project Environmental Management Plan and Programme (PEMP). In addition, if the project is consented we would welcome further discussion on monitoring requirements for Hywind in order to validate some of the ES predictions and consider the environmental impacts of this pilot project in the context of its location and cumulative impacts with other East Coast consented windfarms.

Please refer to Annex VI for further detailed comments on this aspect.

We have divided our comments into the following annexes below:

- Annex I Ornithology
- Annex II Marine mammal ecology
- Annex III Benthic and intertidal ecology
- Annex IV Fish of Conservation Concern
- Annex V Seascape, Landscape and Visual Impacts
- Annex VI Environmental Management and Monitoring

If you have any queries about our advice, then please do not hesitate to contact either Enrique Pardo at JNCC ([enrique.pardo@jncc.gov.uk](mailto:enrique.pardo@jncc.gov.uk), 01224 266590) or Mareike Moeller-Holtkamp at SNH ([mareike.moeller-holtkamp@snh.gov.uk](mailto:mareike.moeller-holtkamp@snh.gov.uk), 01786 435 392).

Yours sincerely,



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## Annex I. Ornithology

### Overarching comment

We would like to make the general point that reviewing the impacts of this development on marine birds has been very challenging. The presentation of ornithological information across a number of separate documents has made it necessary to repeatedly refer to multiple documents, including some submitted much earlier in the planning process. Although most of the recommended methods appear to have been used in the final assessment, the spread of information throughout several documents has made it more difficult to confirm which methods have been used in the final assessment. Whilst there are various points, listed below in Section 3, where our advice has still not been fully followed, we feel that addressing them would not substantially change our conclusions regarding the potential impact of the Hywind development.

#### 1. HRA advice

We cannot rule out LSE on some qualifying features of some SPAs. The most significant risks are associated with:

- herring gull (Buchan Ness to Collieston Coast SPA, collision risk)
- northern gannet (Forth Islands SPA, collision risk)
- black-legged kittiwake (Buchan Ness to Collieston Coast SPA, collision risk)
- common guillemot (Buchan Ness to Collieston Coast SPA, displacement)
- razorbill (Fowlsheugh SPA, displacement), and
- seabird assemblages.

However, for all these qualifying features, we consider that this proposal alone will not adversely affect the integrity of any site.

Any in-combination assessment however, should take into account any impacts from the recently consented Moray Firth offshore wind farm developments (Moray Offshore Renewables Limited (MORL) and the Beatrice Offshore Windfarm Limited (BOWL)), the three Forth and Tay offshore wind farm proposals (Neart na Gaoithe, Seagreen and Inch Cape), the European Offshore Wind Deployment Centre (EOWDC) in Aberdeen Bay and proposed tidal developments within species' mean-max foraging range (mmfr).

As such, in terms of an in combination assessment, we are unable to conclude that this development will have no adverse effect on site integrity, with respect to the following features at the following sites;

- northern gannet (Forth Islands SPA)
- black-legged kittiwake (Fowlsheugh SPA)
- Atlantic puffin (Forth Islands SPA).

We acknowledge that the process of assessing impacts of developments on birds inevitably carries a relatively high level of uncertainty due to a lack of empirical data regarding impacts of offshore wind farms on birds. Given the small size of the Hywind development and correspondingly small impacts on birds, the additional bird mortality attributable to Hywind is probably smaller than the uncertainty in mortality predicted to occur due to the Forth and Tay developments. However, despite this the development will still contribute some additional mortality to interest features of SPAs for which SNH and JNCC have previously advised that

predicted impacts from consented developments exceed levels that would allow a conclusion of no adverse impact on site integrity.

## **2. General comments**

### **Seabird and Marine Mammal Technical Report**

The technical report has presented the data from one year, with reference to an additional second period as additional evidence. We recommended that the analysis utilised the highest counts no matter whether they were recorded in the first year or additional period. The developer has not taken this approach.

We note that there are several receptors that have connectivity with the site, yet for which no LSE was concluded. This goes against our previous advice that even perceived negligible impacts should be screened in and dealt with as part of the appropriate assessment (AA). Providing this transparency would have been good practice and set a good example for future developments. Our advice is that for this project alone there is no adverse effect on site integrity for those receptors identified as having LSE from this project alone.

## **3. Specific comments**

In previous correspondence, JNCC and SNH requested data collection and processing be carried out in line with our advice and recommendations to other developments in the Moray Firth and Forth and Tay. However, these requests have been overlooked in several cases.

### 3.1 Period of data collection and estimation of bird abundance

Bird surveys were conducted over one year for most months with a second year of data collected during July, August and September, a time of year when peak numbers of auks were noted. SNH and JNCC requested in our response of 6<sup>th</sup> February 2015 that, for months with two years of data, the highest abundance data be used in analyses. However, only the first year of data was used to estimate impacts (Table 6, Technical Report).

JNCC and SNH previously advised to use second breeding season data maxima to inform densities of birds on development site, but this does not appear to have been taken on board. Standard practice has been used to assess displacement based on birds on water and in flight, and only birds in flight for collision risk. The level of double counting involved has been acknowledged. However, we are pleased to note that bird abundance was taken to be the 95% upper confidence limit, rather than the mean estimate.

The long list of SPAs considered covers all expected sites, selected using the method outlined in the HRA report. The main anomaly is the use of the mean maximum foraging range (mmfr) +10% value. The source of this information is Thaxter *et al* (2012), which is the generally recommended text for foraging range values. The mmfr is also the preferred metric, although the use of + 10% to inflate the value beyond the bare mean is not standard. Figures are presented in the Thaxter paper with +/- 1 standard deviation around the mean.

Moreover, the use of 10% of the mean instead of 1sd usually results in a lower value for the range, meaning that some sites are not scoped into the long list. However, these will be sites with weaker connectivity and given the size of this development it is unlikely it would contribute a significant impact on mortality or productivity to any such site.

### 3.2 Auk 'chicks at sea' period

The high densities of auks during the post-fledging dispersal were a prominent feature of the first year of seabird surveys for the Hywind assessment. This phenomenon has been included in the HRA report and it indicates more than 3000 guillemots and 1000 razorbill present within the development area during this period. The second period of surveys indicated lower, but still significant, numbers present in July / August. The number of birds on sea in September was higher in the second year than in the first year.

It is likely that these numbers comprise more than 1% of the populations of Buchan Ness to Collieston Coast, Fowlsheugh and Troup, Pennan and Lion's Heads SPAs. In the pre-application discussions we had agreed that these features should be considered if the wind turbine generator (WTG) area + 1 km held at least 1% of an SPA population and the receptor was considered to be at least 'moderately vulnerable' to at least one impact source.

We agree that collision risk is not an expected impact pathway for these species at this time of year. However, given the high densities, we expected to see consideration of pollutant release and displacement / disturbance by structures or shipping as potential impact pathways. The argument presented in the HRA is that the very transient nature of the passage of the auks through the area, the small footprint of the wind farm and the fact that published evidence suggests individuals may move up to 50 km per 24 hours suggests little impact on birds from displacement / disturbance. Release of contaminants is little considered.

We argue that the impact of shipping activity on post-breeding auks and dispersing young is poorly understood. Separating newly fledged young from their parents could have significant consequences for the young. Whilst we therefore do not agree with the ES conclusion that disturbance by shipping is negligible, we can advise that this is not likely to result in adverse effects on integrity of any of the SPAs. Nevertheless we suggest mitigation in Annex VI.

### 3.3 Non-breeding season screening

The HRA for the non-breeding season relies on the Biologically Defined Minimum Population Scales (BDMPS) report (Furness, 2015) using population totals (including SPA totals) and regional populations based on that report, or other 'reference populations'. As yet we do not have guidelines for assessment of non-breeding season HRA, but where non-standard methods are used, these should be clearly explained. The process by which the BDMPS reference populations should be applied to casework in Scottish / UK sites is still being developed. Therefore, given that the approach taken here is clearly explained, we accept it as a working method, at present. Where other methods are used for assigning reference populations of seabirds, this is explained in the text. We think that sufficient information has been provided to allow the impact to be assessed.

The approach to assessment presented assumes 'equal mixing' of populations (i.e. there is no longer an influence of central place foraging). While the true situation is likely to be somewhere between central place (colony-linked) foraging and equal mixing, there is not strong enough evidence to give exact or even approximate values of what the percentage of separate populations might be. In this case, it is assumed that even mixing occurs.

One element of precaution is that all birds on site have been treated as if they are adults. This is known not to be the case. It inflates the impact assigned to SPA breeding populations and therefore is regarded as precautionary. However, for some species, ratios of adults to immature can be recorded. We agree with the list of LSE impacts detailed in the Summary table 2.2., and accept the conclusion that there are no non-breeding season impacts to be considered further.

### 3.4 Collision Risk Modelling

The Joint SNCB advice note of November 2014, issued in response to the Marine Scotland Science (MSS) Avoidance Rates Review, recommends that site-specific flight height data be used where it is of sufficient quality. However, for the Hywind development site, we have not identified sufficient evidence that collecting flight height data at 10m height interval bands is accurate and reliable enough to warrant its use over the published estimates in Johnston *et al* (2014). Initial studies on site-specific flight height estimates have shown a high degree of observer bias, thus it is necessary to be confident that the site-specific estimates are reliable. The evidence supporting the quality of the site-specific data for the Hywind development site has not been forthcoming. Given this, we have considered collision mortality estimates derived from published estimates, assuming them to be more reliable.

Given our concerns regarding the quality of the site-specific flight height data, we are pleased to note that the Option 4 Band model was not used in the final assessment of collision mortality. We are also pleased to note that, with the exception of Arctic tern, breeding season periods used to estimate collision mortality align with those used for other developments in the Moray Firth, Forth and Tay, as per our request.

The species of most concern are kittiwake, with 17 collisions during the breeding season, and gannet, with 6 collisions during the breeding season. There are also a small number of herring gull collisions (mainly outwith the breeding season). The HRA assesses these collision rates against a theoretical 'increase in mortality of 1% threshold' (page 19). However, ignoring any such arbitrary threshold, the total number of collisions attributed to Hywind is relatively small compared to the overall size of the populations. Following apportioning of collisions, these values alone are not sufficient to increase mortality rates to a level that would suggest an adverse impact on site integrity.

### 3.5 Displacement impacts

The approach taken is to assume that all displaced birds are adults and the breeding attempt fails if birds are displaced, and the general displacement rate for birds is also set at 50%. Using this precautionary approach, we do not consider there to be an adverse impact on site integrity from the project alone.

However, displacement impacts have not been assessed for kittiwake or gannet. Displacement impacts from the Forth and Tay developments were assessed for these species and emerging evidence shows gannets to be highly susceptible to disturbance and being displaced from offshore wind farms (Leopold *et al* 2013, Vanerman *et al* 2013). JNCC and SNH have advised that mortality from those developments, in combination, is too high for gannet and kittiwake, and hence it would be valuable to assess displacement impacts from the Hywind development. However, given the small footprint of the Hywind development, we anticipate displacement impacts from this development alone to have a small effect on these features.

### 3.6 EIA

In this instance, due to the BDMPS report not being finalised and the likely relative risk of this small development, we agreed with the developer that a "Regional population... of most relevance to Hywind" might be appropriate for the EIA Assessment. In general, please note that we would advise that the population of relevance for EIA is the population that is biologically linked, which is likely to be bigger than the regional population, especially as we have a relatively good understanding of predicted impacts from renewable developments in UK waters.

## **Annex II. Marine mammal ecology**

No piling operations will take place as part of the Hywind development and noise levels are unlikely to exceed injury/disturbance levels for marine mammals.

Given the above, JNCC and SNH agree with the conclusion that the risk of injury or disturbance to marine mammals is low. We also agree with the assessments of the risk of entanglement and of corkscrew fatalities.

Furthermore, we agree with the conclusion of no LSE for grey and harbour seals, due to the distance to the nearest seal SACs, the low risk of impact and low numbers of seals in the area.

We would like to highlight to Hywind that the Cetacean Management Units paper has now been updated ([http://jncc.defra.gov.uk/pdf/Report\\_547\\_webv2.pdf](http://jncc.defra.gov.uk/pdf/Report_547_webv2.pdf)) but that this does not fundamentally change the conclusions of the assessment.

The operator has recorded four species of cetacean; minke whale, harbour porpoise (accounting for 70% of sightings), white-beaked dolphin and Risso's dolphin. However, we would caution against over interpreting any seasonal data. For most species of cetacean, the presence and number of animals using particular areas may vary considerably between seasons and years, limiting the value of seasonal considerations. One would need several years of data showing a seasonal pattern to be able to use this evidence to justify any variations to the development proposal (for example, adapting construction timings). Therefore, in most cases, and for the purposes of EIA, it should be assumed that animals could be present in the area at any time of the year.

Within inshore waters, SNH do not agree with the ES conclusion of no LSE on bottlenose dolphins from the Moray Firth SAC. Whilst there are few, if any, bottlenose dolphins observed / likely to be within the offshore WTG site, the same is not true of the cable route. SNH conclude that there is LSE from the cable-laying activities close to the coast and as such the HRA is inadequate in this respect. There is potential for disturbance to bottlenose dolphins, which travel along this coast between the Moray Firth and the East coast as far south as the Forth/Tay estuaries, from a number of sources: vessel noise, geophysical surveys, trenching and rock/mattress placement. However, due to the temporary nature of the activity, and the relatively localised nature of the disturbance (and low risk of injury), SNH advise that there would be no adverse impact on site integrity.

SNH also advise the developers to apply for an EPS licence. Although the risk of injury to cetaceans is very low and disturbance is likely to be localised and temporary, there is a possibility that some disturbance could occur.

### Annex III. Benthic and intertidal ecology

The footprint of the project has been estimated as 0.273km<sup>2</sup>, while the export cable footprint would be 0.21km<sup>2</sup>. We note that the worst case scenario assumes of the 35km of cable route up to 2km will require protective materials, and for the inter-array cables up to 7.5km will require protective materials. We acknowledge that these estimates are based on a worst-case scenario and would expect Statoil to minimise the amount of protection material used within the WTG area and export cable route as much as possible in order to minimise impacts to benthic habitats.

We have considered the impacts of this proposal on inshore Priority Marine Features (PMFs) and have concluded that any impacts will be minor and/or of short duration. No offshore PMFs occur in the development area.

The benthic surveys conducted identified *Sabellaria spinulosa* reef on the southern area of the AfL. However, it has been decided that the project will only develop in the northern area of the AfL and as such would avoid impacts to the *Sabellaria* reef in the WTG area. Three types of Annex I reef habitat were identified along the cable route: stony reefs, bedrock reefs and *Sabellaria spinulosa* reefs. The *Sabellaria* reef is classed as “low grade” (based on height and % coverage) and patchily distributed. Although the cable trench will cut through some of this reef habitat, the impacts will be localised and Statoil have committed to routing the export cable in order to minimise damage to the *Sabellaria* reef (although it will not be possible to avoid all reef areas). Moreover, the majority of the export cable is expected to be buried, which could allow for some recovery of benthic habitats after the installation phase.

We highlight that it was previously agreed that benthic hydrodynamic effects (i.e. scouring & sedimentation around anchors) should be scoped in. Despite featuring in the Chapter 9 summary box (bullet 2), they are explicitly omitted from the assessment (9.6.1 pg. 9-30) based on the physical processes impact assessment in Chapter 8. However 8.7.2 merely says scour effects are addressed in other chapters. As well as not being good EIA practice to provide apparently empty cross-referencing, this aspect has not been assessed and we therefore can only provide limited advice.

The rock-covered (non-buried) sections of the cables, and the anchor chains, would be very low-profile. Any scour around them is not likely to significantly add to their footprint of effects. For the far taller suction anchors, scour-protection is specified as extending 15m beyond the anchors, i.e. more than 4x their radius (Section 4.3.2). Given the wide spacing of the WTGs, this design consideration (rather than the arguments quoted above) makes further assessment of scour unnecessary.

The WTG area will require scour protection for the suction anchors (no more than 15m), however the footprints from such scour operations were omitted from the assessment (i.e. not included in Table 9-14). The required correction to include such impacts increases the area of ‘subtidal long-term disturbance’ from 600m<sup>2</sup> to 15,000m<sup>2</sup>. This additional impact should have been considered within the assessment. However, in our opinion this additional footprint is unlikely to change the conclusion of no significant effect overall.

For landfall aspects, the ES presents a preference for horizontal directional drilling (HDD). The ES also mentions an alternative, but it is not clear whether this would require any foreshore trench excavation or if the cable duct would be surface-laid. This should be clarified by Marine Scotland and considered further as required.

#### **Annex IV. Fish of Conservation Concern**

It could be expected that potential impacts might arise from activities including those generating noise and vibration, turbidity and electro-magnetic fields (EMF). There are also other developments in the vicinity that could contribute to a cumulative impact. However, the ES states that no piling will take place and that increased turbidity due to construction would be of short duration and reduce quickly in this high energy environment. In relation to EMF, DECC has recommended that cables be buried to at least 1.5 m, depending on the suitability of the substrates (DECC, 2011). We would welcome the burial of the cable to this depth where possible, particularly in shallow waters (below 20m). We therefore agree that, with the above mitigation, there will be no significant impacts to fish of conservation concern from this proposal.

## **Annex V. Seascape, Landscape and Visual Impacts**

The development will introduce a new feature within the coastal and seascape character. At times, given the clarity of light that can be experienced and the simplicity of the (flat) horizon in this coastal location, the development may appear as a prominent new focus (as illustrated in views from Buchanhaven and Scotstown).

The development is offshore (a minimum distance of 22km) and appears as a contained development, occupying a minor proportion of the view. The local coastal character reinforces the perception of Hywind as an offshore development. At this location, off the north east 'corner' of Grampian, the sea is the dominant influence, wrapping around the land mass (as opposed to the land encircling the sea, for example within a firth). Views from the coast and immediate hinterland are wide broad panoramas of 'seascape'. We understand that the construction base is likely to be located in Norway and construction impacts will be limited to activities within the Pilot Park 25km offshore.

The distance of the development from the nearest receptors, the relatively small scale of the proposal and the character of the coastline limit the impact of the development. We therefore agree with the ES SLVIA conclusion that effects are non-significant.

SNH agree with the conclusion in the ES that the addition of the Hywind proposal to other offshore developments on the east coast, given the separation distances involved, would not result in a significant landscape or visual effect cumulatively. Furthermore, cumulative impacts of Hywind in addition to on-shore wind turbine development (for example as experienced in the coastal hinterland on the approach to Scotstown Head and at viewpoint 4 on the A950) are not significant, due to the limited effects of the Hywind project on the coastal landscape in the study area.

## **Annex VI. Environmental Management and Monitoring**

We support the commitment provided in the ES (section 21) that a Project Environmental Management Plan and Programme (PEMP) will be implemented, upon agreement of its content with the regulator, if the project is consented.

The outline of the contents of the PEMP as detailed in the commitments register (Table 21-1) is not yet comprehensive. We recommend that the following are also included as part of the PEMP, or as separate conditions:

- Employment of an ECOW - the functions of which are to be agreed, but which should include quality assurance of plans prior to submission for approval, ensuring approved plans are followed in contractors/sub-contractors' plans, conducting tool box talks and other communications affecting construction.
- An agreed Vessel Management Plan – to manage scheduled maintenance, construction and decommissioning traffic during July/August, when it is possible that post-breeding adult and chick dispersal is occurring and significant numbers of birds are at risk of being disturbed around the structures.
- An agreed operational maintenance programme aligned with the vessel management plan, identifying likely requirements of maintenance visits, to include duration, timing, access and methods employed.
- Cable burial depths of at least 1.5m, particularly for the grid connection cable, to reduce potential effects of EMF on fish of conservation concern.
- Environmental monitoring requirements (including any adaptive management requirements) for pre-construction, construction and operational periods of this development (see our further comment on this aspect below).

Statoil indicated at a pre-application meeting with SNH, JNCC and Marine Scotland that they would consider further monitoring in the interests of this being a pilot project. We would welcome further discussion as to what consideration has been given to monitoring to assist in the validation of some of the ES predictions and we offer our assistance to help identify and prioritise any monitoring. This exercise should consider the environmental impacts of this pilot project, if consented, in the context of its location and cumulative impacts with other East Coast consented windfarms.

## References

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## Memo

<b>To</b>	Gayle Holland
<b>cc</b>	Finlay Bennet, Jared Wilson, Joao Queiros, Adrian Tait, Enrique Pardo, Sue O'Brien, Victoria Saint, Erica Knott, Glen Tyler, Mareike Moeller-Holtkamp
<b>From</b>	Karen Hall
<b>Date</b>	3 <sup>rd</sup> September 2015
<b>Subject</b>	<b>Hywind Scotland Pilot Park Project – Buchan Deep - Draft Hywind AA ornithology text for SNCB consideration – SNCB Appraisal</b>

## Background

Marine Scotland (MS) consulted SNH / JNCC on 18<sup>th</sup> August 2015 on a draft Appropriate Assessment (AA) for the Hywind floating wind farm development off Peterhead. Advice from SNH and JNCC was provided on 3<sup>rd</sup> July 2015 at the application stage. In that advice we could not conclude no adverse effect on site integrity (NAESI) due to in combination effects on Atlantic puffin (puffin) – Forth Islands Special Protection Area (SPA), Northern gannet (gannet) – Forth Islands SPA and black-legged kittiwake (kittiwake) – Fowlsheugh SPA.

We have also previously provided joint advice to MS in March - July 2014 that we could not conclude NAESI for these same features from the offshore wind farm developments in the Forth & Tay area (Near na Goaithe, Inch Cape and SeaGreen Alpha and Bravo).

Hywind is a proposed development of 5 floating turbines based 25km off the Aberdeenshire coast from Peterhead and just outside Scottish Territorial Waters. As such it is both more distant and considerably smaller than the Forth and Tay wind farms from these SPAs.

## Summary of Marine Scotland (MS) draft Appropriate Assessment (AA)

The assessment made by MS in the draft AA is that it can be concluded that NAESI will result from the Hywind development alone, or in combination with other projects. This follows re-calculation of original mortality estimates from the previously submitted/ consented Forth and Tay wind farm projects.

## SNCB Appraisal

The draft AA uses the mean avoidance rate values presented in the MS-commissioned British Trust for Ornithology (BTO) Report on Avoidance Rates (AR) (Cook *et al* 2014) to recalculate the mortality due to the Forth and Tay wind farms. The AA also uses these avoidance rates to calculate the mortality predicted due to Hywind. In our detailed appraisal below we refer to these as 'BTO avoidance rates'.

The SNCBs recommend a slightly more precautionary approach i.e. to present/ use the BTO avoidance rates +/- 2 standard deviations (SD) and a reduced AR for kittiwake. In our appraisal below we refer to these as 'SNCB avoidance rates'.

The application of the SNCB avoidance rates within 2SD of the mean value would mean that the range of avoidance rate for both gannet and kittiwake is 0.987-0.991 (mean 0.989 +/- 0.002). The range of values presented in Table 2 and Table 3 of the draft AA is 0.980 –

0.998 for gannet and 0.978-1.010 for kittiwake. We are not clear on the reason for this discrepancy.

Our appraisal for each of the species is as follows:

- The revised collision mortality for gannet brings the predicted total mortality apportioned to this population below previously advised thresholds.
- For kittiwake there is a difference in the predictions between the BTO and SNCB avoidance rates. The use of the SNCB avoidance rates for Collision Risk Modelling (CRM), as well as consideration of the displacement effects, means that the predicted impacts are above previously advised thresholds. We are therefore unable to conclude that there would not be an adverse effect on site integrity to kittiwake at Fowlsheugh SPA.
- The argument for puffin is less clear, in that no reassessment of the Forth & Tay project impact has been undertaken. However, the contribution by Hywind to the cumulative impact is reassessed as a reduced contribution. The basis for this conclusion is not clear from the draft AA, as although on its own the impact is small, it is still an additional impact in combination with the Forth and Tay consented projects.

### **Impact on gannet at Forth Islands SPA**

The original Forth & Tay collision estimates were derived from Option 3 Band models – the revised estimates use option 2 models with the BTO avoidance rate. The BTO avoidance rate for gannet is 0.989.

The revised mortality estimate is 1009 birds (1005 for F&T, 4 from Hywind). Mortality outside the breeding season would be additional to this total.

The draft AA presents the results in terms of Counterfactual of Population Size (CPS). The CPS predicted after 25 years of wind farm operation is 92% (rather than previously 79%).

There has been no discussion between SNCBs or between SNCBs and MS regarding the interpretation and acceptable values of counterfactual scores. The score calculated using the BTO avoidance rate is considerably higher than that calculated using the original avoidance rate, reflecting a significant reduction in the difference between the predicted impacted and un-impacted final population figures.

Impacts of displacement for gannet from the Hywind development are insignificant and have been ignored in these calculations.

### **Impact on kittiwake at Fowlsheugh**

The kittiwake assessment has been revised by MS using the BTO avoidance rate. The BTO avoidance rate is 0.992. The SNCB avoidance rate is 0.989 (+/- 2SD) - the same as for gannet.

MS have used the agreed option 2 Band model but with the new BTO avoidance rate to recalculate the predicted mortality by collision with the wind farm. The draft AA also presents the predicted mortality using the SNCB Avoidance Rate – although our calculated figures do not agree. Despite the title for Table 5 implying that it has included displacement impacts for kittiwake these do not appear to have been added to the predicted collision mortality impacts in the presented assessment.

Following our re-calculation of the collision estimates for the Forth and Tay and Hywind (and adding the displacement impacts for the Forth and Tay for kittiwake), our conclusion is that the previously advised threshold of a 1.3% reduction in adult survival for kittiwakes is exceeded when the SNCB avoidance rate is used. This calculation is for breeding season impacts only and does not account for additional non-breeding season, nor mortality to non-breeding adults or immature birds during the breeding season.

### **Non-breeding season assessment**

The draft AA states that: ‘ *Wind farm effects on gannet [gannet and kittiwake] during the non-breeding season have been considered within the assessment in a qualitative manner due to the lack of a method for apportioning effects during the non-breeding season and on immature age classes to the SPA population*’.

However, the fact that there is an ‘unknown’ amount of additional mortality not accounted for in these estimates deserves a word of caution. It also reinforces that thresholds should not be regarded as limits that can be approached as closely as possible.

### **Puffin**

There has been no revision of the impact on puffin due to the Forth & Tay developments which was due to displacement. However, the impact of Hywind has been revised downward by reducing the proportion of breeding adults in the population (the draft AA indicates that this is due to the site being close to the mean-max foraging limit and that it attracts fewer breeding birds), and reducing the mortality rate and breeding failure rate compared to the Forth & Tay developments, because of the SPAs’ distance from the Hywind site.

These arguments have merit, but have not been discussed or agreed as part of any approach to assessment and cannot be quantified.

To accept distance from colony as a multiplier for the percentage mortality and breeding failure, as well as the footprint of the wind farm adds a layer of complexity to the displacement calculations. This is, however, consistent with a smaller increase in energy expenditure required to avoid this relatively small wind farm.

If this rationale for the effect of distance from colony on effects is accepted, then it follows that puffins at Seagreen (furthest of the Forth and Tay sites from Forth Islands SPA) should also experience lower mortality / breeding failure rate than puffins at developments nearer to the SPAs.

The fact that the puffin impacts for Forth and Tay have not been reassessed in this account still leads to the conclusion that we cannot conclude NAESI for the Forth Islands SPA.

### **Conclusion**

The use of the new, agreed avoidance rates produced by the BTO and SNCB avoidance rates has resulted in predicted reductions of the cumulative impacts to gannet.

The revised calculations of collision mortality (using SNCB avoidance rates) plus the modelled displacement mortality for kittiwake indicate that the previously advised threshold for Fowlsheugh will be reached or exceeded by the cumulative total impact. We are unable to conclude NAESI for kittiwake in combination with the consented Forth and Tay projects.

The predicted impact to puffin from Forth Islands SPA due to the Hywind development is very small (3 deaths and 14 breeding failures each year, under the calculations reported in the draft AA). This is not the 'common currency' approach agreed for the Forth and Tay developments and is based upon a modelled reduction in both the proportion of breeding adults in the population on-site at Hywind and a reduction in the proportion of deaths and breeding failures expected. We are unable to conclude NAESI for puffin in combination with the consented Forth and Tay projects for Forth Islands SPA.

## Drew J (Jessica)

---

**From:** Karen.Hall@jncc.gov.uk  
**Sent:** 03 September 2015 18:24  
**To:** Holland G (Gayle)  
**Cc:** Bennet F (Finlay); Wilson J (Jared); Queiros J (Joao); Tait A (Adrian) (MARLAB); Enrique.Pardo@jncc.gov.uk; Sue.O'Brien@jncc.gov.uk; Victoria.Saint@jncc.gov.uk; 'Erica Knott'; Glen Tyler; Mareike Moeller-Holtkamp  
**Subject:** RE: Draft Hywind AA ornithology text for SNCB consideration  
**Attachments:** 20150903\_Draft Hywind AA ornithology text\_SNCB comments.pdf

Hi Gayle,

Please find attached our joint advice on the draft Hywind AA, solely in relation to the part section on ornithology we received on the 18<sup>th</sup> August.

With regard to MS queries over any potential connectivity of Hywind with possible future designations, such as SPAs, SACs and NCMPAs, we provide the following comments:

### dSPAs:

- Forth and Tay Bay Complex dSPA: gannet, puffin and manx shearwater. However, the conservation objectives have not been finalised and it may be that these do not require further consideration but we won't know this until the consultation starts and is completed.
- Ythan Estuary; sandwich tern - with regard to the export cable. However, it is likely that this can be dealt with depending on the duration, timings and method of operations.

### dSAC:

- Moray Firth: harbour porpoise. As with the dSPAs the conservation objectives etc have not been finalised and it may be that these do not require further consideration but we won't know this until the consultation starts and is completed. The main issue is likely to be with regard to the export cable as there is little underwater noise anticipated from Hywind.

### Proposed NCMPA;

- Southern Trench: minke whale, fronts, burrowed mud and geodiversity features. Issues are linked to export cable surveys and construction and would relate to minke whale (disturbance), burrowed mud (loss / disturbance) features. However, it is likely that this can be addressed through the construction method statement.

Kind Regards,

Karen

Karen Hall  
Offshore Industries Advice Manager

Joint Nature Conservation Committee  
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Website: <http://www.jncc.defra.gov.uk>

---

**From:** Gayle.Holland@scotland.gsi.gov.uk [mailto:Gayle.Holland@scotland.gsi.gov.uk]  
**Sent:** 18 August 2015 12:13  
**To:** Karen Hall; Erica.Knott@snh.gov.uk  
**Cc:** Finlay.Bennet@scotland.gsi.gov.uk; Jared.Wilson@scotland.gsi.gov.uk; Joao.Queiros@scotland.gsi.gov.uk; Adrian.Tait@scotland.gsi.gov.uk; Enrique Pardo  
**Subject:** Draft Hywind AA ornithology text for SNCB consideration

Hi Karen/Erica,  
As indicated last week MSS have now reworked some of the figures for impacts on SPAs, based on the BTO avoidance rate review, from the Forth and Tay offshore wind farms and included Hywind. Please find in the attached word document tables and text discussing this. I have also attached an excel spread sheet which provides more detail on the calculations. We have concentrated on the 3 species/SPA combinations where in the advice received from the SNCBs on the 3<sup>rd</sup> of July you were unable to conclude no adverse effect on site integrity in combination with the effects from the Forth and Tay projects:

- northern gannet (Forth Islands SPA)
- black-legged kittiwake (Fowlsheugh SPA)
- Atlantic puffin (Forth Islands SPA).

Please could you consider the work which has been undertaken and advise on whether this changes any of the conclusions reached in the 3<sup>rd</sup> July advice. I would appreciate a response by the 25<sup>th</sup> August if possible, please let me know if you are unable to meet this date. If you would like to discuss anything, please let me know and I can set up a call with Jared and Finlay. Once we have your current position we will finalise the AA and share this with you, this will include all the species/SPA combinations where LSE has been identified.

Kind Regards  
Gayle

---

**Gayle Holland**  
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**Gayle Holland**  
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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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## Drew J (Jessica)

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**From:** Holland G (Gayle)  
**Sent:** 18 September 2015 12:06  
**To:** Queiros J (Joao)  
**Subject:** FW: HyWind - Scotland, Pilot project Park - MS appropriate assessment ornithology text for SNCB consideration

For Hywind file please  
Gayle

---

**From:** Erica Knott [<mailto:Erica.Knott@snh.gov.uk>]  
**Sent:** 18 September 2015 08:45  
**To:** Holland G (Gayle)  
**Cc:** [Lisa.chilton@jncc.gov.uk](mailto:Lisa.chilton@jncc.gov.uk); John Uttley; Sue.O'Brien@jncc.gov.uk; [Victoria.Saint@jncc.gov.uk](mailto:Victoria.Saint@jncc.gov.uk); Glen Tyler; Mareike Moeller-Holtkamp; George Lees  
**Subject:** HyWind - Scotland, Pilot project Park - MS appropriate assessment ornithology text for SNCB consideration

Hi Gayle

In the absence of Karen, please find below our advice on the revised appropriate assessment consideration of kittiwake for the HyWind project proposal.

This advice follows and updates previous advice from SNH and JNCC dated 3<sup>rd</sup> September 2015.

### Impact on kittiwake at Fowlsheugh SPA

SNH and JNCC note that Marine Scotland's revised calculations predict a level of mortality for kittiwake that is below the threshold applied in the determination of the Forth and Tay wind farm consents.

For the Forth and Tay wind farm assessments, we supported the application of a 30% displacement rate for kittiwake for the Seagreen project only. A higher displacement rate was applied for the other Forth and Tay projects. We note that a rate of 30% has now been applied across the suite of projects.

We advise that the kittiwake population at Fowlsheugh is in decline. The drivers of this decline are unclear, but additional mortality will further contribute to the decline.

I trust this is of assistance. Please note as of tonight I am AL until Tuesday 29<sup>th</sup> September. If you should have any queries in both Karen and my absence, please contact:

JNCC – Lisa Chilton – [lisa.chilton@jncc.gov.uk](mailto:lisa.chilton@jncc.gov.uk) – 01224 266552 and in SNH – John Uttley – 01595 693345 and they should be able to advise who else and when any further queries can be addressed, noting as discussed previously with you, the consideration of SPA interests was our key concern and we have now provided our advice on the key qualifying interests.

Thanks Erica

Erica Knott  
Senior Casework Manager – Offshore Renewables

[erica.knott@snh.gov.uk](mailto:erica.knott@snh.gov.uk) 01738 458674

Battleby, Redgorton, Perth, PH1 3EW

Please note the email address for all marine energy correspondence is [marineenergy@snh.gov.uk](mailto:marineenergy@snh.gov.uk)

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Thoiribh an aire airson adhbharan gnothaich, 's dòcha gun tèid sùil a chumail air puist-dealain a' tighinn a-steach agus a' dol a-mach bho SNH.

\*\*\*\*\*

## Drew J (Jessica)

---

**From:** Lisa.Chilton@jncc.gov.uk  
**Sent:** 24 September 2015 12:56  
**To:** Holland G (Gayle); Erica.Knott@snh.gov.uk; Karen.Hall@jncc.gov.uk  
**Cc:** Enrique.Pardo@jncc.gov.uk; John.Uttley@snh.gov.uk; Sue.O'Brien@jncc.gov.uk; alex.robbs@snh.gov.uk; Glen.Tyler@snh.gov.uk; Victoria.Saint@jncc.gov.uk; Wilson J (Jared); Bennet F (Finlay); Bain N (Nicola) (MARLAB); Queiros J (Joao)  
**Subject:** RE: Consideration of Cleasby gannet paper - due to be published 28th Sept

Gayle,

Thank you for asking our advice on this matter. Sue has been in touch with Jared and has now received a draft manuscript of the paper.

We will review it, liaise with SNH, and get back to you as soon as we can with a joint response to your questions. However, in JNCC at least, we have very limited capacity this week and next week. Sue is hoping to take an initial look at the paper today or tomorrow. At that stage we will have a better feel for the work involved in responding, and can discuss this with SNH. If we consider that we will be unable to respond by 2<sup>nd</sup> October as per your request, we will advise you at that stage.

Best wishes,  
Lisa

### Lisa Chilton

Head of Offshore Industries Advice  
Joint Nature Conservation Committee

Please note that I work Mon-Thurs only, 9am-5pm.

*Inverdee House, Baxter Street, Aberdeen AB11 9QA. Tel: 01224 266552.*  
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[www.jncc.defra.gov.uk](http://www.jncc.defra.gov.uk)



---

**From:** Gayle.Holland@gov.scot [mailto:Gayle.Holland@gov.scot]  
**Sent:** 24 September 2015 09:32  
**To:** Erica.Knott@snh.gov.uk; Karen Hall  
**Cc:** Enrique Pardo; John.Uttley@snh.gov.uk; Lisa Chilton; Sue O'Brien; alex.robbs@snh.gov.uk; Glen.Tyler@snh.gov.uk; Victoria Saint; Jared.Wilson@gov.scot; Finlay.Bennet@gov.scot; Nicola.Bain@gov.scot; Joao.Queiros@gov.scot  
**Subject:** Consideration of Cleasby gannet paper - due to be published 28th Sept  
**Importance:** High

Hi Erica/Karen

MS are aware that the paper "Three dimensional tracking of a wide-ranging marine predator: flight heights and vulnerability to offshore wind farms" by Ian R. Cleasby et al will be published in the Journal of Applied Ecology on September 28th 2015, at which point it will be available online at: [onlinelibrary.wiley.com/doi/10.1111/1365-2664.12529/full](http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12529/full). MS have two questions for the SNCBs:

1. Do the SNCBs have any comments on the methods, results or conclusions presented by Cleasby et al 2015?

2. Can the SNCBs advise whether in their view the results presented in Cleasby et al 2015 can be applied to collision risk modelling for offshore wind farms, and if so how?

In our view it is the latter question that is of key importance in the short term- what in the Cleasby paper can be applied to assessments and how should it be applied. We intend to address the Cleasby paper in the Hywind AA and would appreciate the SNCBs consideration. MS have requested further information from the authors on how collision estimates have been calculated, if we receive anything next week we will also share this with you. Would it be possible to provide a response by Friday 2<sup>nd</sup> October?

Kind Regards  
Gayle

-----  
**Gayle Holland**

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Dh’fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson

adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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