

## **Appendix I**

### **Consultation Representations & Advice**

**Lees E (Emma)**

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**From:** KellyR <KellyR@angus.gov.uk>  
**Sent:** 24 September 2020 07:32  
**To:** MS Marine Renewables  
**Subject:** Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion

Dear Sir/Madam

**REGULATION 14 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT)  
(SCOTLAND) REGULATIONS 2017 (AS AMENDED)  
REGULATION 12 OF THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT)  
(SCOTLAND) REGULATIONS 2017 (AS AMENDED)  
REGULATION 13 AND SCHEDULE 4 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT  
ASSESSMENT) REGULATIONS 2007 (AS AMENDED)**

I refer to the above scoping opinion request received by this Authority on 7 September 2020.

I can confirm that having reviewed the Scoping Report in so far as potential impacts on Angus, Angus Council is satisfied with both the conclusions of the report and the recommended environmental topics that will be considered as part of the EIA Report going forward.

As such, Angus Council has no further comments or requirements to add at this stage.

Regards,

Ruari Kelly | Planning Officer (Development Standards) | Angus Council | 01307 492125 | [kellyr@angus.gov.uk](mailto:kellyr@angus.gov.uk) | [www.angus.gov.uk](http://www.angus.gov.uk)



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**Lees E (Emma)**

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**From:** h.bettison <h.bettison@berwick-tc.gov.uk>  
**Sent:** 11 September 2020 17:55  
**To:** MS Marine Renewables  
**Subject:** Wind farm

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

I have no objections.  
Regards Haze

Sent from my Samsung Galaxy smartphone.

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## Lees E (Emma)

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**From:** Brian Douglas [Redacted]  
**Sent:** 23 September 2020 14:51  
**To:** Lees E (Emma)  
**Subject:** Fwd: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Sent from Samsung Mobile on O2

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**From:** Brian Douglas [Redacted]  
**Sent:** Tuesday, September 22, 2020 10:38:52 PM  
**To:** All Town Councillors <allcllr@berwick-tc.gov.uk>; Berwick Town Council <info@berwick-tc.gov.uk>  
**Subject:** Re: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Than you for the information.

I have no objection on principal, but would hope that Berwick upon Tweed will receive some return in terms of work and assistance.

Should you need any assistance I can be contacted on my e-mail on [Redacted]

Best Regards

Sent from Samsung Mobile on O2

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[Redacted]

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Berwick-upon-Tweed Town Council  
Berwick WorkSpace  
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90 Marygate  
Berwick-upon-Tweed  
TD15 1BN

Tel: 01289 302391

Website: [www.berwick-tc.gov.uk](http://www.berwick-tc.gov.uk)

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## Lees E (Emma)

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**From:** lisa.4.smith@bt.com on behalf of radionetworkprotection@bt.com  
**Sent:** 23 September 2020 08:42  
**To:** Lees E (Emma)  
**Cc:** radionetworkprotection@bt.com; Wilson J (Jessica)  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020 - WID11329

Hi Emma

OUR REF: WID11329

Thank you for your email dated 21/09/2020.

We have studied this Scoping Request with respect to EMC and related problems to BT point-to-point microwave radio links.

The conclusion is that, the proposed offshore area should not cause interference to BT's current and presently planned radio network.

Please direct all queries to [radionetworkprotection@bt.com](mailto:radionetworkprotection@bt.com)

Regards

**Lisa Smith**

**Engineering Services Radio Planning**

**Tel: 07483912560 / 03316640197**



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British Telecommunications plc

R/O : 81 Newgate Street, London EC1A 7AJ

[Redacted]



Defence  
Infrastructure  
Organisation

Teena Oulaghan  
Assistant Safeguarding Officer  
Ministry of Defence  
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Kingston Road  
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Telephone [MOD]: 07970 170 934

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Jessica Wilson  
Marine Scotland  
Planning Department,  
Mailpoint 11,  
1B South,  
Victoria Quay,  
EH6 6QQ

07 October 2020

Dear Jessica,

**PROPOSAL: REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION AND MARINE LICENCES FOR BERWICK BANK OFFSHORE WIND FARM LOCATED 39.2 KILOMETRES EAST OF EAST LOTHIAN.**

**REGULATION 14 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)**

**REGULATION 12 OF THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)**

**REGULATION 13 AND SCHEDULE 4 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2007 (AS AMENDED)**

Thank you for consulting the Ministry of Defence (MOD) on the above Scoping Opinion request in respect of the Berwick Bank Wind Farm proposal received by this office on 07th September 2020. I write to confirm the safeguarding position of the MOD on the information that should be provided in the Environmental Statement to support any application.

The applicant has prepared a Scoping Report of the proposed development. This recognises the principal defence issues that will be of relevance to the progression of the proposed development.

The use of airspace for defence purposes in the vicinity of the proposed development have been appropriately identified and considered. The Scoping Report considers aviation and radar systems that may be affected by the proposed wind farm. The MOD is correctly identified as a relevant receptor in section 8.3 Aviation, Military and Communications of the Scoping Report.

The report identifies that the turbines have the potential to affect and be detectable to, the Primary Surveillance Radars (PSR) at Leuchars Station and the Air Defence Radars (ADR) at RAF Brizlee Wood and RAF Buchan. The impact on these radars will need to be taken into account in the progression of any application for this

scheme. The MOD agrees with this. The impact on these radars will need to be mitigated and it will be for the applicant to provide appropriate technical mitigation(s).

Impact on military training has been recognised with the offshore wind farm overlapping with D613C and D613D danger areas and any impact will be covered in more detail in the EIA report. The proposed extension areas do not overlap with any Practice and Exercise Areas (PEXA). We therefore do not anticipate there to be any concerns relating to military maritime activities.

The potential presence of unexploded ordnance (UXO) has been identified as a relevant consideration. The potential presence of UXO and disposal sites is also a relevant consideration to the installation of cables and other intrusive works that may be undertaken in the maritime environment.

Impact on military low flying has been scoped in and the applicant states in the Scoping Report that they are committed to lighting and charting the turbines. In the interests of air safety, the MOD would request that the development be fitted with MOD accredited aviation safety lighting in accordance with the Civil Aviation Authority, Air Navigation Order 2016.

In relation to the Onshore element of the proposed development, a separate scoping opinion will be submitted to East Lothian Council which we hope to be consulted on to determine any impact on MOD assets. A map of the corridor which will contain the Offshore cable route is included in the Scoping Report (Array, Offshore and Onshore Export Cable Route Search Areas and Onshore Substation Search Area Drawing) we request that we are consulted once the cable route and Onshore landfall location is finalised.

I trust this is clear however should you have any questions please do not hesitate to contact me.

Yours sincerely

[Redacted]

Teena Oulaghan  
Safeguarding Manager



**Lees E (Emma)**

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**From:** Alistair Hilton <alistair.hilton@dundeecity.gov.uk>  
**Sent:** 30 September 2020 14:44  
**To:** MS Marine Renewables  
**Subject:** Re: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Thank you for your invitation to Dundee City Council to comment on the Scoping Report associated with the proposed development of the Berwick Bank Offshore Windfarm. We have the following comments on the scoping report.

The framework for environmental assessment of the revised proposals laid out in the report appears satisfactory. Our only comments relate to the potential impact of the development on seascape, landscape, visual resources and cultural heritage.

Our local authority area is beyond the 50km zone of theoretical visibility however the wireline drawing (Figure 8.27) visualisation does indicate that the turbines could be visible from land in the Tay estuary area. The visualisation indicates that this visibility will be very limited given the distances involved and the height of the turbines. Therefore, we do not expect there to be any significant visual effects from the development of this windfarm. However, we do ask that some consideration is given to the cumulative effect of the windfarm in conjunction with the planned windfarm developments elsewhere in this part of the North Sea.

We do not want to comment on whether visual impact should be scoped in or out of the EIA, but want to ensure that the issue has been fully considered.

Thank you for the opportunity to comment on the scoping report and please get in touch should you have any questions.

**Please also note that all future consultations should be sent to our [planning@dundeecity.gov.uk](mailto:planning@dundeecity.gov.uk) email address.**

Regards,

Alistair Hilton  
Principal Planning Officer  
Planning Team  
City Development Department  
Dundee City Council  
50 North Lindsay Street  
Dundee  
DD1 1LS

E-mail: [alistair.hilton@dundeecity.gov.uk](mailto:alistair.hilton@dundeecity.gov.uk)  
Corporate Web Site: [www.dundeecity.gov.uk](http://www.dundeecity.gov.uk)

**From:** development.management <development.management@dundeecity.gov.uk>

**Sent:** 30 September 2020 10:19

**To:** Alistair Hilton <alistair.hilton@dundeecity.gov.uk>

**Subject:** Fw: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

[Redacted]

Our ref: CONS GOV/Marine Scotland/2020 Berwick Bank offshore

Your ref: None given

Sent via email to [ms.marinerenewables@gov.scot](mailto:ms.marinerenewables@gov.scot)  
Cc [jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot)

Monica Patterson  
EXECUTIVE DIRECTOR  
(SERVICES FOR COMMUNITIES)

John Muir House  
Haddington  
East Lothian  
EH41 3HA  
Tel 01620 827827  
Fax 01620 824295

Dear Sir/Madam,

**REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION AND MARINE  
LICENCES FOR BERWICK BANK OFFSHORE WIND FARM LOCATED 39.2 KILOMETRES EAST OF  
EAST LOTHIAN**

**REGULATION 14 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT)  
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REGULATION 13 AND SCHEDULE 4 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT  
ASSESSMENT) REGULATIONS 2007 (AS AMENDED)**

I refer to your email consulting East Lothian Council on the above. The applicant is seeking a Scoping Opinion for a project consisting of an offshore windfarm and related transmission works both on and offshore.

East Lothian Council has issued a Scoping Opinion for the onshore works in its area. I have attached this to the email responding to this consultation. It contains some information which relevant to the intertidal zone which is covered by both both Marine Scotland and East Lothian Council. This information is therefore relevant for the offshore Environmental Impact Assessment Report (EIAR) also. It also sets out our initial consideration of how the Environmental Impact Assessment (EIA) for the offshore and onshore parts of the project should be linked.

The Council notes that the principles of Pre-Application Consultation in the Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013 do not apply, but that consultation will be carried out in accordance with those regulations. The Council welcomes this, and notes that information on the offshore element of the project will be included in public information events held in respect of the planning application for the onshore works.

The Council has the following comments.

**Description of the works**

The description of the works should include requirements for lighting of the turbine or warning sounds. A description of how decommissioning could potentially be carried out should also be included, recognising that good practice at the end of life of the project is likely to have advanced by the time it occurs. Section 3.6 of the Scoping Report (SR) notes that this will be included.

Section 4.2.2.1 of the SR titled : Proposed export cable corridor, identifies two proposed landfall locations on the East Lothian Coast, Thorntonloch landfall and Skateraw landfall. Skateraw landfall overlaps with Barn ness coast SSSI, which is designated for geological feature and biological features (saltmarsh, sand dune and shingle). Both sites have significant visual amenity.

Section 3.3.9 of the SR describes methods for the installation of the export cables through the intertidal zone at the landfall. The method used will depend on the ground conditions and intertidal constraints. Several methods of installation at landfall are being considered; Trenchless installation, such as; horizontal directional drilling (HDD); Direct pipe or open cut trench. The open cut trench method involves the excavation of a trench on the shore via earth moving equipment. The Council would expect that once all explorations of the proposed sites have been completed that the EIAR will present the full details of the proposed method to lay the onshore export cables, rather than an either or scenario that has been presented in the SR.

In the event that open cut trench is used, there would be potential for significant adverse landscape and visual impacts on the intertidal zone between MLWS and MHWS. In terms of minimising potential adverse landscape and visual impacts, it appears that HDD would result in less surface disturbance than open trench. In addition to concerns about the lack of clarity in relation to the proposed construction method used to bury the cable, our Landscape Officers have raised concerns about the proposed construction method for the cable to pass through the landscape (sand dunes) / habitat above the high tide mark.

The EIAR should set out how and where the trenching equipment will gain access onto the intertidal zone without damaging or disturbing existing soft coastal defences such as sand dune and shingle habitat. Both of which are susceptible to damage and disturbance from heavy tracked machinery.

The method for open trench proposes that the cable is pulled ashore into the trench and that the trench is backfilled and then reinstated. The EIAR should set out mitigation measures to reinstate any disturbed landscape and its associated habitat. It should include the depth and width of the trench, if the cable will run through a conduit, and if so what the size and material of the conduit is. Will concrete or other quick set material be used to fix the conduit/cable in situ? At decommissioning will the export cable installation process be reversed? If so the EIAR should describe how this will be carried out and any mitigation to reinstate disturbed landscape and associated habitats

### **Description of reasonable alternatives**

The EIAR should include any alternatives to the landfalls chosen, and the reason for the choice

### **Baseline**

The SR states on page 17(3) that the “Each of the technical topics within the Offshore EIA Report will contain a ‘Future Baseline’ description [...]”. This is useful however it does not specifically state here that the EIAR will provide a baseline description of the current state of the environment. It adds in (4) on page 18 that it will include descriptions of existing conditions for topic specific receptors, which sounds like the same thing. If not, the current baseline should be included.

### **Factors affected**

The SR notes that it is not intended to include a separate section on human health, as the pathways for an effect would be via airborne noise and air quality. It seems likely that there would be overall positive impacts on air quality, which would benefit human health. If air quality impacts are scoped

out because the windfarm will not have adverse impact, this may mean that something that could be a significant positive effect is not picked up.

There could also be health effects if there are effects on active recreation, though these are likely to be minor.

Climate is also not included in a chapter on its own. This is to be included within the ecosystem assessment for ecological topics. It is possible there could be local climatic effects from the offshore windfarm, including cumulatively with other windfarms in the area, and that this may bring changes to temperature, cloud and precipitation distribution. If so, there could be a range of effects onshore, not just to ecosystems. Offshore wind is a fast growing but still relatively young technology so it may not be possible to reach conclusions with certainty. However, this issue should be included in the EIA.

### **Noise**

Section 6.4.5 notes that helicopters may be used in construction, operation and maintenance, and decommissioning. If helicopters are to be used, the impact of noise from helicopter movements should be considered and noise scoped in. If not, it is agreed noise can be scoped out.

### **Biodiversity**

East Lothian Council values its biodiversity including the birds of the Forth Islands and Firth of Forth Special Protection Areas. The Council notes that NatureScot have been working with the consultant on the ornithological survey strategy and the Council supports their advice on this issue.

The Habitat Regulation Appraisal of the East Lothian Local Development Plan 2018 recommended that the Council carry out a study into the impact of recreational use of the coastal area on the qualifying interest species of the Firth of Forth Special Protection Area. The Council has not yet commissioned this, but intends to do so if resources permit. If the study is carried out in a suitable timescale the Council can make the results available to the applicant.

### **Landscape**

The SR quotes UK guidance (SNH, 2017b, Visual Representation of Windfarms Version 2.2. February 2017 ) on the landscape and visual effects of an offshore wind farm recommends a study area of a 50 km radius for wind turbines 150 m high to blade tip and taller. These turbines at 310m are double this; a study area larger than 50km (even 60km – 65km) does not seem unreasonable. I cannot find where 50km is recommended in this guidance however, this extract from the full version of the guidance, available here: <https://www.nature.scot/sites/default/files/2019-09/Guidance%20-%20Visual%20representation%20of%20wind%20farms%20-%20Feb%202017.pdf> recommends initial ZTV distances:

- 48 The table below recommends the initial ZTV distance for defining the study area based on turbine height. Greater distances may need to be considered for the larger turbines used offshore.

Height of turbines including rotors (m)	Recommended initial ZTV distance from nearest turbine or outer circle of wind farm (km)
up to 50 <sup>1</sup>	15
51-70	20
71-85	25
86-100	30
101-130	35
131-150	40
150+	45

The turbines proposed here are 310m to blade tip; twice the highest height in the SNH guidance. Even though this category is '150m +' a doubling in height is considerably greater than the other steps in height considered. The guidance further notes that greater distances may need to be considered for larger turbines used offshore. A wider study area should therefore be included. The choice of study area should be informed by ZTV information. It appears that in Fig 8.12 of the SR the theoretical visibility of the windfarm has been cut off at the edge of the proposed study area though it could be that this is where the turbines go out of sight across the horizon – it is not entirely clear which it is. If there is theoretical visibility of the turbines further inland, this area should be considered for assessment. A larger area may also mean taking further cultural heritage assets into account, in particular those with a coastal outlook as part of their interest.

### Planning Guidance

The development plan for the area is the East Lothian Local Development Plan 2018 and the South East Scotland Plan 201. In addition to the Reports in Table 8.15 of the Scoping Report East Lothian Council has published Supplementary Planning Guidance on Special Landscape Areas, which includes landscape character assessment. It is available here:

[https://www.eastlothian.gov.uk/info/210547/planning\\_and\\_building\\_standards/12284/natural\\_environment\\_and\\_planning/2](https://www.eastlothian.gov.uk/info/210547/planning_and_building_standards/12284/natural_environment_and_planning/2) . We have also published Supplementary Planning Guidance on the Countryside and Coast, which includes information about the qualities of the coast. This is available here: [https://www.eastlothian.gov.uk/downloads/file/28998/countryside\\_and\\_coast\\_spg](https://www.eastlothian.gov.uk/downloads/file/28998/countryside_and_coast_spg) . This supplementary guidance may contain useful information for the applicant.

If you would like to discuss the contents of this letter further, please contact initially J Squires on 01620 827370, or email [jsquires@eastlothian.gov.uk](mailto:jsquires@eastlothian.gov.uk)

Regards,

[Redacted]

Keith Dingwall  
Planning Service Manager  
Development

## Lees E (Emma)

---

**From:** Martin McGroarty <Martin.McGroarty@fife.gov.uk>  
**Sent:** 07 October 2020 15:44  
**To:** MS Marine Renewables  
**Subject:** 20/02118/CON - Berwick Bank OWF - Scoping Opinion

FAO Jessica Wilson

Having consulted Local Members and colleagues with respect to this matter, I can indicate that the comments Fife Council wishes to make on the Scoping for the Berwick Bank OWF are as follows.

From the Fife perspective, there is unlikely to be any significant visual impact on the built environment and landscape.

With respect to the historic environment and cultural heritage, there is potential for visual impact on the category A listed Bell Rock Lighthouse.

Fife Council's Archaeology team indicate that the applicant's scoping report demonstrates a comprehensive understanding of the range of potential archaeological issues and includes a detailed archaeological mitigation strategy but would suggest that they adopt multibeam scanning of potential seabed cultural heritage anomalies as part of their archaeological mitigation strategy. It is also suggested that any survey results of sites identified as containing cultural material should be made available to the archaeological record.

With respect to the natural environment, the main concern would be the impact, particularly cumulative impact of the development on European designated sites. However, NatureScot specialists would be best placed to advise on this, the proposed scope and EIA methodology.

Finally, one of our Local Members, Cllr MacDiarmid has asked me to clarify whether the Berwick Bank OWF (or any other OWF we've recently been consulted upon) is within English waters?

Kind regards,  
Martin

### **Martin McGroarty**

Lead Professional (Minerals)  
Development Management  
Planning Services  
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**LISTEN** | **CONSIDER** | **RESPOND**

Dear Sir/Madam,

## Lees E (Emma)

---

**From:** Alan Wells <alan@fms.scot>  
**Sent:** 28 October 2020 08:27  
**To:** Wilson J (Jessica)  
**Cc:** Lees E (Emma); Wright H (Hamish)  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Dear Jessica,

Thank you for the opportunity to comment on the scoping report for the Berwick Bank Offshore Wind Farm.

Fisheries Management Scotland is the representative body for the District Salmon Fishery Boards, the River Tweed Commission and the Rivers and Fisheries Trusts in Scotland. We work to promote and ensure the best fisheries management for the protection, preservation, and development of Scotland's wild salmon and freshwater fish, along with their fisheries and the wider environment. District Salmon Fishery Boards have a statutory responsibility to protect and improve salmon and sea trout fisheries in their district, but their remit does not extend to other freshwater species. The statutory remit of the River Tweed Commission is broader and covers salmon and all freshwater fish. Rivers and Fisheries Trusts charitable objectives extend to all fish species and the wider aquatic environment.

The Scottish Marine Energy Research Programme (ScotMER) has a specific diadromous fish specialist receptor group which has developed an [evidence map](#) which summaries and prioritises knowledge gaps in relation to the potential effects of offshore wind and marine renewables on diadromous fish. It is important to note that these evidence gaps are significant, and we are strongly of the view that the industry needs to do more to fill these gaps, both through site-specific licence conditions and through contributing to wider, strategic research.

The process of developing the evidence map builds on the previous review undertaken by Malcolm *et al.* (2010) and identifies additional potential pressures which should be addressed in the Environmental Statement. At the last meeting of the diadromous fish specialist receptor group, it was also agreed that the reviews undertaken by Marine Scotland were not current and needed to be updated to incorporate more recent work. As we understand it, this process is to be undertaken in the coming months, so we would suggest that the developers liaise closely with Marine Scotland Science and Policy as the Environmental Statement is developed.

We have continually stressed the need for information on migratory pathways and habitat usage for migratory fish species. As has been the case with previous developments, no site-specific surveys relating to migratory fish species are proposed, and the developer has stated that it will be assumed that the seven migratory fish species identified in the scoping report are present within the array area and cable corridor during key migration periods. In the absence of such site-specific data, in assessing the risks of the development to migratory fish, we have no alternative but to assume that the *entire* run of each river identified in the scoping document will use the area proposed for development. We note that Marine Scotland Science have previously commented that '*it needs to be categorically established which species are present on the site, and where, before the application is considered for consent*'. We recognise the commitment in the scoping report to assess the timing of fish migration, but we would highlight that, at least for salmon (smolts and returning adults), this will encompass the majority of the year.

Offshore renewable developments have the potential to directly and indirectly impact migratory fish. We would therefore expect developers to assess the potential impacts of deployed devices during the deployment, operation and decommissioning phases. Such potential impacts have been highlighted by Marine Scotland Science and could include:

- Avoidance (including exclusion from particular rivers and subsequent impacts on local populations);
- Disorientation effects that could potentially affect behaviour, susceptibility to predation or by-catch; and
- Impaired ability to locate normal feeding grounds or river of origin; and delayed migration



We therefore recommend that careful consideration should be given to the following activities:

*i. Subsea noise during construction*

A previous review commissioned by SNH (*Literature review on the potential effects of electromagnetic fields and subsea noise from marine renewable energy developments on Atlantic salmon, sea trout and European eel*) states that 'Marine renewable energy devices that require pile driving during construction appear to be the most relevant to consider, in addition to the time scale over which pile driving is carried out, for the species under investigation'.

*ii. Subsea noise during operation*

*iii. Electromagnetic fields (EMFs) arising from cabling*

The SNH-commissioned review (cited above) has shown that EMFs from subsea cables have the potential to interact with European eels and possibly salmonids if their migration or movement routes take them over the cables, particularly in shallow waters (<20m). Marine Scotland Science have undertaken work to investigate electro-magnetic force impacts on salmonids. However, whilst this work did not demonstrate any obvious behaviour response to EMFs, it was not designed to determine whether EMFs arising from cabling could disrupt or delay migration to, or location of, rivers of origin. It is vital that all cables are appropriately shielded to ensure that EMF effects are below any threshold of effect for salmonids.

*iv. EMFs arising from operation of devices*

It is important to ensure that such effects are quantified and assessed in the Environmental Statement.

*v. Disturbance or degradation of the benthic environment (including secondary effects on prey species)*

It is important to ensure that such effects are quantified and assessed in the Environmental Statement.

*vi. Aggregation effects*

Whilst the aggregation of prey items around physical structures might be seen as a positive effect, possible negative effects include the associated aggregation of predators. As identified in the evidence map referenced above, we consider it important that the potential for these structures to become new 'pinch points' for predation of migrating smolts and returning adults is fully considered.

*vii. Other disturbance/avoidance effects*

We seek information as to how the movement of the turbine blades may affect behaviour of migratory fish. This should consider Snell's window and the way in which fish perceive the environment above water. If this phenomenon results in offshore wind farms acting as 'virtual islands' which fish chose to swim around (we understand that a similar effect has been demonstrated for some bird species), the energetic and other costs need to be fully considered.

We note that table 7.7 identifies a number of Special Areas of Conservation. We would highlight that Atlantic salmon are also an Annex II species present as a qualifying feature for the River Teith SAC.

The issues that we highlight above are broadly the same as the issues identified by Malcolm et al in 2010, and we have raised these issues repeatedly. We are disappointed by the lack of progress, either through ScotMER or through the existing regional advisory groups, and we are strongly of the view that this needs to be addressed with some urgency. Salmon catches in Scotland have reached the lowest levels ever recorded. This is accepted by Scottish Government and work to deliver the Programme for Government commitment to develop a wild salmon strategy will begin later this week. For many years, we have been pushing for a strategic and coordinated approach to understanding the potential impacts of renewable energy on migratory fish, and we do not believe that the current approach – on a development-by-development basis – is working.

Finally, we seek assurance from MS-LOT that the following organisations have been contacted for comment on the scoping report. As highlighted above, District Salmon Fishery Boards and the River Tweed Commission have a range

of powers and duties related to the protection and enhancement of migratory fish, and it is important that their opinions are sought.

River Tweed Commission

Forth DSFB

Tay DSFB

Esk DSFB

Dee DSFB

Please do not hesitate to contact me if you require any clarification on the points raised above.

Yours sincerely,

Alan

Dr Alan Wells | CEO

Fisheries Management Scotland

11 Rutland Square, Edinburgh, EH1 2AS

Tel: 0131 221 6567 | 07557 133455

[www.fms.scot](http://www.fms.scot)

[Redacted]

## Lees E (Emma)

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**From:** Alison Baker (FDSFB) <clerk@forthdsfb.org>  
**Sent:** 26 October 2020 08:15  
**To:** Lees E (Emma); Wilson J (Jessica)  
**Cc:** alan@fms.scot  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Dear Emma

Thank you for the information which we have reviewed.

Our comments are as follows:

The Gardner reports show that Forth smolts are genetically distinct from the other east coast salmon populations. There is little information on the direction Forth smolts were swimming, however, but the north sea study area covers the whole coast where salmon smolts from the Forth could feasibly be.

Migratory fish (all species) will all be considered in the EIA, and the area proposed appears to be appropriate. We believe that the Malcolm review has been misinterpreted in the past and we are pleased that the more recent smolt trawling work will be added to the baseline.

We have no comment therefore to make on the defined scoping and look forward to seeing the EIA when available.

Regards

Alison



Alison Baker  
Clerk to the Forth District Salmon Fishery Board  
The Clubhouse, 106 Biggar Road, Edinburgh, EH10 4DY.  
Tel: 07594 332323  
[www.forthdsfb.org](http://www.forthdsfb.org)

[Redacted]

## Lees E (Emma)

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**From:** Pamela Smyth <Pamela.Smyth@forthports.co.uk>  
**Sent:** 15 September 2020 12:35  
**To:** MS Marine Renewables  
**Cc:** Sandra Robson  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Dear Sirs,

We refer to the below correspondence.

With the cumulative effect of the development of Offshore Wind farms in the approaches to the Forth Estuary, Forth ports Limited would recommend the carrying out of a Navigational Risk assessment on passing traffic, with particular regard to vessels carrying cargoes such as Oil and Gas and any effect on established safe shipping routes. Consideration should also be given on how traffic in the vicinity of the wind farms is managed and whether there is a need for an offshore/coastal Vessel Traffic Services (VTS) to be established.

Yours faithfully

**Pamela Smyth** | Group General Counsel and Company Secretary | Forth Ports Limited

Head Office | 1 Prince of Wales Dock | Edinburgh | EH6 7DX

T: 0131 555 8700 | DD: 0131 555 8731 | M: 07760991219 | <https://forthports.co.uk>

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By email: [MS.MarineRenewables@gov.scot](mailto:MS.MarineRenewables@gov.scot)

Jessica Wilson  
Marine Scotland (Marine Renewables)  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

Longmore House  
Salisbury Place  
Edinburgh  
EH9 1SH

Enquiry Line: 0131-668-8716  
[HMConsultations@hes.scot](mailto:HMConsultations@hes.scot)

Our case ID: 300044396

07 October 2020

Dear Ms Wilson

[The Marine Works \(Environmental Impact Assessment\) \(Scotland\) Regulations 2017](#)  
[The Electricity Works \(Environmental Impact Assessment\) \(Scotland\) Regulations 2017](#)  
[Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion](#)  
[Scoping Report](#)

Thank you for your consultation which we received on 07 September 2020 about the above scoping report. We have reviewed the details in terms of our historic environment interests. This covers world heritage sites, scheduled monuments and their settings, category A-listed buildings and their settings, inventory gardens and designed landscapes, inventory battlefields and historic marine protected areas (HMPAs).

The relevant local authority archaeological and cultural heritage advisors will also be able to offer advice on the scope of the cultural heritage assessment. This may include heritage assets not covered by our interests, such as unscheduled archaeology, and category B- and C-listed buildings.

### **Proposed Development**

We understand that the proposed development comprises an offshore wind farm of up to up to 242 wind turbines, with maximum height to tip of up to 310m located in the outer Firth of Forth and Firth of Tay, 39.2 km east of the East Lothian coastline. The current consultation relates only to the offshore elements of the proposals, excluding onshore transmission and substation.

### **Scope of assessment**

We are content to agree with the scope of assessment set out in the report. As discussed and provisionally agreed in our conference call of 16 July with the developer and their consultants, we are content for impacts on marine archaeology and the setting of onshore cultural heritage assets to be scoped out of further assessment for our interests.

We welcome the level of information that has been provided on mitigation and the wireline figures showing theoretical visibility from a number of heritage assets. The



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consultation taken at an early stage in the process has allowed us to agree a proportionate approach to the EIA, and we welcome this.

While we do not have any further advice on the contents of the EIA Report, we will be happy to continue to provide advice on further details on methodologies works relating to marine archaeology. We will also separately provide advice and input to the onshore elements of the proposed development.

### **Further information**

Guidance about national policy can be found in our 'Managing Change in the Historic Environment' series available online at [www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/managing-change-in-the-historic-environment-guidance-notes](http://www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/managing-change-in-the-historic-environment-guidance-notes). Technical advice is available on our Technical Conservation website at <http://conservation.historic-scotland.gov.uk/>.

We hope this is helpful. Please contact us if you have any questions about this response. The officer managing this case is Ruth Cameron, who can be contacted by phone on 0131 668 8657 or by email on [Ruth.Cameron@hes.scot](mailto:Ruth.Cameron@hes.scot).

Yours sincerely

**Historic Environment Scotland**

## Lees E (Emma)

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**From:** JRC Windfarm Coordinations <windfarms@jrc.co.uk>  
**Sent:** 27 October 2020 14:15  
**To:** Lees E (Emma)  
**Subject:** FW: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020 [WF921644]

Dear Emma,

A Windfarms Team member has replied to your co-ordination request, reference **WF921644** with the following response:

*Dear Sir/Madam,*

**Site Name:**

*Berwick Bank (Offshore)*

**Turbine at NGR:**

593232 623899

**Hub Height:** 90m **Rotor Radius:** 50m *(These sizes are used if not specified)*

*This proposal **\*cleared\*** with respect to radio link infrastructure operated by:*

***The local electricity utility***

*JRC analyses proposals for wind farms on behalf of the UK Fuel & Power Industry. This is to assess their potential to interfere with radio systems operated by utility companies in support of their regulatory operational requirements.*

*In the case of this proposed wind energy development, JRC does not foresee any potential problems based on known interference scenarios and the data you have provided. However, if any details of the wind farm change, particularly the disposition or scale of any turbine(s), it will be necessary to re-evaluate the proposal. Please note that due to the large number of adjacent radio links in this vicinity, which have been taken into account, clearance is given specifically for a location within the declared grid reference (quoted above).*

*In making this judgement, JRC has used its best endeavours with the available data, although we recognise that there may be effects which are as yet unknown or inadequately predicted. JRC cannot therefore be held liable if subsequently problems arise that we have not predicted.*

*It should be noted that this clearance pertains only to the date of its issue. As the use of the spectrum is dynamic, the use of the band is changing on an ongoing basis and consequently, you are advised to seek re-coordination prior to submitting a planning application, as this will negate the possibility of an objection being raised at that time as a consequence of any links assigned between your enquiry and the finalisation of your project.*

*JRC offers a range of radio planning and analysis services. If you require any assistance, please contact us*

*by phone or email.*

*Regards*

*Wind Farm Team*

*Friars House  
Manor House Drive  
Coventry CV1 2TE  
United Kingdom*

*Office: 02476 932 185*

*JRC Ltd. is a Joint Venture between the Energy Networks Association (on behalf of the UK Energy Industries) and National Grid.*

*Registered in England & Wales: 2990041*

*<http://www.jrc.co.uk/about-us>*

*JRC is working towards GDPR compliance. We maintain your personal contact details in accordance with GDPR requirements for the purpose of "Legitimate Interest" for communication with you. However you have the right to be removed from our contact database. If you would like to be removed, please contact [anita.lad@jrc.co.uk](mailto:anita.lad@jrc.co.uk).*

We hope this response has sufficiently answered your query.

If not, please **do not send another email** as you will go back to the end of the mail queue, which is not what you or we need. Instead, **reply to this email by clicking on the link below or login to your account** for access to your co-ordination requests and responses.

<https://breeze.jrc.co.uk/tickets/view.php?auth=olxheeqaaoeaaahyJEKEPKKiy7KQ%3D%3D>

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Neart na Gaoithe Offshore Wind Limited  
Atria 1, 6<sup>th</sup> floor  
144 Morrison Street  
Edinburgh  
EH38EX  
Scotland, United Kingdom

Marine Scotland Licensing and Operations Team  
By email only: [ms.renewables@gov.scot](mailto:ms.renewables@gov.scot)

Date 07/10/20

Document Reference: NNG-NNG-ECF-LET-0044

Dear Sirs,

Thank you for the opportunity to comment on the Berwick Bank Wind Farm Offshore Scoping Report. The below comments have been made on behalf of Neart na Gaoithe Offshore Wind Limited (NnGOWL).

SSE Renewables have correctly identified construction, operation and decommissioning phase impacts to NnGOWL assets in Table 8.19. Due to the close proximity, and overlap in some cases, of the Berwick Bank Wind Farm to some of our assets, we would encourage SSE Renewables to engage with NnGOWL as early as possible.

We note the use of NnG Offshore Wind Farm Environmental Statement as a key desktop report to inform the Berwick Bank Environmental Impact Assessment. Please do not hesitate to consult with NnGOWL if you have any queries.

NnGOWL would be interested to receive information on any further consultation for the Berwick Bank Wind Farm.

*Yours sincerely*

[Redacted]

Claire Gilchrist  
Offshore Consents Manager  
Neart na Gaoithe Wind Limited

## **Berwick Bank WF Offshore Scoping Report**

### **Marine Analytical Unit Response**

The Berwick Bank Scoping report includes descriptions of a range of potential impacts. This response focuses only on the assessment of social and economic impacts.

Marine Scotland is producing guidance on how to carry out Socio-Economic Impact Assessments for offshore renewable developments. The guidance is still in draft form and so cannot be shared, but the recommendations included in this response align with the broad contents of the guidance document.

Overall, the assessment of potential social impacts is quite weak, and presented in a way that is counterintuitive and confusing. It is often unclear how the data is used in the report, and how it relates to the impacts that are scoped in and out. For potential economic impacts, it is recommended that the scope is widened to include other economic considerations such as displacement, substitution and additionality. In the following paragraphs specific issues are described before making the recommendation that a full Socio-Economic Impact Assessment be scoped into the EIA, and describing what this should include.

### **Separation of offshore and onshore components**

The scoping report only covers the offshore components of the proposed development, and the authors state that the onshore components of the development will be discussed separately in another scoping report. That said, the report does describe some onshore impacts. This is quite confusing, and dividing impacts up in this way increases the chance that some impacts may fall through the cracks.

Onshore communities and industries may be affected by offshore activities, but these are not considered in any detail in this report. It is not clear if these potential impacts will be addressed more comprehensively in the onshore report. We advise that socio-economic impacts from offshore and onshore activities and structures be considered together so that links and interactions can be identified.

### **Description of EIA methods**

Chapter 5, which outlines the methods to be used in the EIA but does not go into any detail at all about the methods to be used for assessing socio-economic impacts. Chapter 8, which describes potential impacts on the Offshore Human and Socio-economic Environment does

not contain much more detail. We would expect to see descriptions of methods, data collection, and the overall approach.

The applicants also state that where mitigation of impacts has been identified, these impacts will be scoped out, as it is assumed that the mitigation will be successful. This seems premature, particularly with regard to socio-economic impacts. We recommend that stakeholders and impacted communities are involved in the process of identifying impacts and agreeing upon mitigation measures. It would be better to scope in potential impacts, and to address their mitigation through the Socio-Economic Impact Assessment process, that should form part of the EIA.

### **Stakeholder and community engagement**

Chapter 5 also includes a description of how stakeholder engagement will be carried out. The report only outlines stakeholder engagement during the pre-application phase. This implies little to no engagement beyond this point. We would recommend continuous engagement with stakeholders and local communities. We would also like more detail about how this engagement will be carried out, who will be included, and how the applicants will ensure that all relevant groups are represented.

The applicant also describes using an 'Offshore Scoping Road-map' as a way of engaging with stakeholders, but it is unclear how this will work.

### **Receptor specific concerns**

#### **Fishing**

Fishing vessels are considered in both the 'Commercial Fisheries' section and the 'Navigation' section. The applicants discuss potential impacts on the safety of vessels, but they do not describe how cumulative impacts of other marine developments combined with existing features such as currents and prevailing wind may impact on safe passage. This is something that could be addressed through consultation with local fishers.

In the section on 'Navigation', the report states that AIS data for 14 days in the summer and 14 days in the winter is used to determine the frequency with which vessels transit through the area. Fishing is highly seasonal, most likely varying more than twice in a year. We would recommend looking more closely at seasonal change.

#### **Seascape visuals and cultural heritage**

The section on 'Seascape visuals and cultural heritage' describe in detail the methods and guidance that will be followed in assessing visual impacts. They describe how "consultation with key stakeholders to identify potential visual receptors is a standard approach to seascape, landscape, visual resources and cultural heritage setting assessments" and that this would include organisations such as SNH, Natural England and Northumberland Coast

AONB Partnership. There is no mention, however, of engaging with local communities regarding potential visual receptors, this is something we would advise.

When describing key visual receptors, the report includes a fairly comprehensive list of land-based receptors. While it is acknowledged that a number of marine activities take place in the area, including recreation activities such as canoeing and kayaking, the applicants conclude that these receptors are unlikely to be affected by the development. If beach users are considered to be able to see the development, one would assume that the same is true for marine users, who are likely to be closer to the development.

The report recognises that there are number of scheduled monuments, listed buildings and cultural heritage sites within sight of the development, and that “views out to sea and along the coastline, and views from the sea towards the monuments, contribute to their cultural significance”. It is a surprise to see that ‘Impacts of the proposed development on cultural heritage assets’ have been scoped out. We recommend that these be scoped in and included in the Socio-Economic Impact Assessment so that local communities and relevant stakeholders are included in decisions on this topic.

The report does not include any discussion about how impacts on visual amenity and cultural heritage might impact upon recreation and tourism in the area.

### **Socio-economics and tourism**

The section on ‘Offshore socio-economic and tourism’ considers the potential impacts of construction, operation and maintenance, and decommissioning of the offshore and intertidal components on both onshore and offshore receptors.

The applicants describe their approach to the study area, but the division of offshore and onshore components of the developments makes it difficult to determine whether the approach is appropriate. In the SIA section of the EIA, we recommend an approach which assesses local and regional impacts as described in the report, and that efforts should be made to acknowledge different ‘epicentres of impact’. These might include the offshore site, the operations/construction port, temporary worker accommodation, the visibility of the offshore site, and any areas associated with the supply chain.

The report states that no site-specific data will be collected, as there is enough information contained within existing studies. We recommend collecting baseline social data for this development, and for this to consider a wider range of potential impacts that described in this report. More detail is provided in the next section.

In the section describing the proposed approach for assessing socio-economic impacts within the EIA, the applicants refer to the methods described in Chapter 5. As mentioned earlier, there is little to no reference to socio-economic impacts in this chapter. The section goes on to describe the use of a socio-economic model to assess these impacts. It later

becomes clear that this is an economic model and that social impacts are not considered at all.

The applicants state that no embedded mitigations are considered for socio-economic impacts as most of these are considered to be positive. Without site-specific information and engaging with the community to determine how they feel about the development, we cannot be certain that all impacts will be positive.

The report goes on to describe potential positive impacts relating to employment and training opportunities relating to construction, maintenance and supply chain, as well as potential community funds. There is no detail about how to ensure that these positive impacts are realised, how they will be distributed and what this will actually mean for communities. Some of these impacts also appear to be related to onshore activities, increasing the confusion about what is included in this scoping report.

The impacts that are scoped in for this section relate only to GVA, employment, housing, and tourism and these will only be assessed using a desk-based review. We recommend collecting primary data and engaging with communities and local industries.

### **Recommendation for full Socio-Economic Impact Assessment to be scoped in**

#### **For social impact assessment**

We recommend that a full Socio-Economic Impact Assessment be scoped into the Environmental Impact Assessment. Marine Scotland is producing guidance on how to carry out SIA for offshore wind farms and, as this is not yet complete, in this section we will outline the main principles that should underpin the SIA for this development.

#### Participatory approach

Creating participatory processes and a deliberative space to facilitate community discussions about desired futures, the acceptability of likely negative impacts and proposed benefits, and community input into the SIA process.

- Assess community capacity to engage – capacity building may be necessary
- Appoint Community Liaison Officer(s) for each affected community
- Set up governance structures so that communities feel they can voice opinions and be listened to
- Begin community engagement as soon as possible, brief communities on project with as much detail as possible so that they can prepare

#### Baseline

Gain a good understanding of the communities and stakeholders likely to be affected by the project (i.e. profiling) including their needs and aspirations and any key social issues that may arise as a result of the project.

- Develop social and economic profile of the area including history, culture and context
- Engage with community to learn of any other important features/indicators to include in baseline. There may be useful local datasets
- Analysis may draw on a combination of existing datasets and primary data

## Prediction

Forecasting the social changes that may result from the project and the impacts these are likely to have on different groups of people. A list of potential socio-economic impacts can be seen in Table 1. Many of these impacts can be considered from a social and economic perspective. In the following sections we describe in more detail how this could be done.

- Identify potential/anticipated social impacts
- Identify suitable method for predicting impacts
- Collect necessary evidence to conduct analysis
- Engage with community to check predictions and assign significance to predicted impacts
- Impact prediction should include
  - Assessment of different phases of the project (development, construction, operation & maintenance, decommissioning) and phases within phases (early construction, peak construction)
  - Consideration of transition between phases

*Table 1. Types of socio-economic impact (taken from Glasson 2017<sup>1</sup>)*

1. <b>Direct economic:</b>	<ul style="list-style-type: none"> <li>• employment, including employment cohort and safeguarding of existing employment;</li> <li>• unemployment and underemployment</li> <li>• characteristics of employment (e.g. skill group);</li> <li>• labour supply and training; and</li> <li>• other labour market effects, including wage levels and commuting patterns</li> </ul>
2. <b>Indirect/induced/wider economic/expenditure:</b>	<ul style="list-style-type: none"> <li>• employees' retail expenditure (induced);</li> <li>• linked supply chain to main development (indirect);</li> <li>• labour market pressures;</li> <li>• wider multiplier effects;</li> <li>• effects on existing commercial activities (eg tourism; fisheries);</li> <li>• effects on development potential of area; and</li> <li>• GVA and GNP.</li> </ul>
3. <b>Demographic:</b>	<ul style="list-style-type: none"> <li>• changes in population size; temporary and permanent;</li> <li>• changes in other population characteristics (e.g. family size, income levels, socio-economic groups); and</li> <li>• settlement patterns</li> </ul>
4. <b>Housing:</b>	<ul style="list-style-type: none"> <li>• various housing tenure types;</li> <li>• public and private;</li> <li>• house prices and rent / accommodation costs;</li> <li>• homelessness and other housing problems; and</li> <li>• personal and property rights, displacement and resettlement</li> </ul>
5. <b>Other local services:</b>	<ul style="list-style-type: none"> <li>• public and private sector;</li> <li>• educational services;</li> <li>• health services; social support;</li> <li>• others (e.g. police, fire, recreation, transport); and</li> <li>• local authority finances</li> </ul>
6. <b>Socio-cultural:</b>	<ul style="list-style-type: none"> <li>• lifestyles/quality of life;</li> <li>• gender issues; family structure;</li> <li>• social problems (e.g. crime, ill-health, deprivation);</li> <li>• human rights;</li> <li>• community stress and conflict; integration, cohesion and alienation; and</li> <li>• community character or image</li> </ul>
7. <b>Distributional effects:</b>	<ul style="list-style-type: none"> <li>• effects on specific groups in society (eg: by virtue of gender, age, religion, language, ethnicity and location); environmental justice</li> </ul>

Mitigation and enhancement

Identifying ways of mitigating potential negative impacts and maximising positive opportunities.

- Engage with community to develop strategy for enhancing benefits and mitigating against impacts
- This may involve Community Benefit Agreement (CBA)
- Care should be taken to ensure that CBA and any associated funds should have accessible application procedures so that allocated funds can be used

Monitoring

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<sup>1</sup> Glasson J (2017a) "Socio-economic impacts 2: Overview and economic impacts" in Therivel R and Wood G (eds.), *Methods of Environmental and Social Impact Assessment*, Abingdon: Routledge

Developing a monitoring plan to track implementation, variations from mitigation actions, and unanticipated social changes, especially negative impacts.

- Develop management plan and monitoring strategy
- Engage with community – especially with regard to both
  - Community may have concerns that they particularly want to be monitored
  - There may be local considerations regarding timing of monitoring and methods used e.g. access to internet for particular groups
- Link management plan to governance structures so that community can continue to engage with the project

## **For economic impact assessment**

### **Review of the Scoping Report**

Following impacts were proposed to be scoped into the proposed development for socio-economics and tourism impact assessment by the developers:

#### **Project phase: Construction**

- Impact on employment in construction in the supply chain
- Impact on the amount of GVA supported by construction activity
- Impact on access to construction-related employment amongst local residents
- Impact on the demand for housing, accommodation and local services
- Impact on tourism and recreation activity and associated economic value

#### **Project phase: Operation and Maintenance**

- Impact on employment in operation and maintenance and in the supply chain
- Impact on the amount of GVA (£m) supported by operation and maintenance activity
- Impact on access to operation and maintenance related employment amongst local residents
- Impact on the demand for housing, accommodation and local services
- Impact on local tourism and recreational resources

#### **Project phase: Decommissioning**

- Impact on decommissioning related employment
- Impact on the amount of GVA (£m) supported during decommissioning activity
- Impact on access to decommissioning related employment amongst local residents
- Impact on demand for housing, accommodation and local services
- Impact on local tourism and recreational resources

#### **Projects and activities to be considered for potential cumulative effects**

- other offshore wind farms and associated onshore cabling and infrastructure;
- onshore energy generation projects;
- road and rail projects;
- major residential, commercial and leisure projects; and
- minerals extraction and landfill projects.

#### **Potential Transboundary Impacts to be considered for**

- foreign commercial fishing; and
- foreign shipping and navigation



**Remarks from Marine Analytical Unit and response to the questions posed by developers in the scoping report.**

Q: Are there any additional baseline datasets to those included in section 8.7.3 that should be reviewed to characterise the socio-economics baseline?

In addition to potential impacts mentioned above, the economic analysis should also cover areas such as:

- Population
- Economic activity
- Productivity and GVA
- Earnings
- Skills and education
- House prices

The detailed analysis should be followed by conclusions on the current supply chain and supply chain development trends in Scotland and the impact area. Impact areas assessed should include local, national (Scottish) and UK wide impact areas. While national and UK wide are defined boundaries, defining the immediate area will need to be clearly communicated in the impact assessment report. The [Additionality Guide](#) by Homes and Communities Agency (HCA) sets out the common geographical levels used in economic and social impact assessments.

Further economic considerations that should be included in the socio-economic impact assessment report are:

- **Displacement**  
Displacement effects arise when some of the project's benefits produce dis-benefits elsewhere in the local economy, i.e. jobs being moved from one location to another within the UK. Developers are expected to assess the impacts on affected livelihoods in the local project area, such as impacts on fisheries and tourism business as a result of the development.
- **Substitution**  
Substitution impact can be viewed as within firm displacement and refers to the impact of businesses substituting one form of activity for a similar one. For instance, recruiting a jobless person to replace a current employee in order to take advantage of public sector assistance. These affects need to be considered before presenting the total economic impacts.
- **Additionality**  
Defined as additional benefits of a development that would not have occurred had the development not taken place. The benefits are often expressed in terms of the increase in GVA and employment generated by the development. Primary factors to be considered in the calculation of Additionality include:  
Gross impacts, Leakages, Displacement, Deadweight loss, and Substitution. Please refer to HCA *Additionality guide* for detailed information.
- **Optimism bias, Risk Bias and Sensitivity Analysis**

Refer to Green Book for detailed definitions. (Green Book [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685903/The\\_Green\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf))

- Where applicable any impacts related to the use of natural resources (depletion risks, resource use considerations, etc.) should be considered.

The EIA should be clear on the assumptions and methodologies applied at each stage of the assessment. The developers should be explicit in stating the following:

- Development's impact area
- Low, medium and high scenario definitions
- Assumed appraisal period and price base
- Applied SIC codes, GVA to turnover and employment to GVA multipliers
- Assumed Additionality factors
- Applied economic multipliers (Type I and Type II)

Q: Are there any additional baseline datasets to those included in section 8.7.3 that should be reviewed to characterise the socio-economics baseline?

Further to the data sources mentioned in the scoping report, following datasets/reports can be considered to inform the socio-economic impact assessment:

1. Scotland's Marine Economic Statistics 2018 - <https://www.gov.scot/publications/scotlands-marine-economic-statistics-2018/>
2. Scottish Marine Recreation & Tourism Survey 2015- <http://marine.gov.scot/information/scottish-marine-recreation-tourism-survey-2015>
3. Annual Business Survey, ONS; <http://www.ons.gov.uk/ons/rel/abs/annual-business-survey/index.html>
4. *Additionality Guide Fourth Edition 2013*, HCA; [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/378177/additionality\\_guide\\_2014\\_full.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf)

Jessica Wilson  
Casework Manager  
Marine Scotland Licensing Operations Team

07 October 2020

Dear Jessica,

**REGULATION 14 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)**

**REGULATION 12 OF THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)**

**REGULATION 13 AND SCHEDULE 4 OF THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2007 (AS AMENDED)**

**Request for Scoping Opinion for Berwick Bank Offshore Windfarm**

Thank you for the opportunity to comment on this consultation. The MCA has reviewed the scoping report provided by Berwick Bank Wind Limited for the Berwick Bank Offshore Wind Farm under the above Environmental Impact Assessment Regulations, as detailed in your email of 7 September 2020, and would comment as follows:

The Environmental Statement should supply detail on the possible impact on navigational issues for both commercial and recreational craft, specifically:

- Collision Risk
- Navigational Safety
- Visual intrusion and noise
- Risk Management and Emergency response
- Marking and lighting of site and information to mariners
- Effect on small craft navigational and communication equipment
- The risk to drifting recreational craft in adverse weather or tidal conditions
- The likely squeeze of small craft into the routes of larger commercial vessels.

The development area carries a significant amount of through traffic with a number of shipping routes in close proximity. Attention needs to be paid to routing, particularly in heavy weather ensuring shipping can continue to make safe passage without large-scale deviations. The likely cumulative and in combination effects on shipping routes should also be considered, taking into account the proximity to other windfarm developments, and the impact on navigable sea room.

We note that relatively high density of traffic was observed in the western section of the shipping and navigation study area, with routeing occurring primarily within, and inshore, of the array area.

We understand that there was an alteration to the proposed development array boundary, so the buffer is only 7 nm to the west. However, the project has stated that this is considered adequate at the Scoping stage and will be increased to 10 nm within the Navigational Risk Assessment (NRA).

A Navigational Risk Assessment will need to be submitted in accordance with MGN 543 (and MGN 372) and the MCA Methodology for Assessing the Marine Navigation Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI). This NRA should be accompanied by a detailed MGN 543 Checklist which can be found at <https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping>

We note that a vessel traffic survey will be undertaken to the standard of MGN 543. The survey will consist of a minimum of 28 days of seasonal data (two x 14-day surveys) collected from a vessel-based survey using AIS, radar and visual observations to capture all vessels navigating in the study area. We welcome discussions to agree survey plans.

The proximity to other offshore windfarms will need to be fully considered, with an appropriate assessment of the distances between OREI boundaries and shipping routes as per MGN 543. The cumulative impacts of other windfarms in close proximity will likely change routing including Inch Cape, NnG and SeaGreen, all of which are consented but either awaiting CfD or pre-construction. There is also a gap between Berwick Bank and Marr Bank which is not consistent all the way through, therefore will require further discussion. The MCA would welcome early discussion on the lighting and marking arrangements.

We note the Scoping Reports states that no impacts related to shipping and navigation will be scoped out of the NRA process, which we welcome, and it confirmed it will follow both the MCA's MGN 543 and the IMO FSA methodology (IMO, 2018).

The turbine layout design will require MCA approval prior to construction to minimise the risks to surface vessels, including rescue boats, and Search and Rescue aircraft operating within the site. Any additional navigation safety and/or Search and Rescue requirements, as per MGN 543 Annex 5, will be agreed at the approval stage. We note the polygon (redline boundary) comes to a point in the southern section, and we would like to ensure the layout considerations include avoiding any dangerously protruding turbines or any isolated structures.

Attention should be paid to cabling routes and where appropriate burial depth for which a Burial Protection Index study should be completed and subject to the traffic volumes, an anchor penetration study may be necessary. If cable protection measures are required e.g. rock bags or concrete mattresses, the MCA would be willing to accept a 5% reduction in surrounding depths referenced to Chart Datum. This will be particularly relevant where depths are decreasing towards shore and potential impacts on navigable water increase, such as at the HDD location.

Particular consideration will need to be given to the implications of the site size and location on SAR resources and Emergency Response Co-operation Plans (ERCoP). Attention should be paid to the level of radar surveillance, AIS and shore-based VHF radio coverage and give due consideration for appropriate mitigation such as radar, AIS receivers and in-field, Marine Band VHF radio communications aerial(s) (VHF voice with Digital Selective Calling (DSC)) that can cover the entire wind farm sites and their surrounding areas. A SAR checklist will also need to be completed in consultation with MCA, as per MGN 543 Annex 5 SAR requirements.

MGN 543 Annex 2 requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager. Failure to report the survey or conduct it to Order 1a might invalidate the Navigational Risk Assessment if it was deemed not fit for purpose.

On the understanding that the Shipping and Navigation aspects are undertaken in accordance with MGN 543 and its annexes, along with a completed MGN checklist, MCA are likely to be content with the approach.

In response to 8.2.9 'Scoping questions to consultee' the MCA has no concerns to raise on the understanding the above is addressed, and the project is progressed in accordance with MGN 543 and its annexes. The project may also wish to consult with the local RNLI coxswains in the area.

Yours sincerely,

[Redacted]

Helen Croxson  
OREI Advisor

## Lees E (Emma)

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**From:** Kevin Martin <kevin@onedigitalnation.co.uk>  
**Sent:** 09 October 2020 17:51  
**To:** Lees E (Emma)  
**Subject:** Re: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020 - Nil Response

Hi Emma

thanks for your mail. The report makes interesting reading for sure, but I'm not sure why I'm being consulted to be honest. It won't affect me in any way and happy for a nil response to be recorded against my name.

Kind regards

Kevin

[Redacted]

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**5 February 2021**

## **BERWICK BANK OFFSHORE WIND FARM – SCOTTISH FISHERMEN'S FEDERATION CONSULTATION RESPONSE**

Marine Scotland Science has reviewed the relevant documentation and has provided the following comments.

### **Benthic Ecology and Commercial Fisheries**

#### Impacts from release of sediment bound contaminants

The developer has advised that they intend to scope out impacts from release of sediment bound contaminants. However, in table 7.5 (and table A 1 in Annex A of the Scoping Report), they also mention that site specific sediment chemistry sampling will be undertaken across the array area and proposed export cable corridor, to provide evidence in support of the proposal to scope out this impact.

Given the sediment chemistry sampling being undertaken by the developer, evidence should be presented in the Berwick Bank EIA report to demonstrate the potential for impacts of the release of sediment bound contaminants. MSS will then review this evidence in the EIA report, and will provide further comment to MS-LOT on the findings.

In the absence of empirical evidence on sediment bound contaminants at the scoping stage, MSS recommend that, in agreement with SFF, impacts from release of sediment bound contaminants should be scoped in.

MSS would like to reiterate that, if drilling is used in the installation of turbine foundations at Berwick Bank, that an assessment should be made of the impact of any drilling fluids used and drill cuttings produced, due to risk to benthic ecological features of introduction of chemicals into the marine environment.

#### Impacts from accidental pollution during construction, operation and maintenance and decommissioning

MSS are content for impacts from accidental pollution during construction, operation and maintenance and decommissioning to be scoped out.

MSS are content with the justification given by the developer, and that any risks of such events are managed by measures set out in standard post consent plans (e.g. Environmental Management Plans, including Marine Pollution Contingency Plans).

Hopefully these comments are helpful to you. If you wish to discuss any matters further then please contact the REEA Advice inbox at [MSS\\_Advice@gov.scot](mailto:MSS_Advice@gov.scot)

Yours sincerely,

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**5 February 2021**

## **BERWICK BANK OFFSHORE WIND FARM - SCOPING REPORT - FURTHER MS-LOT ADVICE REQUEST**

Marine Scotland Science have reviewed the request, and the Fisheries Management Scotland comments and have provided the following comments.

### **Diadromous Fish**

The view of MSS has been requested in relation to diadromous fish as to whether three potential impact pathways put forward by Fisheries Management Scotland (FMS) should be scoped in.

#### FMS Request iv. Electromagnetic fields (EMF) arising from operation of devices

In the case of offshore wind farms, cables are the only significant source of underwater EMFs, therefore MSS do not agree that EMF arising from operational devices, other than cables, need be scoped in.

The developer has already proposed in the scoping report that '*Electromagnetic fields (EMF) from subsea electrical cabling – operation and maintenance phase*' should be scoped in, which we agreed with, but we also requested that the remit should be expanded to include consideration of any potential for EMF to impact on migrating diadromous fish navigating using geomagnetic cues, and FMS have included a similar comment.

#### FMS Request vi. Aggregation effects

MSS agree with the need to consider the potential for such effects and indeed we advised in our earlier comments on the scoping report that the following potential impact pathway should be scoped in, with respect of diadromous fish:

- *Potential reef effects of the structures, including the direct effect on numbers or behaviour of migrating or foraging diadromous fish or on numbers and behaviour of bird, mammal and fish predators, which may subsequently impact on migrating or foraging diadromous fish. This also has wider cross-receptor relevance.*

There is a wider strategic question around this potential mechanism for impact, linked to our knowledge that marine predators can target wind turbine structures to exploit foraging opportunities (e.g. Russell *et al.* 2014), and uncertainty surrounding aggregation behaviour of diadromous fish in the marine environment.

#### FMS Request vii. Disturbance/avoidance effects from the movement of the turbine blades.

Fish may be able to see structures above the sea surface, although perception of these objects will be distorted and degraded by waves and ripples (Lynch 2015). Anti-predator responses to models of avian predators visible through the water surface in calm conditions have also been demonstrated

(Gallacher *et al.* 2016). However, this observation does not show whether large blades rotating above the water surface could disturb, exclude or delay migrating fish. The fast swimming speeds shown by actively migrating salmon smolts suggests that they are not easily disturbed, delayed or diverted.

A district salmon fishery board has also recently raised the question of whether land based wind turbines proposed for a site next to a Scottish salmon SAC river could impact on fish populations through this mechanism. There has also been a review of light and shadow effects from wind turbines in Scotland (Anon., 2017), however this discussed only people as potential receptors and only land based situations.

MSS advise MS-LOT that there is insufficient information for visual impacts of turbine blades to be scoped in as a separate topic, and the mechanisms and implications of impact as discussed by FMS are speculative and unclear.

## References

Anon. (2017) Review of Light and Shadow Effects from Wind Turbines in Scotland. Stage 1 and 2 Final Report for ClimateXChange. LUC in association with Page Power. 98pp.  
[https://www.climateexchange.org.uk/media/2075/light\\_and\\_shadow\\_effects\\_from\\_wind\\_turbines\\_in\\_scotland\\_stages\\_1\\_and\\_2.pdf](https://www.climateexchange.org.uk/media/2075/light_and_shadow_effects_from_wind_turbines_in_scotland_stages_1_and_2.pdf)

Lynch, DK (2015) Snell's window in wavy water. Applied Optics 54(4), B8-B11. <https://www.osapublishing.org/ao/fulltext.cfm?uri=ao-54-4-B8&id=301426>

Gallacher, AJ, Lawrence MJ, Jain-Schlaepfer, SMR, Wilson, ADM and Cooke SJ 2016. Avian predators transmit fear along the air–water interface influencing prey and their parental care. Canadian Journal of Zoology 94, 863–870 <https://cdnsciencepub.com/doi/full/10.1139/cjz-2016-0164>

Russell, D.J., Brasseur, S.M., Thompson, D., Hastie, G.D., Janik, V.M., Aarts, G., McClintock, B.T., Matthiopoulos, J., Moss, S.E. and McConnell, B., 2014. Marine mammals trace anthropogenic structures at sea. Current Biology, 24(14), pp.R638-R639.

Hopefully these comments are helpful to you. If you wish to discuss any matters further then please contact the REEA Advice inbox at [MSS\\_Advice@gov.scot](mailto:MSS_Advice@gov.scot)

Yours sincerely,

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**10 December 2020**

## **BERWICK BANK OFFSHORE WIND FARM - SFF CONSULTATION RESPONSE**

For the sake of clarity, Marine Scotland Science (MSS) comments have been appended to the bullet-point responses (in black) from the Scottish Fishermen's Federation.

MSS have colour coded the responses as per the following receptor specialisms:

**Fish and Fisheries**

**Benthic Ecology**

**Physical processes**

### **Chapter 3**

- P29, 3.3.3 bullet 3. 2280 cubic metres of scour protection must be scoped in.

**MSS agree that this should be scoped in.**

**MSS agree that this should be scoped in.**

**MSS agree that investigating the impact of the scour protection on physical processes, i.e. changes in sediment suspension and transport around the windfarm, should be scoped in.**

- P31, 3.3.5, para 2. Floating foundations are seen as closed to fishing so must be scoped in. Same point at page 37. Para 3 does not seem to resonate with decommissioning being the return to pre-development state? Should be scoped in.

**MSS agree, and advise that fisheries displacement should be considered if floating wind technology is used and yes, further information about the decommissioning programme will need to be provided in due course.**

### **Chapter 6**

- Page 79
  - 1. Datasets don't show any input from Marine Scotland Science reports?

**MSS advise that the following additional datasets may be of use:**

- Berx, B, Hughes, S. 2009. Climatology of Surface and Near-bed Temperature and Salinity on the North-West European Continental Shelf for 1971–2000 dataset. DOI: 10.7489/1900-1
- De Dominicis, M., O'Hara Murray, R., Wolf, J. Gallego, A. (2018) The Scottish Shelf Model 1990 – 2014 climatology – reduced precision output from version 2.01. doi: 10.7489/12122-1

- De Dominicis, M., O'Hara Murray, R. and Wolf, J. 2019. Physical variables from the Scottish Shelf Model 1990-2014 climatology – 4 monthly averages on a shelf wide regular grid. doi: 10.7489/2011-1
2. Due to the lack of verified science, we would expect an assessment of real Suspended Particulate Matter (SPM), to confirm or otherwise the desktop study. There are opportunities throughout the scoping to engage in real world science in tune with MS Science and ScotMER. Furthermore, given the recent controversial deaths of many sea mammals, there is a need to monitor any seismic activity. Airborne noise and thrumming should be scoped in too, in order to prove the numerical modelling is good. (ref P89)

MSS agree, and recommend that SPM model/desktop validation is scoped in. MSS fully support the engagement in science activities (sharing data etc. and opportunistic collaboration with scientists attempting to better understand impacts). MSS Oceanography group are not able to comment about need to monitor seismic activity or airborne noise and thrumming monitoring.

3. Regarding the embedded mitigation, it looks like replacing one problem with another, so it's not really mitigation.
4. The SFF would prefer to see more real time science applied. Numeric modelling is not verified or strong enough without it.

MSS agree, and recommend model validation.

- Page 95
  1. No, airborne noise needs to be assessed and monitored.
  2. No, as we point out above, thrumming and noise still need to be assessed to prove they are not dangerous.
  3. No
  4. No, they should be scoped in, tied into expanding the scientific data base for offshore wind.
- Page 104
  - No comments on air quality.

## Chapter 7

- P111, table 7.1. The ecosystem approach to the benthic ecology would be enhanced by the inclusion of commercial fisheries catch & bycatch. Discussion with ScotMER should help define baselines and long-term monitoring for real benefits to stakeholders.
- P123, table 7.4, benthic surveys are essential to back up the numerical modelling of SPM, and should be scoped in to assess the impact on shellfish and spat from smothering

Benthic surveys will be carried out. MSS recommend further consideration of the impact of increased suspended sediment and the potential for it to smother fish eggs and larvae during critical spawning periods.

- P125, Colonisation of hard structures, should be scoped in to assess the extent of the impact of the moving species, do they aggregate or does the population grow.

MSS agree that this should be scoped in.

MSS agree that colonisation of hard structures should be scoped in together with the effect of aggregation of fish surrounding these structures, bearing in mind the scale of the proposed development (i.e. 242 turbines) in a soft sediment environment.

- Page 128
  1. Yes

2. Yes
  3. No, detailed above
  4. No, we believe they should be scoped in.
- P134, whilst the two reports cited on spawning and nursery grounds are useful, both reports are old and would be seen as out of date and needing review, which could form part of the scoping or mitigation. Similarly, we think there should be a *Nephrops* survey to validate the claims of non-existence.

Agree, there is a mis-match between site-specific survey data and Marine Scotland underwater video survey data. Parts of the development area are consistent with suitable habitat for *Nephrops* and therefore MSS advise a review of suitable habitat for *Nephrops* and their spawning grounds.

The applicant cites an ICES (2018) paper in the spawning and nursery section but this is not given in the reference list.

- 7.2.7. The SFF cannot believe that all impacts are localized, given the vast expanse of seabed being disturbed in the area, so would request real surveys to back up the claims, and give clarity to the cumulative impacts

MSS agree that not all impacts are localised, for example, noise impacts from piling and UXO clearance have the potential to cause effects outwith the footprint of the project.

Non-indigenous species are often quick to colonise vacant ecological niches such as a turbine where there is at first minimal competition from other species (Tyrrell & Byers 2007). Wind farm turbines and the associated scour protection create a network of hard structures and may act as stepping stones for spread of such species that were not previously indigenous to the environment (De Mesel 2015; Nall *et al.* 2015).

Page 140

1. Yes, we agree with the areas.
2. Existing desktop data is insufficient to properly describe the baseline. Herring in particular, should take cognisance of ICES advice and not interfere with genuine spawning grounds.

A further review of herring spawning and nursery grounds has been proposed which will help to confirm if herring spawning ground is still in use or has been abandoned.

3. Table 7.9 should not simply rely on modelling, but take the time to survey fully.

Agree, however further reviews of herring spawning and nursery grounds along with an epibenthic beam trawl survey is being proposed.

4. Given that studies onshore are finding negative impacts arising from thrumming that should be scoped in. Colonisation should also be scoped in to extend the available knowledge of the adaptation by animals and the extent thereof. Recent studies have found that EMF can have negative impacts on Lobsters and their fecundity, so should be scoped in.

Agree that colonisation should be scoped in and EMF is already scoped in.

MSS are content with operational underwater noise from wind turbine operations being scoped out of the EIA. However, this is a knowledge gap recognised in the ScotMER evidence maps for marine fish, benthic ecology and diadromous fish, and therefore more information is required to better understand the potential impacts of these stressors. Although limited information is currently available to assess impacts, MSS advise that operational noise may be of increasing relevance when considered cumulatively and when taking into account the scale of future development within the North Sea.

- P192, table 8.2. the embedded mitigation does not adequately compensate for any temporary loss or restricted access, during either construction or operation, so it should be scoped in.

This has been scoped in.

- P194, similarly the embedded mitigation does not address displacement, so should be scoped in.

This has been scoped in.

- P195. Safety issues must be recognised as the fishing industry's biggest concern about the introduction of infrastructure to the Marine Environment. This is a completely different slant to the Shipping and Navigation assessment, and should be scoped in its own right.

Agree, the risk of snagging fishing gear is not a concern for shipping and navigation and should be reviewed separately rather than as part of the shipping and navigation assessment.

- P197
  1. The SFF would like to see any numerical modelling backed up by up to date science.
  2. No, this does not cover the sale of fish and the supply chain which will be impacted

Agree, sale of fish and the supply chain should be included in assessments.

- P198, as in the previous comment fishing operations are so different from Shipping & Navigation, it should be assessed separately.
- P218, questions, as above this chapter is not the right place to assess fishing operations.
- P272. Supporting baseline datasets has no fishing identified. Therefore, P281 8.6.9 first answer is, no, there's not enough of a baseline.
- P288 onwards, the selection of areas for the socio-economic needs to be done at a level that ensures the fishing industry factors are visible, particularly in areas now used as commuter belt for Edinburgh and Dundee and Glasgow and Aberdeen.

Agree

- P323- 342 – Annex A the SFF can agree with these proposals if some real time verification of the numerical modelling takes place.
- P343. Pollution should be scoped in.
- P344 – 346, the only issue would be that accidental pollution is scoped out.
- P347 – Colonization should be scoped in, data is lacking.
- P354 – 366, agreed.
- P378 on does not give clarity on Cultural Heritage.
- P383 – 385 – should also model of no Scottish expenditure in the supply chain as appropriate, and worst case scenario for employment.

Agree

## References

De Mesel, I., Kerckhof, F., Norro, A., Rumes, B., and Degraer, S. 2015. Succession and seasonal dynamics of the epifauna community on offshore wind farm foundations and their role as stepping stones for non-indigenous species. *Hydrobiologia*, 756(1): 37–50. <https://doi.org/10.1007/s10750-014-2157-1>

Nall, C. R., Guerin, A. J., and Cook, E. J. 2015. Rapid assessment of marine non-native species in northern Scotland and a synthesis of existing Scottish records. *Aquatic Invasions* 10(1): 107-121. <http://dx.doi.org/10.3391/ai.2015.10.1.11>

Tyrrell, M. C. & Byers, J. E. 2007. Do artificial substrates favor nonindigenous fouling species over native species? *Journal of Experimental Marine Biology and Ecology* 342(1): 54-60

Hopefully these comments are helpful to you. If you wish to discuss any matters further then please contact the REEA Advice inbox at [MSS\\_Advice@gov.scot](mailto:MSS_Advice@gov.scot)

Yours sincerely,

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**19<sup>th</sup> November 2020**

## **BERWICK BANK OFFSHORE WIND FARM - CONSULTATION ON REQUEST FOR SCOPING OPINION**

Marine Scotland Science has reviewed the Berwick Bank Wind Farm Scoping Report and have provided the following comments.

### **General comment**

The developer has presented a broad project design envelope, including turbine installation methods from monopiles to unspecified numbers of floating turbines. MSS acknowledge that this level of uncertainty in engineering methodology is understandable at this stage of a large offshore wind project, but assume that the project environmental impact assessment (EIA) will assess the worst-case scenario with respect to each receptor. We anticipate that the scenario thought to be “worst case” will be presented and considered by the developer. In addition, we note that the worst-case scenario can sometimes be unrealistic, and we encourage the developer to refine the project design envelope to be as realistic as is possible, at the point of submission of the environmental impact assessment.

### **Marine Ornithology**

In preparing our ornithology advice, MSS have considered the Offshore Scoping Report prepared by Berwick Bank (hereafter the Developer) and the consultation responses on this from NatureScot (NS, dated 7<sup>th</sup> October 2020) and from the Royal Society for the Protection of Birds (RSPB, dated 21<sup>st</sup> October 2020).

In common with NS and RSPB, MSS highlight the likely connectivity of the proposed development with several SPA sites in an area of high sensitivity for marine birds. Given the potential for significant impacts on these SPA sites from the development either in isolation or in combination with other plans and projects both NS and RSPB have advised that there should be early consideration given to the derogations process (Article 6(4) of the Habitats and Wild Birds Directives) on a without prejudice basis as to the outcome of the assessment process. MSS support this suggestion.

MSS understand that a HRA screening assessment report is currently being prepared, but detail is provided on the general approach to be taken for screening sites (section 2.4 of the Offshore Scoping Report). The long-list for LSE screening will allow for further consideration on specific species and sites. A shortlist of key SPA sites is given (section 2.4.1), which MSS agree are likely to be the sites at greatest risk of adverse effects from the development. However, provision of information on the long-list and the systematic LSE screening will help to consider all potentially impacted sites. The report identifies five key seabird species (gannet, black-legged kittiwake, common guillemot, razorbill, and Atlantic puffin – section 7.4.4). Perhaps as a consequence of the emphasis on these focal species, this report scopes out disturbance or displacement to ‘seabirds’ during construction of the



offshore export cable (Table 7.17). NS advised that these effects should be scoped in, and especially should be considered in relation to the overlap of the offshore export cable corridor with the Outer Firth of Forth and St. Andrew's Bay Complex pSPA. MSS agree with NS and advise that attention is given to deriving a baseline characterisation of the export cable route during surveys and advise that further discussion will be required to agree the survey and subsequent assessment approach.

The Developer proposes to include an ecosystem assessment within each ecological receptor topic (section 5.3.6), with this to include consideration of relationships between seabird abundance and prey availability, physical oceanographic influences and distance from seabird colonies (end of section 7.4.4). How these relationships may change following wind farm construction and in the context of climate change is also to be considered. This general approach is supported by NS which state the need 'to understand potential impacts holistically at a wider ecosystem scale'. With respect to ornithology NS state that there should be more consideration given in the EIAR to indirect impacts on prey availability. MSS support the consideration of wider ecosystem characteristics in the context of marine ornithology and consideration of this in the context of the effects of climate change. MSS would welcome further discussion around how this is implemented in the assessment. MSS note that forthcoming reports from a Marine Scotland commissioned study<sup>1</sup> and a MarPAMM (<https://www.mpa-management.eu/>) commissioned study<sup>2</sup> will provide useful context with respect to how climate change impacts seabird populations in Scotland.

NS advised that the cumulative assessment should focus on the Development in combination with the other Forth & Tay (consented) wind farms, MSS advise that the in-combination assessment should also include the proposed Marr Bank development. Further wind farms located in Scottish and English waters will likely need to be included, particularly for the non-breeding season, MSS thus support the NS suggestion for further discussion and agreement on which additional wind farms should be included. The Developer state that most recent CRM results will be used for the consented Forth and Tay developments considering the 'optimised projects'. MSS note that it may be appropriate to recalculate project specific effects should the as built project (e.g. as specified by the Design Specification and Layout Plan) differ from the development scenario previously assessed and also that for Seagreen Alpha and Bravo (Seagreen 1) it is the original consent that is relevant as that is the project to be built out rather than the later consent for the optimised project.<sup>3</sup>

### Baselines Surveys

The approach taken for baseline characterisation for ornithology is set out in section 7.4.1. This provides a useful overview of the significant amount information available for bird species in this region. We understand that there will be further discussion around this with an interim baseline report to be consulted on imminently. There is a substantial body of ornithology survey data available for the development site (described in section 7.4.1), as such agreement on how these data will be used in assessment is crucial. A soon to be published Marine Scotland commissioned study<sup>4</sup> provides recommendations around how data collected from different platforms (e.g. boat and digital aerial) can be combined to produce a modelled distribution. The outcomes of this study will require further discussion with stakeholders to reach agreement on whether this approach will be appropriate for this development.

### Analytical methods

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<sup>1</sup> Study to examine the impact of climate change on seabird species off the east coast of Scotland and potential implications for environmental assessments (ITQ-0241). Publication expected in December 2020/ January 2021.

<sup>2</sup> MarPAMM - Lot 5: Production of Climate Change Model for Key Seabird Species in the INTERREG VA Region. Publication of project outputs expected in Q1 2021.

<sup>3</sup> Seagreen Alpha and Seagreen Bravo Offshore Wind Farm Development Specification and Layout Plan. August 2020. <http://marine.gov.scot/data/offshore-wind-farm-development-specification-and-layout-plan>

<sup>4</sup> Study to develop best practice recommendations when combining seabird survey data collected from different platforms (ITQ-0247). Publication imminent.

Echoing similar comments from NS and RSPB, MSS consider the level of detail contained in the scoping report to be insufficient to provide detailed advice on all aspects of the ornithology assessment, thus there will need to be further discussion to reach agreement on certain aspects of the assessment. However, this need for further discussion towards agreement is anticipated by the Developer, who propose an 'Offshore Scoping Road Map' approach (Annex A to Scoping Report). We do provide some specific comments here for awareness of both emerging and existing guidance and methodologies, though further discussion will be required to reach agreement on appropriate approaches and methods to use in the assessment:

**Displacement and barrier effects:** To assess displacement effects the developer proposes to use the SNCB Matrix Approach (SNCBs 2017)<sup>5</sup> with the SeabORD tool (Searle et al. 2018)<sup>6</sup> potentially also to be used. NS advise that the Matrix Approach be used for the three auk species (i.e. guillemot, razorbill, and puffin) for both breeding and non-breeding seasons. However, NS also support use of the SeabORD tool for the breeding season for those species with tracking data. RSPB support use of the SeabORD tool along with the Matrix Approach where SeabORD is not applicable. MSS advise that the SeabORD tool should be used for all three auk species during the breeding season, assuming there are sufficient data available to parameterise the model. Whilst we consider that assessment should be based on the seabORD outputs where it can be applied, for comparison, the Matrix Approach should be used for all displacement susceptible species and for relevant seasons to enable direct comparison across species/seasons and provide context for the calculated displacement mortality rates emerging from SeabORD. MSS are in agreement with NS and RSPB that further discussion will be needed on the displacement and mortality rates to use for displacement assessment for each species and season considered. We note that discussion will also be needed on the parametrisation of the SeabORD model.

For the non-breeding season, NS advise that for the auk species the BDMPS Report (Furness, 2015)<sup>7</sup> population scales be applied except for common guillemot where the assessment area and population should be derived using breeding season mean maximum foraging range (from Woodward et al. 2019)<sup>8</sup>. MSS advise that emerging evidence (e.g. Auk tagging studies from MacArthur Green and SEATRACK)<sup>9</sup> could alter our understanding of the movement and distribution of auk species during the non-breeding season, and as such that should new evidence emerge within assessment timeline, then it may be appropriate to review how these species are assessed for the non-breeding season.

For kittiwake NS advise that there needs to be further discussion to reach agreement on whether the species is assessed for displacement and barrier effects in addition to for collision risk. RSPB do not provide specific comment on this. As NS note it was previously unclear whether collision risk and displacement risk are mutually exclusive, a soon to be published Marine Scotland commissioned study<sup>10</sup> now indicates that these are not mutually exclusive risks at the population scale though also indicates complexities around how collision and displacement/barrier effect assessments should be parameterised in a common way. Once that report is published MSS advise that there should be further discussion to reach agreement on the approach to be taken for kittiwake. MSS consider that

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<sup>5</sup> Joint SNCB Interim Displacement Advice Note 2017. <https://hub.jncc.gov.uk/assets/9aecb87c-80c5-4cfb-9102-39f0228dcc9a>

<sup>6</sup> K R Searle, D C Mobbs, A Butler, R W Furness, M N Trinder and F Daunt. 2018. Finding out the Fate of Displaced Birds. Scottish Marine and Freshwater Science Vol 9 No 8, 149pp. DOI: 10.7489/12118-1 <https://data.marine.gov.scot/dataset/finding-out-fate-displaced-birds>

<sup>7</sup> Furness (2015). Non-breeding season populations of seabirds in UK waters - Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Report NECR164 to Natural England. <http://publications.naturalengland.org.uk/publication/6427568802627584>

<sup>8</sup> Woodward, I., Thaxter, C.B., Owen, E., and Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724. <http://marinedataexchange.co.uk/ItemDetails.aspx?id=11418>

<sup>9</sup> See: <http://www.seapop.no/en/seatrack/> and Auk Tagging and Monitoring - MacArthur Green -Interim Report 2019. <https://group.vattenfall.com/uk/siteassets/wind-pdf-documents/eowdc/auk-and-guillemot-tagging-study-by-macarthur-green.pdf>

<sup>10</sup> Study to examine how seabird collision risk, displacement and barrier effects could be integrated for assessment of offshore wind developments (ITQ-0246). Marine Scotland commissioned study. Publication imminent.

due to their physiology in terms of flight efficiency and additionally their wide-ranging ecology, displacement impacts to kittiwake should be considered only during the breeding season when they function as central-place foragers.

For gannet, NS advise that assessment is not required for displacement and barrier effects, with Searle et al. (2014)<sup>11</sup> cited. MSS note that this study did not include Berwick Bank nor Marr Bank projects, additionally further to that study, Warwick-Evans et al. (2018)<sup>12</sup> also developed an individual based model for combined assessment of collision risk, displacement, and barrier effects; while that was applied for a different region it did indicate that gannet could be vulnerable to displacement and barrier effects during the breeding season from cumulative effects of larger scale developments. RSPB advise that there should be a combined assessment for displacement and collision risk for gannet. MSS agree with RSPB that this should be assessed, and suggest that an individual based modelling approach should be taken that allow for barrier effects to be modelled (i.e. not only displacement). MSS suggest that there should be further discussion around the approach to take, this should be informed by the aforementioned forthcoming Marine Scotland commissioned report<sup>10</sup> and by earlier modelling studies<sup>6,12</sup>. As for kittiwake, MSS consider the flight physiology and wide ranging ecology of gannets mean displacement impacts should be considered only in the breeding season where they are constrained as central-place foragers.

Collision risk modelling: The developer proposes to perform collision risk modelling using both the deterministic Band (2012)<sup>13</sup> model and the stochastic implementation of Band (2012) developed by Masden (2015)<sup>14</sup> and subsequently implemented as a user friendly web application (McGregor et al. 2018)<sup>15</sup>, the stochastic collision risk model (sCRM). NS support the use of both approaches, while RSPB recommend the use of the sCRM application (i.e. McGregor et al. 2018). MSS advise the outputs of the sCRM should be relied on for assessment but for comparability and context it may still be useful to also run the deterministic Band (2012) model. NS provide a number of recommendations on which model version to use and some discussion on appropriate references for parameter values. RSPB do not provide specific comments here but note that they welcome further discussion around this. MSS suggest that further discussion is had to reach agreement on the specifics of the collision risk modelling approach.

The developer proposes to assess collision risk for migratory species qualitatively with reference to the Marine Scotland commissioned strategic level report (Marine Scotland 2014)<sup>16</sup>, this approach is supported by NS and MSS are in agreement. As NS note in their advice, Marine Scotland are currently in the process of commissioning a further strategic study<sup>17</sup>, this is undergoing procurement. Should this be available within the assessment timescale then MSS agree with NS that this should be used. The new strategic study also includes further development of the sCRM tool, which should be used within this assessment should it be available within the assessment timescale.

<sup>11</sup> Searle, K., Mobbs, D., Butler, A., Bogdanova, M., Freeman, S., Wanless, S. & Daunt, F. (2014) Population consequences of displacement from proposed offshore wind energy developments for seabirds breeding at Scottish SPAs (CR/2012/03). Final report to Marine Scotland Science. Scottish Marine and Freshwater Science Volume 5 Number 13. <https://www.gov.scot/publications/scottish-marine-freshwater-science-volume-5-number-13-population-consequences/>

<sup>12</sup> Warwick-Evans, V., Atkinson, P.W., Walkington, I., Green, J.A. (2018). Predicting the impacts of wind farms on seabirds: An individual-based model. *J Appl Ecol.* 55: 503– 515. <https://doi.org/10.1111/1365-2664.12996>

<sup>13</sup> SOSS-02: A review of methods to estimate the risk of bird collisions with offshore wind farms - <https://www.bto.org/our-science/wetland-and-marine/soss/projects>

<sup>14</sup> Masden, E. (2015) Developing an avian collision risk model to incorporate variability and uncertainty. Scottish Marine and Freshwater Science Vol 6 No 14. Edinburgh: Scottish Government, 43pp. DOI: 10.7489/1659-1. Available from: <https://data.marine.gov.scot/dataset/developing-avian-collision-risk-model-incorporate-variability-and-uncertainty>

<sup>15</sup> McGregor, R., King, S., Donovan, C., Caneco, B., Webb, A. (2018). A Stochastic Collision Risk Model for Seabirds in Flight. <https://www2.gov.scot/Topics/marine/marineenergy/mre/current/StochasticCRM>

<sup>16</sup> Marine Scotland (2014) Scottish Marine and Freshwater Science Volume 5 Number 12: Strategic assessment of collision risk of Scottish offshore wind farms to migrating birds. <https://www.gov.scot/publications/scottish-marine-freshwater-science-volume-5-number-12-strategic-assessment/>

<sup>17</sup> Strategic study of collision risk for birds on migration and further development of the stochastic Collision Risk Modelling tool. Public Contracts Scotland reference number: SEP395028.

[https://www.publiccontractsscotland.gov.uk/search/show/search\\_view.aspx?ID=SEP395028](https://www.publiccontractsscotland.gov.uk/search/show/search_view.aspx?ID=SEP395028)

Apportioning: The Developer suggests that apportioning will follow emerging Marine Scotland guidance and NatureScot (2018)<sup>18</sup>. MSS assume that the emerging Marine Scotland guidance referred to by the Developer and NS is the recently published (but after the Scoping Report was prepared) report and MS Apportioning Tool (Butler et al. 2020)<sup>19</sup> but confirmation of this would be helpful. NS support the general approach proposed by the developer, while RSPB do not provide specific comment on apportioning. MSS are in general agreement with NS but wish to clarify that the MS Apportioning Tool includes two different apportioning options, one a new method using the Wakefield et al. (2017)<sup>20</sup> colony specific distributions and the other being the NatureScot breeding season 'theoretical approach' method. Thus, MSS consider the MS apportioning tool to implement both apportioning approaches recommended by NS. However, it is important to note that MSS are currently exploring the feasibility of updating the tool to allow use of the ongoing Seabird Count census data (it currently utilises Seabird 2000 data) and/or allow for user defined population counts. MSS advise that there should be further discussion to provide more specific advice on breeding season apportioning, in terms of consideration of the Wakefield and Theoretical approaches and pending the relevant update to the tool.

For apportioning during the non-breeding season the developer states that there will need to be further discussion to reach agreement on approach, but suggests use of the BDMPS approach (Furness 2015)<sup>21</sup>. NS state that the BDMPS approach should be used for most species but that this will require further discussion for species that disperse less widely from the breeding area during the non-breeding season (e.g. guillemot). RSPB provided no specific comment here. MSS are in agreement with NS on the general approach and agree that further discussion will be needed to reach agreement on approach (also note our comment above regarding emerging evidence for non-breeding season movement and distribution of auk species).

Population viability analyses (PVA): Where effects are assessed to be potentially significant either from the Development alone or in combination with other developments, PVA models should be produced to better understand population level impacts for protected sites (SPA populations). MSS interpret that NS's suggested threshold of 0.2% change in adult survival rate equates to e.g. a 0.2 percentage point change in adult survival from 0.98 to 0.96 rather than a percentage proportion change; but advise that NS clarify this point. MSS advise that there should be further discussion to agree appropriate thresholds for when PVA should be produced, the 0.2% change in adult survival value may be appropriate for some species, but given interspecific variation in annual survival a percentage of background mortality may be a more appropriate approach. The developer does not provide detail on their proposed methods for PVA. NS and RSPB recommend use of the Natural England commissioned PVA tool (Searle et al. 2019)<sup>22</sup> and provide some advice on how this should be used. MSS agree with the general guidance, including the need to model outputs for both a period

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<sup>18</sup> NatureScot (2018) Interim Guidance on apportioning impacts from marine renewable developments to breeding seabird populations in SPAs - <https://www.nature.scot/interim-guidance-apportioning-impacts-marine-renewable-developments-breeding-seabird-populations>

<sup>19</sup> Butler, A., Carroll, M., Searle, K., Bolton, M., Waggitt, J., Evans, P., Rehfish, M., Goddard, B., Brewer, M., Burthe, S. and Daunt, F. 2020. Attributing seabirds at sea to appropriate breeding colonies and populations (CR/2015/18). Scottish Marine and Freshwater Science Vol 11 No 8, 140pp. DOI: 10.7489/2006-1 - <https://data.marine.gov.scot/dataset/attributing-seabirds-sea-appropriate-breeding-colonies-and-populations-cr201518> - to note the report is published but the tool is not yet published, this will be published imminently (expected prior to 15<sup>th</sup> November 2020).

<sup>20</sup> Wakefield, E.D., Owen, E., Baer, J., Carroll, M.J., Daunt, F., Dodd, S.G., Green, J.A., Guilford, T., Mavor, R.A., Miller, P.I., Newell, M.A., Newton, S.F., Robertson, G.S., Shoji, A., Soanes, L.M., Votier, S.C., Wanless, S. and Bolton, M. (2017), Breeding density, fine-scale tracking, and large-scale modeling reveal the regional distribution of four seabird species. *Ecol Appl*, 27: 2074-2091. doi:10.1002/eap.1591 <https://doi.org/10.1002/eap.1591>

<sup>21</sup> Furness (2015). Non-breeding season populations of seabirds in UK waters - Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Report NECR164 to Natural England.

<http://publications.naturalengland.org.uk/publication/6427568802627584>

<sup>22</sup> Searle, K., Mobbs, D., Daunt, F. & Butler, A. 2019. A Population Viability Analysis Modelling Tool for Seabird Species. Natural England Commissioned Reports, Number 274.

<http://publications.naturalengland.org.uk/publication/4926995073073152> also see [https://github.com/naturalengland/Seabird\\_PVA\\_Tool](https://github.com/naturalengland/Seabird_PVA_Tool)



of 25 years and 50 years as suggested by both NS and RSPB, and agree that the NE PVA Tool provides a useful standardized approach for population models. However, MSS note that integrated (or semi-integrated) population models perform best (Searle et al. 2020)<sup>23</sup> but are not currently implemented in the NE Tool, and as such these models should be considered where it is possible to run these. Such a model was previously developed for some seabird populations in the Forth and Tay region (see Freeman et al. 2014)<sup>24</sup>. The recommendations of Searle et al. (2020)<sup>23</sup> should be considered carefully when parameterising PVA models, this includes in where to draw population and demographic parameter estimates from and suggestion to 'tune' demographic parameters to improve model performance, but this must follow an automated and transparent approach.

#### Additional data sources not referenced

In common with NS and RSPB we suggest most recent data from the seabird census are used. Additionally annual reports from the Isle of May long-term study, plus associated research literature from key colonies might provide additional or contextualise population data for use in aspects of the assessment such as assessing flight speeds and climate change impacts. We welcome further discussion and agreement on such matters.

#### Impact pathways scoped in/out

The Developer proposed to scope out disturbance from offshore export cable construction during the construction phase (Table A 1). MSS suggest that this is scoped in for assessment at least for EIA, with this to be assessed qualitatively, but further discussion will be required to reach agreement on the approach for this stressor. The proposed export cable corridor appears on the maps provided (Figure 1.1. in the Scoping Report) to pass through the Outer Firth of Forth and St. Andrew's Bay Complex pSPA. Whilst effects may be temporary and installation of short duration if there is the possibility of pathway to impact and subsequent effects (even if short in duration) to the pSPA features, which may need consideration for HRA.

#### Comment on embedded mitigation

It is stated that the 'minimum distance between the bottom of the blade and the water surface will be between 22 m to 40 m' (Table C.1.). This is generally termed the 'air gap' in terms of collision risk modelling. Generally fewer large turbines with increased air gaps will lead to reduced collision risk. MSS therefore suggest that the Developer consider committing to an increased air gap early in the process because of the potential for this to substantially reduce estimated collisions.

#### Floating Technology

MSS note that the Developer is considering floating foundation technology with a small number of floating wind turbine generators as a demonstrator in deeper areas of the proposed development area. MSS advise that there should be careful consideration on suitable assessment for a mixed technology development and that this will require further discussion to reach agreement on assessment approach.

### **Marine Mammals**

MSS broadly agree with the comments from NatureScot on this scoping report. Whilst the developer does identify the key species that may be impacted by the development, the most notable protected sites that could be impacted, and the majority of the pathways which could lead to impacts on individual marine mammals and/or populations, there are some omissions and areas requiring further consideration. The scoping report lacks detail on methods for impact assessment, and it provides little or no detail on some activities with the potential for considerable impact on marine mammal receptors (e.g. unexploded ordnance (UXO) clearance, see below).

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<sup>23</sup> Searle, K., Butler, A., Bogdanova, M. and Daunt, F. 2020. Scoping Study - Regional Population Viability Analysis for Key Bird Species CR/2016/16. Scottish Marine and Freshwater Science Vol 11 No 10, 118pp. DOI: 10.7489/12327-1 <https://data.marine.gov.scot/dataset/scoping-study-regional-population-viability-analysis-key-bird-species-cr201616>

<sup>24</sup> Freeman, S., Searle, K., Bogdanova, M., Wanless, S. & Daunt, F. (2014) Population dynamics of Forth & Tay breeding seabirds: review of available models and modelling of key breeding populations (MSQ – 0006). Contract report to Marine Scotland Science.

<https://www2.gov.scot/Topics/marine/marineenergy/Research/SeabirdsForthTay/FinalReport>

Our chief concern, with respect to marine mammals, is underwater noise generated during construction (e.g. turbine foundation installation, UXO clearance), and the potential for this to cause behavioural disturbance and/or auditory injury. The effects of underwater noise on individuals and populations must be considered both for the Berwick Bank development alone, and cumulatively, with other projects in the region. This is not the only potential impact pathway, and disturbance from shipping (e.g. construction and maintenance vessels servicing the site), and potential risks from floating turbine structures (which do not appear to have been included in the scoping document) may pose risks to marine mammals.

The developer poses four questions at the end of section 7.3. Our brief responses are provided below, and more information is provided in subsequent paragraphs:

1. MSS agree in general with the data sources listed, however in our comments below, we make reference to several other data sources and references of note.
2. MSS do not agree that all potential impact pathways have been identified. One notable omission is that of unexploded ordnance clearance. We advise that the EIA should consider the full lifespan of the project, from pre-construction to decommissioning. We request that the developer considers, for example a Vessel Management Plan and a Piling Strategy as key components of the development.
3. MSS do not agree that the methods described in Table 7.13 are sufficient to inform a robust impact assessment. Detail on assessment approaches (e.g. population modelling) are lacking.
4. MSS agree that accidental pollution, operational noise, and changes in water clarity can be scoped out of the EIA process. However, as the project design elements includes the potential for floating turbines, we advise that potential impact pathways from floating wind turbines are scoped and assessed (e.g. electromagnetic fields from mid-water electricity cables; entanglement).

#### Key points

There is no mention of UXO clearance in the marine mammal section. This potential significant source of underwater noise is considered through a marine licence application prior to construction, but is a significant pre-construction activity. MSS note that predicted noise levels from the detonation of UXO can lead to auditory injury at large distances from the source. MSS request that the developer acknowledges in the EIA that UXO will be considered as and when required. MSS advise that clearance of UXO should be considered within a cumulative impact assessment for this project.

MSS note that, “*Embedded mitigation measures adopted as part of the proposed development may include development of, and adherence to, a Vessel Monitoring Plan.*” (Section 7.3.5). MSS advise that development and adoption of a Vessel Monitoring Plan will be an essential component of the project, to mitigate disturbance of marine mammals. Additionally, the list of embedded mitigation includes the implementation of piling soft-start and ramp-up measures. We recommend that these measures are comprehensively considered in the development of a pre-construction Piling Strategy.

Throughout the scoping report there are no mentions of additional underwater noise abatement methods and technologies e.g. bubble curtains. MSS advise that noise abatement methods for noisy activities, such as impact piling and detonation of UXO, should be considered where practicable and discussed in the EIA report.

#### Study area and data sources

MSS agree with NatureScot that other plans, projects and developments to be included in the cumulative impact assessment should be selected per species, given the spatial extent of the respective management units.

MSS note that the recently published Marine Scotland report on regional marine mammal baselines (Hague, Sinclair and Sparling, 2020) is not referenced in the Scoping Report. This may be a particularly useful reference when undertaking the marine mammal impact assessment. This report highlights available data sources and summarises some key parameters e.g. regional animal densities.

Table 7.11 references a harbour porpoise model by Heinen and Skov (2015). MSS had major concerns with this model when it was published. MSS advise that a revised analysis led by the consultancy DHI, developed in conjunction with JNCC and MSS, will supersede this reference and should be published in late 2020 (Tuhuteru, Mortenson and Skov, in prep.).

#### List of species to be included in the assessment

The list of species in section 7.3.3.2, based on local survey sightings and described as, “...those which will form the focus of the marine mammal assessment...” lists “unknown seal and cetacean species”. For clarity, the list of species that MSS request are scoped in to the marine mammal assessment, should include:

- Harbour porpoise *Phocoena phocoena*
- Bottlenose dolphin *Tursiops truncatus*
- Minke whale *Balaenoptera acutorostrata*
- White beaked dolphin *Lagenorhynchus albirostris*
- Grey seal *Halichoerus grypus*
- Harbour seal *Phoca vitulina*

#### Protected areas

MSS are content with the list of MPAs presented in the Scoping Report (Table 7.12) and we note the comment that this list will be refined in the marine mammal EIA report.

#### Species descriptions

There is a missing reference in the harbour porpoise species description in section 7.3.3.3 (Baseline Characterisation). The reference cited as “JNCC, 2019d” relates to white-beaked dolphin. The correct reference can be found here:

<https://jncc.gov.uk/jncc-assets/Art17/S1351-UK-Habitats-Directive-Art17-2019.pdf>

The Minke Whale species description is the only one of the six species without corresponding population sizes stated. For consistency throughout the document it would be better if this information had been included, e.g. SCANS II/III abundance estimates.

Figure 7.17 shows the Russell *et al.* (2017) seal usage maps, which are the current best available evidence for seal densities at sea off eastern Scotland. A new report is likely to be published before the developer submits their EIA; this publication will present modelled habitat preference maps for both grey and harbour seals around the British Isles (Carter and Russell, in prep.). At this stage MSS cannot advise that these models will in future become the preferred density surface for marine mammal EIAs, however we note that this publication is imminent and MS-LOT should be aware of this. Upon publication, discussions are likely required between MSS, MS-LOT, MS-Marine Planning and Policy and NatureScot to discuss the adoption of these models as a preferred density map for seal impact assessments.

At the end of the harbour seal species description, there is a section on seal haul-outs which includes a whole paragraph on grey seal haul-out sites. MSS recommend that this section is split appropriately between the two seal species descriptions.

#### Management units and species distributions

MSS recommend that management unit population sizes based on SCANS III survey abundance estimates should be used for minke whale, white beaked dolphin and harbour porpoise. We agree with NatureScot that impacts on these species should be assessed against (i) the whole management unit population and (ii) at a regional scale, based on SCANS III Block R.

Density surfaces for harbour porpoise, white-beaked dolphin and minke whale (estimated from SCANS III survey data) are available in the recently-published Regional Marine Mammal Baselines report (Hague, Sinclair and Sparling, 2020).

For bottlenose dolphin, the best available east coast Scotland population estimate should be used (currently this is 195 (95% Highest Posterior Density Intervals 162 - 253) individuals, from Cheney *et al.* 2013). Whilst this reference is now > 7 years old (and was generated from data from 2006-2007) it remains the most recent estimation of the whole east Scotland population.

For harbour seal, the Firth of Tay and Eden Estuary SAC has experienced substantial declines in recent years. There is evidence from telemetry data that harbour seals from this population visit the Berwick Bank development area. MSS advise further discussion between MS-LOT and NatureScot to agree an assessment process for harbour seals, given the status of the local SAC population.

For grey seal, MSS recommend that Special Committee on Seals (SCOS) seal management units and population estimates should be used to inform the assessments. These are available from recent SCOS reports (available online, here: <http://www.smru.st-andrews.ac.uk/research-policy/scos/>).

As mentioned previously, MSS recommend that the Russell *et al.* (2017) seal usage maps, available on Marine Scotland's National Marine Plan Interactive website (more information here: <http://marine.gov.scot/information/seal-usage-maps>), should be used to determine seal densities for the marine mammal impact assessment. Other data sources may become available (e.g. Carter and Russell, in prep.), and may be useful contextual information.

#### Assessment and modelling approaches

Within Chapter 7 of this scoping report (Marine Mammals), noise modelling approaches and methods to model marine mammal population impacts have not been scoped or described in any detail by the developer.

NatureScot have provided two substantial sections in their comments (subtitled, "Approach to underwater noise modelling", and, "Population consequences and cumulative impacts"), on how these assessment approaches might be implemented, and we are largely supportive of their comments.

We share the concerns of NatureScot over the 1% energy conversion factor used in noise modelling, given recent evidence from piling noise monitoring in the Moray Firth. We recommend that if this approach is to be used, then robust justification would be required.

MSS recommend that the interim PCoD model is used to assess impacts of both Berwick Bank Wind Farm alone and cumulative with other plans/projects in the region.

MSS would welcome further discussion with MS-LOT on how NatureScot and MSS recommendations on noise modelling and population modelling are provided to the developer in the scoping opinion.

#### Impact pathways

MSS again highlight that UXO clearance has the potential to cause wide ranging disturbance and even injury to marine mammals. This impact is a notable omission from Table 7.13. Noise abatement and mitigation should be considered in the EIA.

Floating turbines have been scoped in to the project design envelope. This method of turbine installation does not require a piled foundation, although small piles (which can still generate significant noise during piling) may be used to install anchors. In addition, we recommend the developer considers the additional potential impacts listed by NatureScot, including electromagnetic fields from mid-water cables, and entanglement risk.



Table 7.13 mentions injury and disturbance to marine mammals during the operation and maintenance (O&M). It is unclear to MSS what the pathway to injury might be during O&M (given that collision with vessels has its own row in the table), and MSS would welcome examples.

### Marine fish ecology

In regard to marine fish ecology, the MSS response follows the four questions posed by the developer at the end of section 7.2 in the Scoping Report.

1. Do you agree with the study areas defined for fish and shellfish ecology?

MSS agree with the selection of the two study areas defined in section 7.2.2.

2. Do you agree that the existing desktop data on fish and shellfish resources in the fish and shellfish study area is sufficient to characterise the describe the ecology in the fish and shellfish baseline?

MSS agree that most of the existing data on fish and shellfish resources have been included, however MSS advise that the developer refers to a report which provides a modelled spatial representation of the probability of the presence of 0 age group fish (fish in the first year of their life) and the probability of aggregations of 0 age group fish (Aires *et al.* 2014). It is recommended these data are presented visually in conjunction with the Coull *et al.* (1998) and Ellis *et al.* (2012) nursery maps, as there are certain limitations with the data. Further details are available here: (<https://www2.gov.scot/Topics/marine/science/MSInteractive/Themes/fish-fisheries/fsm>)

In addition to the Coull *et al.* (1998), Ellis *et al.* (2010) and Aires *et al.* (2014) data, new information is available regarding the spawning areas of cod, haddock and whiting (González-Irusta and Wright 2016; González-Irusta and Wright 2016; González-Irusta and Wright 2017). The whiting paper is available but the associated layers are not available as yet. The three papers contain the new information however they are not yet available on NMPI. We hope to get these online shortly to enable use of them. Links to the new reports are available in the references section at the bottom of this response.

MSS also advise referencing the the ORJIP study on 'Impacts on fish from piling at offshore wind farm sites: collating population information, gap analysis and appraisal of mitigation options' which was published in 2018 (Boyle and New 2018).

MSS welcome the epibenthic beam trawl surveys which will go some way to update the existing baseline for site-specific fish surveys. MSS also note that a further review of the herring spawning and nursery grounds is proposed to support the fish and shellfish ecology assessment, however no further information on this assessment is provided. MSS agree with NatureScot that a further review should identify suitable habitat for sandeels and herring spawning to inform impact assessment and the need for mitigation. There are methods to judge whether spawning is likely within an area, such as sediment analysis. Sandeels prefer spawning substrate with a low clay silt fraction (<10%) and typical sandeel habitat is within the 20 – 100 m water depth range (Mazik *et al.* 2015 and Lancaster *et al.* 2014). Herring exhibit a high degree of site fidelity, require a specific substrate type for spawning and lay their eggs on gravel and similar habitats (coarse sand, gravel, maerl and small stones/rocks). These habitat types for sandeel and herring are consistent with the study area however further confirmation and refinement of spawning areas is required as there is anecdotal evidence that herring can recolonise abandoned spawning grounds (MSS are happy to provide more information on this point, if required).

MSS note that there seems to be a mismatch between site-specific survey data and Marine Scotland underwater video survey data over the presence of *Nephrops*. Parts of the development area are consistent with suitable habitat for *Nephrops* and therefore MSS advise a review of suitable habitat for *Nephrops* and their spawning grounds.

MSS recommend that Table 7.8 is updated to reflect those fish species which are Priority Marine Features (PMFs) to highlight the importance of those species. MSS also recommend, in line with NatureScot, that the EIAR should consider those fish species which provide an important function as a key prey resource (such as herring, sandeels and sprat) and the implications for predator/prey interactions.

3. Do you agree that all potential impacts (Table 7.9) have been identified for fish and shellfish ecology?

MSS agree that the potential impacts identified for fish and shellfish ecology in Table 7.9 should be scoped in. However, for underwater noise MSS recommend consideration is given to sound pressure and particle motion, physiological and behavioural impacts of underwater noise on fish, and also to pre-construction noise such as UXO clearance. MSS advise that fish impact thresholds (Popper et al., 2014) are applied to the UXO assessment when carried out. Shellfish do not currently have impact thresholds and so the impact should be considered qualitatively.

MSS also recommend further consideration is given to the impact of increased suspended sediment and the potential for it to smother fish eggs and larvae during critical spawning periods.

MSS agree that EMF should be scoped in and recommend that consideration is given to elasmobranch species as studies have shown that they are capable of detecting EMF and showing behavioural responses to them (Hutchison *et al.* 2018), especially given that a number of floating devices (with associated mid-water electrical cables) are scoped into the project design envelope.

In terms of proposed mitigation for marine fish, MSS advise focusing on herring as they are the most sensitive to noise impacts and there are herring spawning and nursery grounds in the area. The spawning period for herring in the Banks/Dogger region is August – October. Where possible, MSS advise avoidance of loud, impulsive noise generating activities e.g. pile driving and UXO clearance during this time period, should the area be identified as an important spawning ground. Other mitigation measures include carrying out a noise assessment, taking into account sound exposure criteria provided by Popper et al. (2014) and following a precautionary approach where it is assumed that fish will remain stationary and not flee from noise. For Herring, the criteria suggests that mortality and potential mortal injury will occur from pile driving at 207 dB SELcum or > 207 dB peak. In addition to this, sound mitigation measures that are used for marine mammals will go some way towards mitigating noise impacts for fish.

4. Do you agree that the impacts described in Table 7.10 can be scoped out of the fish and shellfish ecology Offshore EIA Report chapter?

MSS do not agree with scoping out colonisation of hard substrates. The proposed development area largely consists of soft sediments and the introduction of hard substrates has the potential to create a reef habitat. This has the potential to impact diversity and distribution of fish species.

MSS are content with underwater noise from wind turbine operations, and the introduction of contaminants from foundations, being scoped out of the EIA. However, these are both knowledge gaps recognised in ScotMER evidence maps for marine fish (as well as benthic and diadromous fish) and therefore more information is required to better understand the potential impacts of these stressors. Although limited information is currently available to assess impacts, and for individual developments or turbines these impacts may be localised, MSS advise that they will be of increasing relevance when considered cumulatively and when taking into account the scale of future development within the North Sea. MSS recommend that these two topics are considered for strategic monitoring, and MSS would welcome the opportunity to discuss them further with LOT, the developer and the Regional Advisory Groups.

In relation to operational noise, MSS note the scale of the proposal and the large number of turbines being deployed (up to 242 turbines). Studies have been carried out on operational noise for

windfarms within the UK, with the level of underwater noise found to be very low and for fish or other marine species comparable to ambient variation. It was concluded that the small increase in noise in the immediate vicinity of turbines at operational offshore wind farms is unlikely to cause a behavioural response in marine species (Nedwell et al. 2007). However, the windfarms studied had a maximum of 30 turbines deployed whereas this proposal is for up to 242 turbines and strategic monitoring to better understand implications of such scaling up of projects and across multiple projects would be beneficial.

With regards to the introduction of contaminants from foundations, recent studies have highlighted potential contamination by emissions of metals and organic compounds related to offshore wind farms (Kirchgeorg et al. 2018). Aluminium (Al), zinc (Zn) and indium (In) are metals used for corrosion protection in sacrificial anodes. Although chemical emissions from offshore wind farms are probably low compared to other offshore activities, they may become more relevant with increasing number of turbines and wind farms. Available information is limited and there is a need for more data to be able to assess the impact of these chemical emissions on the marine environment (Bavo and Hostens 2019).

### **Commercial fisheries**

MSS is disappointed that there has been no engagement with the fishing industry so far and advise engaging with the fishing industry as early as possible in the development process.

1. Are there any additional datasets to those included in Table 8.1 that you feel should be reviewed to characterise the commercial fisheries baseline?

In terms of using 2018 landings data by ICES rectangle, MSS recommend using data for the last five years to add strength to the assessment and identify any trends in the activity.

MSS highlight that finalised Scottish Government fisheries statistics for 2019 were published in October 2020 and therefore MSS recommend using the most up-to-date statistics. Please note that the format of the statistics has changed and from 2019 onwards, these will be published in .csv format and made available through the Marine Scotland Data page:

<https://data.marine.gov.scot/group/fisheries>. The 2019 finalised statistics (which include finalised statistics for 2015 - 2019) are available on the following web page (doi: 10.7489/12338-1):

<https://data.marine.gov.scot/dataset/2019-scottish-sea-fisheries-statistics-fishing-effort-and-quantity-and-value-landings-ices>

Historical statistics are also still available on the following web page:

<https://www2.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/RectangleData>

MSS advise that future applications consider the proposed fisheries management measures within Marine Protected Areas (MPA's). It is anticipated that implementation of the measures by the EC, through a delegated Act, will be made and further developments will be published on the Marine Scotland website as information becomes available.

More detail on the proposals can be obtained here: <https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/SACmanagement>

Of particular relevance to this region are the documents on the following page concerning the Northern North Sea Proposal: <https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/SACmanagement/Offshore2017>

Map layers showing these proposed areas are now available on Marine Scotland's National Marine Plan interactive (NMPI) which may be accessed here: <http://marine.gov.scot/information/mpa-and-sac-management-marine-conservation-orders-mcos-and-fisheries-management-measures>

The fisheries management measure proposal is for bottom contact fishing such as beam trawl, bottom trawl, seines and dredges to be prohibited in certain parts of the MPA. This proposal has been consulted upon with a range of stakeholders including the commercial fishing industry. In terms of the management areas, both Marine Scotland (MS) and the fishing industry have put forward management areas within the MPA which largely but not completely overlap with each other. The areas proposed by both MS and fishing industry overlap with the Berwick Bank project site, indicating agreement that this area should be subject to the proposed fisheries management measures. The fishing industry have identified the area based on VMS data suggesting that the area receives very little fishing pressure. In light of this, MSS advise that consideration is given to the potential for maximising the deployment of floating wind turbines within the windfarm area that overlaps with the MPA in order to minimise any impacts on benthic species or habitats. This also has the potential to minimise conflict with the fishing industry in terms of fisheries displacement.

MSS is commissioning a project to develop good practice guidance for assessing fisheries displacement by other licensed marine activities. This project is currently awaiting award of contractor and this will be a 4 month contract ending in February 2021. MSS recommend referring to this guidance when it has been published.

2. Do you agree that all potential impacts have been identified for commercial fisheries receptors?

MSS agree with the potential impacts which have been identified for commercial fisheries however MSS have some further points for consideration. In terms of embedded mitigation, MSS recommends consideration of the types of fishing that takes place in the area, their minimum operating space requirements (deploying and hauling gear) and vessel manoeuvrability and factor this into wind farm layout, configuration and turbine spacing from an early design process stage. For example, ensuring turbine spacing is at least 800 m to 1000 m to allow fishing activity to continue after construction of the wind farm and to encourage coexistence between the marine users and industries. MSS also recommends that a fisheries displacement assessment is carried out to estimate any displacement levels. This assessment should include but not be limited to consideration of minimum operating space requirements for the range of fishing activities (deploying and hauling gear), vessel manoeuvrability and over-trawl-ability of cables. From a Marine Spatial Planning perspective and the potential for 'squeeze on marine space' from other developments and sea users/activities, MSS recommend that the fisheries displacement assessment also consider Marine Protected Area's (MPA) as some MPA's restrict access to some types of fishing. With regards to over-trawl-ability of cables, the European Subsea Cable Association's (ESCA) stance is that fishing over cables, even if they are buried, is not safe and they recommend that fishing vessels should avoid any activity at a minimum distance of 0.25 nautical mile on either side of submarine cables. However only some offshore wind developers are members of ESCA and have aligned themselves with the ESCA stance, therefore MSS recommend that there is a clear stance at an early stage in the process on whether or not fishing will be possible over cables as this will have implications for the fisheries displacement assessment. If the developer is content with fishing to continue over cables, then MSS would expect a practical over-trawl ability study to be carried out using local vessels and gear to test the safe use of fishing gear and to minimise, as far as reasonably practicable, the risks of fishing gear snagging on cables.

MSS recommends further consideration of floating wind technology in fisheries displacement assessments, as floating wind has the potential to restrict access to some types of fishing methods and this will have implications for fisheries displacement.

MSS also recommends consideration of displacement of fishing to other areas as a result of loss of grounds.

More information is required on plans for decommissioning and if the intention is for all infrastructure to be removed from the marine environment. Any disused infrastructure left in the marine environment is a potential safety hazard for commercial fishing.

## Diadromous fish

The word diadromous is not used in the report. Instead, diadromous fish are described as migratory fish. MSS recommend that the term diadromous fish is used, as many purely marine fish, particularly pelagic species, are highly migratory. There are important features of diadromous fish which are different from those of purely marine fish:

- the high conservation value of all diadromous fish species, with most species being included as interests in riverine SACs,
- that factors in fresh water are important in determining the state of the populations and their resilience to impact,
- that they have special adaptations to allow them to move between fresh and salt water,
- that two of the species, salmon and sea trout, home accurately to their natal areas in fresh water,
- that two of the species, salmon and sea trout, support economically important rod fisheries in fresh water and in estuaries and net fisheries (which now mainly do not operate) in estuaries and on the coast,
- that the same two species, salmon and sea trout, have influential and well-informed stakeholder organisations concerned purely with their conservation and welfare.

Because of these differences, diadromous fish are assessed separately by MSS, although relevant aspects of the MSS comments on purely marine fish will also apply to diadromous fish.

MSS is content that the wider and local study areas proposed for fish and shellfish in 7.2.2 and Figure 7.7 can also be used for diadromous fish.

7.2.3.2 and Figure 7.6 bring in some reports relevant to the local migration of salmon and sea trout migration but this is a rapidly moving field and there will be a need to bring in all other available information.

MSS note that there will be a separate draft HRA report which will be issued later in the year. The indication given in 7.2.3.3 and Table 7.7 of the designated sites (international and national) which will be considered include most of the key sites for diadromous fish, but MSS would note that the River Teith SAC also has Atlantic salmon as a species interest.

Fish assemblage (7.2.3.3). MSS would note that epibenthic trawls provide little information on salmon and sea trout which spend much of the time close to the sea surface.

Migratory Fish Species (7.2.3.3). This section deals with diadromous fish, but some information on sharks and rays, which are purely marine, is included. MSS recommend discussion on diadromous fish are disentangled from other migratory (marine) fish species, due to the reasons listed above.

No site-specific surveys are proposed to inform the baseline characterisation or impact assessment on diadromous fish species. Again, some reports relevant to the local migration of salmon and sea trout migration are brought in, but there will be a need to bring in all other available information. MSS consider that even when has been done, there will still be a major need for improved information on the spatial and temporal distribution of diadromous fish, including particularly salmon and sea trout, in the vicinity of the development (see ScotMER diadromous fish evidence map:

<https://www2.gov.scot/Topics/marine/marineenergy/mre/research/maps>). MSS advise that the developers and MS-LOT consider how the developers will contribute to addressing knowledge gaps.

The diadromous fish species which need considered are correctly identified as Atlantic salmon, sea trout, sea lamprey, river lamprey, European eel, Allis shad, twaite shad and sparling (European smelt). It is correct that the species which have the greatest potential to be present within the vicinity are Atlantic salmon, sea trout, eels and the lamprey species.

Shellfish assemblage (7.2.3.3) It is stated that the River South Esk, River Dee and River Spey SACs have primarily been designated as SACs due to the presence of the freshwater pearl mussel. This should instead say that they are designated as SACs with freshwater pearl mussel as a species that

are a primary reason for selection of the site, and Atlantic salmon and in some cases lamprey species are also primary species interests.

Embedded mitigation (7.2.5). MSS would note that soft-start and ramp-up procedures are unlikely to be effective as mitigation to protect Atlantic salmon from noisy activities. (Harding *et al* (2016) found that salmon did not show immediate avoidance behaviour in the presence of piling noise, although the sound level was greatly above that which salmon can detect.)

Cumulative impacts and potential transboundary effects (7.2.7 and 7.2.8). MSS would note that because of long distance migrations any effects of construction, operation and maintenance, and decommissioning may be much wider than the footprint of the project and could involve effects on diadromous fish from other countries, notably England.

Scoping questions to consultees (7.2.9). MSS have rephrased the questions so that they are targeted at diadromous fish.

1. Do MSS agree with the study areas defined for fish and shellfish ecology as being appropriate to diadromous fish?

Yes, MSS is content that the wider and local study areas proposed for fish and shellfish can also be used for diadromous fish.

2. Do MSS agree that the existing desktop data on fish and shellfish resources in the fish and shellfish study area is sufficient to characterise the describe the ecology in the diadromous fish baseline?

No, see previous comments

3. Do MSS agree that all potential impacts (Table 7.9) have been identified for diadromous fish under those described under fish and shellfish ecology?

No, see comments below regarding scoping

4. Do MSS agree that the impacts described in Table 7.10 as being able to be scoped out of the fish and shellfish ecology Offshore EIA Report chapter can also be scoped out for diadromous fish?

No, see comments below regarding scoping

MSS recommend that the applicant considers the resilience of the salmon and sea trout populations to loss of fish, in any population impact modelling for diadromous fish (see <https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/fishreform/licence/status> for more details in relation to salmon).

Impacts proposed to be scoped in for fish and shellfish (Table 7.9). MSS agree that these are also appropriate to diadromous fish. With regard to noise, MSS advise that piling ramp up and soft start are unlikely to be effective mitigation for salmon and sea trout (see previous comment). UXO clearance may also be a major concern in relation to noise. Appropriate timing of the operations may be important. Emigrating salmon smolts are potentially a very sensitive life stage and are likely to mainly pass through the development area in May and possibly early June. With regard to EMF, MSS would note that there are potential effects on migrating diadromous fish which are navigating using geomagnetic cues which will need consideration.

MSS advise that the following potential impact pathway should also be scoped in, with respect to diadromous fish:

- Potential reef effects of the structures, including the direct effect on numbers or behaviour of migrating or foraging diadromous fish or on numbers and behaviour of bird, mammal and fish



predators, which may subsequently impact on migrating or foraging diadromous fish. This also has wider cross-receptor relevance.

Impacts proposed to be scoped out for fish and shellfish (Table 7.10). In relation to diadromous fish and any aspects of release of pollutants or underwater noise which are proposed to be scoped out, please see the Marine Fish Ecology section and apply the conclusions to diadromous fish. MSS do not agree with the colonisation of hard structures being scoped out for diadromous fish as colonisation by predatory mammals, birds or larger fish could impact on migrating or foraging diadromous fish.

NatureScot letter of 7/10/20. MSS do not agree that diadromous fish should only be considered within the EIAR rather than within the HRA. In the case of salmon, the emigrating smolts are at a potentially sensitive stage and acoustic telemetry and near surface netting with genetic assignment to rivers and regions (Newton et al 2017, 2019) have demonstrated that the smolts move out quickly from rivers rather than follow the coast, so that smolts from nearby rivers will be expected to pass through the development site. There is also now good information available on the state and resilience of the salmon populations of each Scottish river and their the potential to be impacted by any losses of fish (Scottish Government, 2019). MSS advise that the available information will be reviewed and assessed, and would be happy to discuss this further with LOT or the applicant. There are also a range of knowledge gaps for this part of Scottish waters which may be best addressed via strategic studies.

### **Benthic Ecology**

MSS note that the proposed development site covers roughly 50 % of the Berwick Bank section of the Firth of Forth Banks Complex nature conservation Marine Protected Area (ncMPA) which has been designated for its geological and benthic features (JNCC 2014). Habitat loss or degradation of habitat surrounding the 242 fixed wind turbines risks conflicting with the conservation objectives of the ncMPA (partly quoted from the conservation objectives in JNCC 2018):

- Shelf banks and mounds occur in the south-east of Berwick Bank. JNCC (2018) state that, 'A change in the prevailing hydrodynamic regime, which could occur as a result of large scale subsea infrastructure, could affect the extent and distribution of the area of the shelf banks and mounds protected within this site.'
- The banks and mounds provide suitable conditions for sustaining a sandeel population, a key prey item for top predators in the North Sea food web. Sandeels have been found to the east of the Berwick Bank site (<https://jncc.gov.uk/mpa-mapper/>). Sandeels live and spawn on sand and gravel habitats and are a key prey species for many other fish and birds. They have distinct habitat preferences in terms of particle size which may be related to oxygen concentration (Holland *et al.* 2005) and prefer a spawning substrate with a low silt fraction (<10%; Lancaster *et al.* 2014). A combination of physical habitat loss, together with a change in currents brought about by turbine structures may alter the sediment structuring and thus affect the spawning success of sandeels in the area.
- *Arctica islandica* (ocean quahog), listed as a PMF and on the OSPAR List of Threatened and Declining Species, are recorded in the northwest of Berwick Bank. Further surveys are required to ascertain if they occur in the development area. JNCC (2018) states that, 'Activities should look to minimise, as far as is practicable, disturbance to individuals that may result in a change to the extent and distribution of ocean quahog aggregations within the site'. Ocean quahog is highly sensitive to physical loss of habitat (Tyler-Walters Sabatini 2017).

Installation of these wind turbines and offshore substation platforms (OSP) will change this area from a soft sediment habitat including shelf bank and mound features, to one which includes a mixture of man-made hard substrates (resembling artificial reef) together with a soft bottom habitat that may be altered by changes in currents and sediment movement. Absolute levels of biodiversity will doubtlessly be increased by the artificial reef ecosystems which the turbine foundations may create, but the character of Berwick Bank will change and the ncMPA may no longer be fully protecting the natural glacial features at Berwick Bank that were formed during the last ice age, and their associated ecosystems.

Study area: MSS agree with the NatureScot comments on using a smaller regional study area than the northern North Sea. MSS would suggest that this study area includes an area covering the neighbouring consented wind farms (Seagreen, Neart na Gaoithe, Inch Cape), the proposed Marr Bank wind farm, the Firth of Forth Banks Complex ncMPA, the area in between these sites and cable corridors.

The map (Figure 7.1) showing the proposed sites together with the boundaries of the ncMPA is small. MSS recommend that the applicant redraws this in more detail in the EIAR using a smaller study area than the northern North Sea. MSS recommend including the Marr Bank proposed site as well as Seagreen Alpha and Bravo. It would be helpful for the ncMPA boundaries to be added to other maps in the benthic ecology section in order to assist with evaluation of impact within the study sites together with cumulative impacts of multiple wind farms on the features in the ncMPA and wider region.

Key species and habitats: MSS is in agreement with NatureScot that an assessment of the impact of the development on all designated features of the ncMPA should be included both within the Berwick Bank site and in combination with the Seagreen development and Marr Bank proposal. Ocean quahog is of particular significance due to it being in decline in the northern North Sea (OSPAR 2009).

Similar to the NatureScot advice, MSS query the use of 'important ecological features'. We are unclear whether this is an over-arching term for species that are of functional significance to the benthic environment, or those of conservation or commercial value. MSS recommend clarifying this and using Priority Marine Features (PMFs), OSPAR Threatened and Declining species and habitats or Annex I habitats, as appropriate.

#### Section 7.1.3.2:

While MSS is looking forward to seeing the results of the baseline survey, it would have been beneficial for Berwick Bank to discuss plans for these before carrying them out. MSS advise that the initial baseline survey be detailed enough to identify the syphons of ocean quahog, and the extent of communities such as *Sabellaria spinulosa* and others. Should Annex I features or PMFs be found, MSS would expect additional DDV to be carried out to understand the full extent of that feature.

MSS also advise that the baseline survey is detailed enough for acceptable levels of change in the protected features of the ncMPA to be evaluated by stakeholders. Details of this approach are given in Wilding et al. (2017).

Section 7.1.4: In addition to the references given regarding identification of *S. spinulosa* reefs, MSS recommend referring to Pearce and Kimber (2020). They underscore the use of the Gubbay (2007) criteria on Scottish east coast examples but also emphasise that, given its rarity in Scotland and its ecological value, all *S. spinulosa* classed as 'reef' should be protected and not just those that fit the description of 'high quality' reef.

Section 3.3.5: MSS agree with NatureScot on the difficulty of determining the relative footprints of foundation types and the worst-case scenario due to variation in the information presented in the tables. From the information provided, MSS note that jacket foundation with pin piles or monopiles have the lowest footprint per turbine (60 to 64 m<sup>2</sup>), compared with gravity bases or jackets with suction buckets (220 m<sup>2</sup> per turbine), and thus piled foundations are likely to have less benthic impacts during construction. Floating designs have not been considered for the majority of the turbines, but these would be expected to have a smaller footprint.

#### Table 7.4: Impacts proposed to be scoped into the proposed development assessment for benthic subtidal and intertidal ecology

- Suspended sediment concentrations (SSC): MSS agree with NatureScot advice but suggest that the impact should be expanded to scope in the impact of increased SSC on primary productivity. Presence of a structure though the entire water column results in hydrodynamic



changes, possibly resulting in upward transport of nutrients and thereby affecting local primary production and carbon flow to the benthos (Dannheim *et al.* 2020).

- Long-term subtidal habitat loss: MSS recommend an assessment of habitat loss to each specific feature listed in the ncMPA, together with the cumulative impact of Berwick Bank, plus Seagreen phase I.
- Colonisation of hard structures: MSS agree with NatureScot comments. Additionally, MSS suggest expanding this section to include attraction of invasive non-native species to the area (i.e. those that would not otherwise be found in a soft-sediment environment). Related to colonisation of the structures, impact of seabed enrichment under the turbines should be considered. This may occur either by marine growth falling onto the seabed or marine growth being deliberately cleaned off during maintenance. Both of these may lead to enrichment in the underlying seabed, particularly in areas with low currents and can lead to changes in ecological community over a wider area (Coates *et al.* 2014; Degraer *et al.* 2019).

MSS advise that other aspects should be scoped in including:

- Changes in prey species availability and whole ecosystem effects, as suggested by NatureScot.
- Impact of changes in hydrodynamics and sediment movement on the benthic communities.
- Impact of disposal of UXOs (i.e. noise, chemical contamination) on the sediment and benthic communities.
- Impact of drilling on the benthic communities, if drilling is being considered. This may have a significant impact if effluent from drilling or drill cuttings are deposited on the seabed, particularly given that it could be for multiple turbines in an area with commercial fish / shellfish and prey species.

Electromagnetic Fields (EMF): MSS agree that this should be scoped in for invertebrates. Both the magnetic field and the induced electric field may still be detectable by electro-sensitive and magneto-sensitive organisms even after burying. Burying a cable increases the distance from the source of the EMF, but it does not shield the EMF; it is measurable at biologically relevant scales at the seabed and in the water column (Hutchison *et al.* 2020). Magneto-receptive and electro-receptive species have evolved to respond to small changes in the Earth's geomagnetic fields and bioelectric fields; therefore reducing the intensity of the cable EMF does not necessarily translate to a reduced effect, but may instead present an EMF more perceivable to receptive species (Formicki *et al.* 2019; Newton *et al.* 2018; Hutchison *et al.* accepted). The EMF for both AC and DC cables and the interaction with the local natural electromagnetic environment should be evaluated for effects and impacts on electro- and magneto-sensitive species (examples in Scott *et al.* 2018; Hutchison *et al.* 2020; Gill and Desender 2020).

Colonisation of hard structures: MSS advise that this should be scoped in. Mobile epifauna are often attracted to hard substrate, such as scour protection, cable protection and the base of foundations (Mavraki *et al.* 2020). Irrespective of the relative scale of the hard structures in comparison to the seabed, the presence of these structures will change the ecosystems in the development area, from just soft sediment to a combination of those that occupy hard substrate and those that inhabit soft sediment. Hard substrates can also present a stepping stone for marine invasive non-native species (INNS).

As in the fish and shellfish section, MSS are content with underwater noise from wind turbine operations and the introduction of contaminants from foundations being scoped out of the EIA. However, considering the increasing scale of development in the North Sea and the potential for cumulative effects, MSS advise that these issues should be progressed via strategic monitoring. MSS would welcome the opportunity to discuss these issues further with LOT and the developer.

Underwater noise from wind turbine operation and vessels – operation and maintenance phase: Invertebrates aggregate around wind turbine foundations (Reubens *et al.* 2011), mobile invertebrates

are attracted to turbines for shelter or following prey, while sessile species colonise the structure itself (Degraer *et al.* 2019). Blue mussels (*Mytilus edulis*) can be adversely affected by shipping noise both in terms of their behaviour and physiology (Wale *et al.* 2019). A review of how low level noise could impact fish is included in Popper and Hawkins (2018), which is also relevant to benthic invertebrates

Underwater noise – construction, UXOs decommissioning: Particle motion describes acceleration, displacement and velocity of particles, as sound is transmitted through water or other medium. It is often not simply related to sound pressure. It is known to be sensed by many invertebrates (examples are given in Popper and Hawkins 2019; Solan *et al.* 2016; Wale *et al.* 2019). Even if piles are installed using drilling (generally considered less noisy than impact piling), acoustic impacts from particle motion could occur.

MSS note that in Table A.1, it states that fish and shellfish impacts for underwater noise during construction and decommissioning will be assessed using the underwater noise modelling outputs. Only fish impacts can be assessed using this methodology, and not impacts on invertebrates.

Introduction of contaminants from corrosion protection systems: Kirchgeorg *et al.* (2018) review the potential for chemicals to be emitted into the marine environment from chemicals such as Aluminium from galvanic ‘sacrificial’ anodes. The review states that Al has been found in sediment and in mussels present in the biofouling community but the effect on benthic organisms and their prey species is not known.

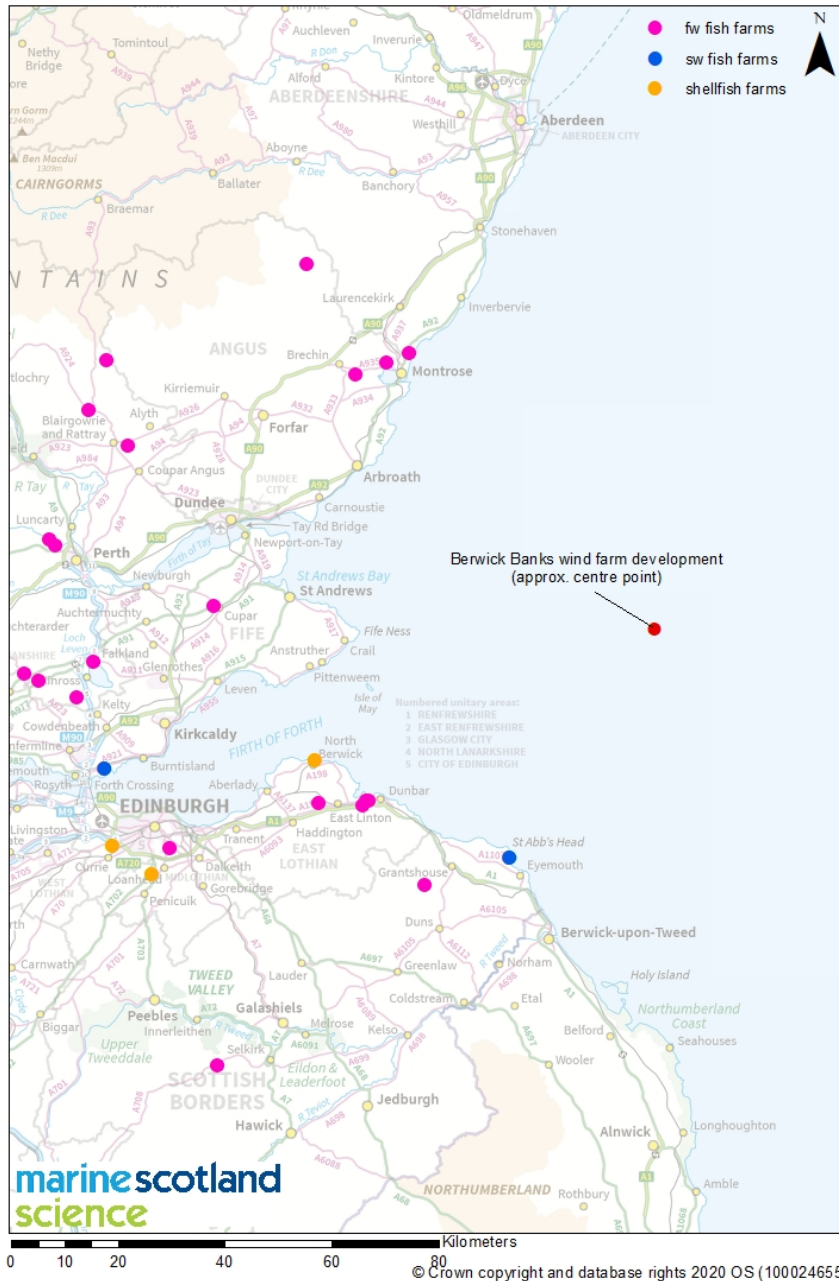
## **Aquaculture**

There are currently no aquaculture sites registered with Marine Scotland Science located in the immediate vicinity of the Berwick Bank development.

The nearest aquaculture site is at St Abbs, situated ~ 40 km south of the boundary of the proposed development site and ~ 20 km south east of where the export cable corridor meets land. This is a land based tank site using pumped seawater and stocked with a variety of marine finfish and shellfish species. It is currently active and operated by St Abbs Marine Station.

Distances are approximate from the location of the development shown in the maps.

## Aquaculture sites in the vicinity of Berwick Banks development



## Offshore Physical Environment

The scoping document details all the relevant physical processes and data sources. MSS support the rigorous physical processes modelling study proposed for the EIA and suggest including some aspect of modelling the fate of the sediment scoured from around the scour protection and foundations. Answers to specific question are below.

Do you agree with the data sources which are suggested for the assessment of physical processes?  
Yes

Do you agree that all receptors and impacts have been identified for physical processes?  
Yes

Do you agree with the suggested embedded mitigation and is this mitigation appropriate?  
Yes, scour protection is probably a sensible option, but there may still be some scouring of sediments around the scour protection. For this reason MSS advise against scoping it out of the EIA at this

point. The pickup and transport of sediments from around the foundations/scour protection could be modelled as part of the wider modelling being undertaken (detailed in section 6.1.6.1). To be clear, potential scouring is not likely to lead to destabilisation of foundations, but may lead to the pickup and transport of sediments within the windfarm area and this should be investigated in the EIA.

Do you agree with the proposed approach assessment?

Yes, it's good to see that the impact on all physical parameters are being modelling in a consistent manner (i.e. using models on a common computational grid).

Do you agree that transboundary impacts of marine physical processes receptors should be scoped out of the Proposed Development EIA?

Yes

## References

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Hopefully these comments are helpful to you. If you wish to discuss any matters further then please contact the REEA Advice inbox at [MSS\\_Advice@gov.scot](mailto:MSS_Advice@gov.scot)

Yours sincerely,

**Renewable Energy Environmental Advice group**  
Marine Scotland Science





## Lees E (Emma)

---

**From:** NATS Safeguarding <NATSSafeguarding@nats.co.uk>  
**Sent:** 05 October 2020 15:15  
**To:** Lees E (Emma); MS Marine Renewables  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020 [SG30350]  
**Attachments:** SG30350 Berwick Bank Offshore Windfarm - TOPA - Issue 1.pdf  
**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Our Ref: SG30350

Dear Sir/Madam

We refer to the application above. The proposed development has been examined from an en-route infrastructure technical safeguarding perspective and the findings show that it will infringe NERL safeguarding criteria for the following reason: The proximity, physical size and relative orientation of the development, is sufficient to generate false tracks. **Accordingly, NATS (En Route) plc objects to the proposal.**

We would like to take this opportunity to draw your attention to the legal obligation of local authorities to consult NATS before granting planning permission. The obligation to consult arises in respect of certain applications that would affect a technical site operated by or on behalf of NATS (such sites being identified by safeguarding plans that are issued to local planning authorities).

In the event that any recommendations made by NATS are not accepted, local authorities are obliged to follow the relevant directions within Planning Circular 2 2003 - Scottish Planning Series: Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) (Scotland) Direction 2003 or Annex 1 - The Town And Country Planning (Safeguarded Aerodromes, Technical Sites And Military Explosives Storage Areas) Direction 2002.

These directions require that the planning authority notify both NATS and the Civil Aviation Authority ("CAA") of their intention. As this further notification is intended to allow the CAA to consider whether further scrutiny is required, the notification should be provided prior to any granting of permission.

It should also be noted that the failure to consult NATS, or to take into account NATS's comments when determining a planning application, could cause serious safety risks for air traffic.

Should you have any queries, please contact us using the details below.

Yours faithfully



**NATS Safeguarding**  
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**From:** Emma.Lees@gov.scot <Emma.Lees@gov.scot>  
**Sent:** 25 September 2020 13:59



# Technical and Operational Assessment (TOPA)

## Berwick Bank Offshore Wind Farm

NATS ref: SG30350

*Issue 1*

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## Publication History

Issue	Month/Year	Change Requests and summary
1	September 2020	Scoping Request

## Document Use

External use:    Yes

## Referenced Documents

# 1. Background

## 1.1. En-route Consultation

NATS en-route plc is responsible for the safe and expeditious movement in the en-route phase of flight for aircraft operating in controlled airspace in the UK. To undertake this responsibility it has a comprehensive infrastructure of RADAR's, communication systems and navigational aids throughout the UK, all of which could be compromised by the establishment of a wind farm.

In this respect NATS is responsible for safeguarding this infrastructure to ensure its integrity to provide the required services to Air Traffic Control (ATC).

In order to discharge this responsibility NATS is a statutory consultee for all wind farm applications, and as such assesses the potential impact of every proposed development in the UK.

The technical assessment sections of this document define the assessments carried out against the development proposed in section 3.

## 2. Scope

This report provides NATS En-Route plc's view on the proposed application in respect of the impact upon its own operations and in respect of the application details contained within this report.

Where an impact is also anticipated on users of a shared asset (e.g. a NATS RADAR used by airports or other customers), additional relevant information may be included for information only. While an endeavour is made to give an insight in respect of any impact on other aviation stakeholders, it should be noted that this is outside of NATS' statutory obligations and that any engagement in respect of planning objections or mitigation should be had with the relevant stakeholder, although NATS as the asset owner may assist where possible.

### 3. Application Details

Scottish Government submitted a request for a NATS technical and operational assessment (TOPA) for the development at Berwickbank Offshore Wind Farm. It will comprise a large number of turbines contained within the boundary points as detailed in Table 1 and shown in the diagrams contained in Appendix B.

Turbine	Lat	Long	East	North	Tip Height (m)
A	56.0619	-1.3912	438009	685619	310
B	56.1502	-1.3936	437771	695444	310
C	56.1503	-1.5855	425852	695363	310
D	56.1368	-1.6446	422187	693846	310
E	56.3338	-1.6953	418939	715751	310
F	56.3546	-1.6599	421116	718084	310
G	56.4342	-1.6913	419135	726937	310
H	56.4466	-1.6538	421441	728322	310
I	56.4619	-1.6131	423943	730043	310
J	56.4815	-1.5656	426854	732244	310
K	56.4896	-1.4608	433302	733187	310
L	56.1596	-1.2453	446974	696581	310

**Table 1 – Turbine Details**

### 4. Assessments Required

The proposed development falls within the assessment area of the following systems:

RADAR	Lat	Long	nm	km	Az (deg)	Type
Great Dun Fell Radar	54.6841	-2.4509	90.4	167.4	17.3	CMB
Lowther Hill Radar	55.3778	-3.7530	84.8	157.0	52.4	CMB
Perwinnes Radar	57.2123	-2.1309	47.7	88.4	160.3	CMB
Nav	Lat	Long	nm	km	Az (deg)	Type
None						
AGA	Lat	Long	nm	km	Az (deg)	Type
None						

**Table 2 – Impacted Infrastructure**

## 4.1. En-route RADAR Technical Assessment

### 4.1.1. Predicted Impact on Perwinnes RADAR

Using the theory as described in Appendix A and development specific propagation profile it has been determined that the terrain screening available will not adequately attenuate the signal, and therefore this development is likely to cause false primary plots to be generated. A reduction in the RADAR's probability of detection, for real aircraft, is also anticipated.

### 4.1.2. En-route operational assessment of RADAR impact

Where an assessment reveals a technical impact on a specific NATS' RADAR, the users of that RADAR are consulted to ascertain whether the anticipated impact is acceptable to their operations or not.

Unit or role	Comment
Aberdeen Offshore ATC	Unacceptable
Prestwick Centre ATC	Unacceptable

*Note: The technical impact, as detailed above, has also been passed to non-NATS users of the affected RADAR, this may have included other planning consultees such as the MOD or other airports. Should these users consider the impact to be unacceptable it is expected that they will contact the planning authority directly to raise their concerns.*

## 4.2. En-route Navigational Aid Assessment

### 4.2.1. Predicted Impact on Navigation Aids

No impact is anticipated on NATS' navigation aids.

## 4.3. En-route Radio Communication Assessment

### 4.3.1. Predicted Impact on the Radio Communications Infrastructure

No impact is anticipated on NATS' radio communications infrastructure.

## 5. Conclusions

### 5.1. En-route Consultation

The proposed development has been examined by technical and operational safeguarding teams. A technical impact is anticipated, this has been deemed to be unacceptable.

## Appendix A – Background RADAR Theory

### Primary RADAR False Plots

When RADAR transmits a pulse of energy with a power of  $P_t$  the power density,  $P$ , at a range of  $r$  is given by the equation:

$$P = \frac{G_t P_t}{4\pi r^2}$$

Where  $G_t$  is the gain of the RADAR's antenna in the direction in question.

If an object at this point in space has a RADAR cross section of  $\sigma$ , this can be treated as if the object re-radiates the pulse with a gain of  $\sigma$  and therefore the power density of the reflected signal at the RADAR is given by the equation:

$$P_a = \frac{\sigma P}{4\pi r^2} = \frac{\sigma G_t P_t}{(4\pi)^2 r^4}$$

The RADAR's ability to collect this power and feed it to its receiver is a function of its antenna's effective area,  $A_e$ , and is given by the equation:

$$P_r = P_a A_e = \frac{P_a G_r \lambda^2}{4\pi} = \frac{\sigma G_t G_r \lambda^2 P_t}{(4\pi)^3 r^4}$$

Where  $G_r$  is the RADAR antenna's receive gain in the direction of the object and  $\lambda$  is the RADAR's wavelength.

In a real world environment this equation must be augmented to include losses due to a variety of factors both internal to the RADAR system as well as external losses due to terrain and atmospheric absorption.

For simplicity these losses are generally combined in a single variable  $L$

$$P_r = \frac{\sigma G_t G_r \lambda^2 P_t}{(4\pi)^3 r^4 L}$$

## Secondary RADAR Reflections

When modelling the impact on SSR the probability that an indirect signal reflected from a wind turbine has the signal strength to be confused for a real interrogation or reply can be determined from a similar equation:

$$P_r = \frac{\sigma G_t G_r \lambda^2 P_t}{(4\pi)^3 r_t^2 r_r^2 L}$$

Where  $r_t$  and  $r_r$  are the range from RADAR-to-turbine and turbine-to-aircraft respectively. This equation can be rearranged to give the radius from the turbine within which an aircraft must be for reflections to become a problem.

$$r_r = \sqrt{\frac{\lambda^2}{(4\pi)^3}} \sqrt{\frac{\sigma G_t G_r P_t}{r_t^2 P L}}$$

## Shadowing

When turbines lie directly between a RADAR and an aircraft not only do they have the potential to absorb or deflect, enough power such that the signal is of insufficient level to be detected on arrival.

It is also possible that azimuth determination, whether this done via sliding window or monopulse, can be distorted giving rise to inaccurate position reporting.

## Terrain and Propagation Modelling

All terrain and propagation modelling is carried out by a software tool called ICS Telecom (version 11.1.7). All calculations of propagation losses are carried out with ICS Telecom configured to use the ITU-R 526 propagation model.



## Appendix B – Diagrams

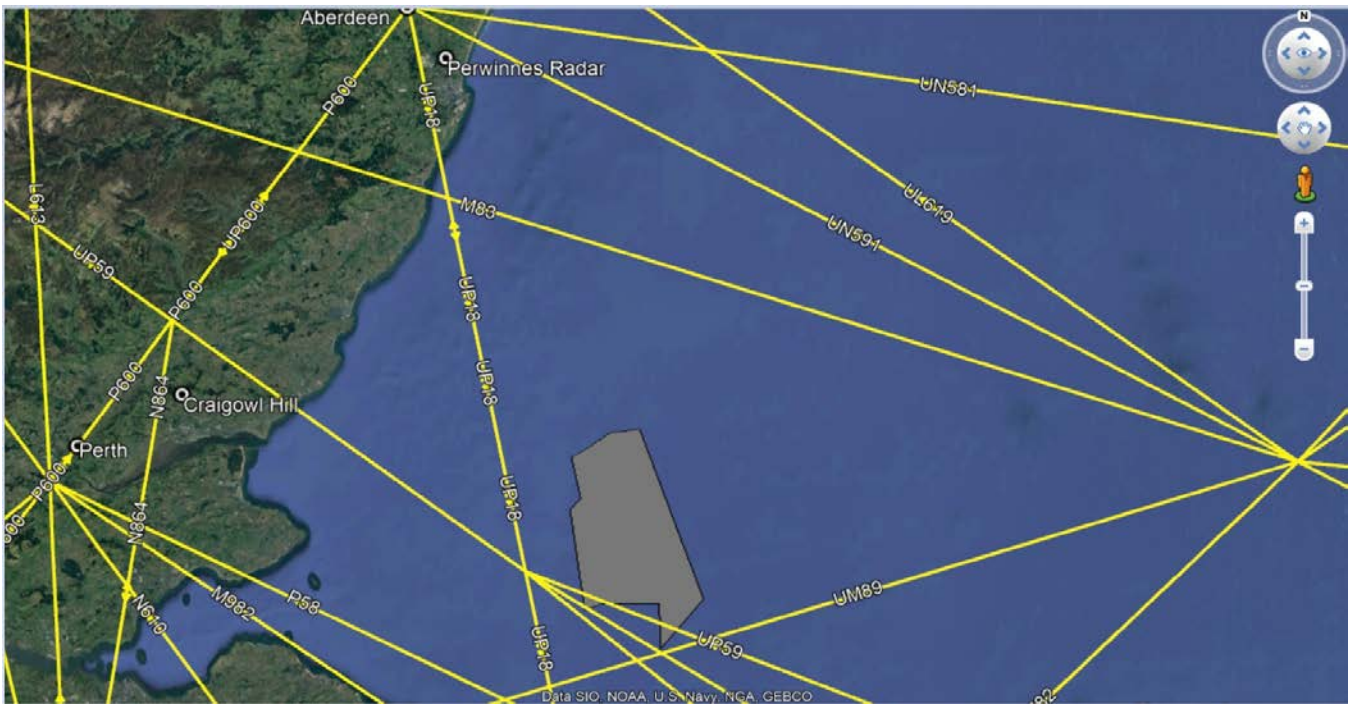


Figure 1: Proposed development location shown on an airways chart

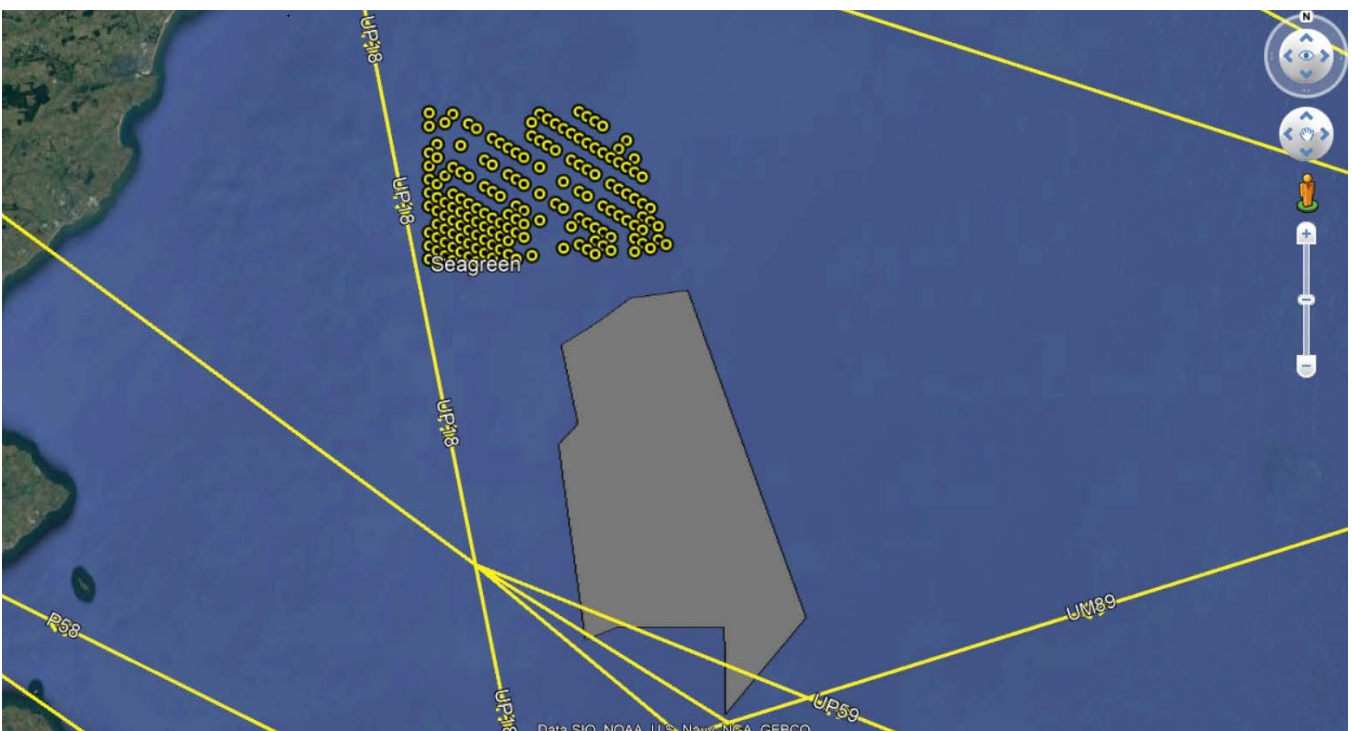


Figure 2: Proposed development shown alongside other recently assessed applications



Jessica Wilson  
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07 October 2020

Our ref: CNS REN OSWF Berwick Bank  
– Pre-application

Dear Jessica

## **FORTH & TAY OFFSHORE WIND – BERWICK BANK**

### **NatureScot SCOPING ADVICE**

Thank you for consulting SNH (hereinafter referred to as NatureScot) on the scoping report submitted by Berwick Bank Wind Limited. We provide our advice on the natural heritage interests to be addressed within the Environmental Impact Assessment Report (EIAR) and Habitats Regulations Appraisal (HRA) below for the proposed Berwick Bank offshore wind farm, located 39.2 km east of the East Lothian coastline.

The proposal which includes a project design envelope approach, comprises:

- Up to 242 wind turbines and associated support structures and foundations, with maximum blade tip of 310m above LAT;
- Up to ten offshore substations and associated support structures and foundations;
- A network of inter-array cabling linking the individual wind turbines to the offshore substation(s), plus inter-connections between substations (approximately 1,036 km of array cabling);
- A cable corridor, approximately 80km in length with up to 10 offshore cables connecting the offshore substation(s) to the onshore substation with landfall options at Thorntonloch and or Skateraw Harbour on the East Lothian coastline.
- Scour protection of up to 2,280,000 m<sup>3</sup> (0.00228 km<sup>3</sup>);
- An approximate installed capacity of 2,300MW with a proposed 50-year consent period.

### **Background**

The Berwick Bank wind farm proposal located in the outer Forth represents the second of three *phases* within the Round 3 'Firth of Forth Zone'. Phase one includes two consented offshore wind farms previously

called Seagreen Alpha and Seagreen Bravo and now collectively referred to as Seagreen. Phase three, Marr Bank, is expected to seek a scoping opinion in early 2021.

The assessment work undertaken for Seagreen together with its neighbouring consented Forth and Tay wind farms, Neart na Gaoithe and Inch Cape, provide useful context and reference. However there have been or are likely to be a number of changes to the assessment processes and methodologies for some receptors since these revised applications were considered. Where we are able to provide an update to these methods we have sought to do so. We have also indicated where we know of projects near completion that are anticipated to provide key updates.

The applicants proposed Scoping Road Map will therefore provide a vital tool to track agreement of emerging methods and new information and what is to be required during the intervening period between issue of the Scoping Opinion and the submission of the Section 36 and marine licence applications.

### **Policy context**

NatureScot works in support of the Scottish Government's vision for an energy sector that delivers secure, affordable and clean energy for Scotland<sup>1</sup>. We provide advice in the spirit of Scotland's National Marine Plan<sup>2</sup> which balances the promotion of the sustainable development of offshore wind, whilst protecting our biodiversity and taking account of seascapes, landscapes and visual impacts.

Working within the context of a climate emergency and a biodiversity crisis, we wish to provide advice that is enabling and secures the right development in the right place with most benefit for climate change reduction, and takes account of and lessens impacts in respect of the biodiversity crisis.

### **Content of the Scoping report**

We have reviewed the Scoping Report in its entirety and find that it lacks clarity on the key issues to be considered. For example, there is little cohesion between what is proposed to be scoped in (or out) and the baseline descriptions provided. There is also crucially very little narrative across most of the receptors on the proposed methods for impact assessment, often with only brief descriptions provided within the tables. Considerable focus is instead given to the Scoping Road Map process, transboundary screening and embedded mitigation. Much of this mitigation we consider to be premature or likely to be addressed through consent conditions once the full extent of impacts are known. Our concern about relying on mitigation at this stage is that relevant assessment is not undertaken as fully as may be required. Many of the study areas selected don't always make biological sense when considered against key impact pathways and where mapping has been included this often omits key designated sites and or consented development to be considered as part of the cumulative / in combination assessment. We are disappointed overall with the quality and length of this submission.

### **Assessment Approach**

The EIAR should consider the impact of all phases of the proposed development on the receiving environment, including effects from pre-construction activities and decommissioning as well as the construction and operation phases. Increasingly, there is a need to understand potential impacts holistically at a wider ecosystem scale rather than via the standard set of discrete individual receptor assessments. This assessment should focus on potential impacts across key trophic levels particularly in relation to the

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<sup>1</sup> Scottish Government Energy Strategy 2017: <https://www.gov.scot/Publications/2017/12/5661/3>

<sup>2</sup> <https://www.gov.scot/Publications/2015/03/6517>

availability of prey species. This will enable a better understanding of the consequences (positive or negative) of any potential changes in prey distribution and abundance from the development of the wind farm on seabird and marine mammal (and other top predator) interests and what influence this may have on population level impacts.

We support the intention to consider the impact of climate change effects within the ecological topics both in future proofing the project design and how certain climate stressors may work in combination with potential effects from the development wind farm. The EIAR should also consider the carbon cost of the wind farm (including supply chain) and to what extent this is offset through the production of green energy.

### **Habitats Regulations Appraisal (HRA)**

An HRA screening report has not been provided alongside the Scoping report, this is due later in 2020. We provide advice within our technical appendices (as discussed below) to assist development in the consideration of both a long and short list for further assessment of sites / features under HRA.

We anticipate that in this location and due to the uncertainty around both the predicted and actual impacts for the consented Forth and Tay wind farms, that there may be a predicted adverse effect on site integrity for a number of seabird features and their colonies. We therefore advise that early consideration is given (without prejudice to the assessment process outcome) to undertake a parallel process relating to the derogation process (regulation 49) of the Habitats Regulations.

### **Natural heritage interests to be considered**

Below, we provide a summary of our scoping advice for Berwick Bank in relation to key natural heritage interests, further detail is provided in receptor-specific technical appendices. This advice incorporates advice received from JNCC with respect to:

- Firth of Forth Banks Complex Nature Conservation Marine Protected Area (ncMPA)
- Outer Firth of Forth and St Andrews Bay Complex proposed Special Protection Area (pSPA)

The Firth of Forth Banks Complex ncMPA is designated for ocean quahog aggregations, offshore subtidal sands and gravels, shelf banks and mounds and moraines representative of the Wee Bankie key geodiversity area – advice for each of these four features has been included within the relevant appendices – see benthic interests (Appendix D), fish/shellfish interest (Appendix E), and physical processes / environment (Appendix F).

We will continue to engage through the Scoping Road Map process and have sought to identify within each Appendix where there is the need for further discussion to refine and agree assessment methods.

- **Ornithology**

Advice on ornithological interests is provided in Appendix A. The HRA Screening Report has not yet been provided – we provide detailed advice to aid this process together with guidance on expected assessment methods.

Key impacts include barrier/displacement of birds and / or the risk of collision from the operation of the wind farm as well as potential impacts from construction activities on important prey species. Impacts

associated with the installation of the export cables require consideration especially in relation to the overlap with the Outer Firth of Forth and St Andrew's Bay Complex pSPA.

Cumulative assessment should focus on Berwick Bank in combination with the other Forth & Tay (consented) wind farms covering Seagreen, Neart na Gaoithe and Inch Cape. There may also be a need to include additional wind farms, depending on connectivity once the long list is provided. Further discussion and agreement is needed in consultation with Marine Scotland.

- **Marine mammals**

Key species to be addressed for this proposal are harbour porpoise, bottlenose dolphin, white beaked dolphin, minke whale, harbour seal and grey seal. Advice is provided in Appendix B on the reference population for these species and expected assessment methods required for HRA, EIA and European Protected Species (EPS) licensing.

Our key concern remains the potential disturbance of marine mammals from underwater noise emitted during construction and associated activities particularly from pile-driving turbine foundation installation and use of high order deflagration for UXO clearance.

We will also need to agree the approach to cumulative impact assessment for marine mammal interests for HRA, EIA and EPS licensing requirements.

- **Seascape, landscape and visual interests**

Advice on seascape landscape and visual impact assessment (SLVIA) is provided in Appendix C. This includes the need for a larger study area beyond the existing 50km ZTV due to the height of the turbines proposed. This extended area will allow consideration of visual impacts across Angus, Fife, East Lothian and Scottish Borders where the wind farm array is likely to be seen both in combination with the consented Forth / Tay wind farms, as well as being the only wind farm on the horizon. Suitable viewpoints for this will need to be agreed in conjunction with ourselves and the Local Authorities.

- **Benthic interests**

Advice on benthic interests is provided in Appendix D. Habitat loss / disturbance is a key impact to be addressed for the wind farm alone and in combination with neighbouring wind farms. This will be particularly important for assessing impacts to features of the Firth of Forth Banks Complex ncMPA and any areas of Annex 1 habitat. The introduction of hard structures will also require consideration.

- **Fish and shellfish interests**

Advice on fish and shellfish interests is provided in Appendix E. Key species to be assessed include diadromous fish as well as Priority Marine Features (PMFs) which are ecologically important as a key prey species – this will help inform the impact assessment for seabirds and marine mammals. Habitat loss and disturbance (both temporary and long term) from the wind farm on these prey species is a key impact that should be considered across their life history stages.

Our advice recognises the continuing lack of knowledge on individual river populations for diadromous species which are SAC qualifying interests and so currently we continue to advise that the assessment of these should be covered within the EIAR rather than the HRA.

- **Physical processes / environment**

Advice on physical processes is provided in Appendix F and will need to include assessment of impacts to the geodiversity features of the Firth of Forth Banks Complex ncMPA. There should also be an assessment of coastal recession in respect of the export cable route(s) and landfall and sediment scour within the wind farm array and export cable.

Further discussion and agreement is needed in consultation with Marine Scotland on the methodology for hydrodynamic and hydro-sedimentary modelling – this will also need to take into account differing foundation types and construction methods.

### **Further information and advice**

NatureScot can provide further advice on natural heritage interests, at appropriate stages, as work is undertaken by the applicant in support of their formal submission. We are happy to discuss further any aspect of our advice prior to and after the issue of a formal scoping opinion. Please contact myself, Karen Taylor or Erica Knott in the first instance for any further advice.

Yours sincerely,

**Karen Taylor**

Marine Sustainability Adviser

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## NatureScot ADVICE FOR BERWICK BANK OFFSHORE WIND FARM

### APPENDIX A – ORNITHOLOGICAL INTERESTS

Offshore and intertidal ornithological interests are considered in Section 7.4 (p166 -185) of the Berwick Bank scoping report. We have responded to the scoping questions raised within our advice below and have incorporated advice received from JNCC on Outer Firth of Forth and St Andrews Bay Complex pSPA.

#### Study area

We agree with the rationale used to identify the proposed study areas.

#### Baseline

We are content that section 7.4.1 captures relevant baseline datasets and provides a useful summary of the previous and current site-specific surveys (offshore aerial and boat-based, winter intertidal) as well as strategic data studies (tracking, colour-ringing and breeding colony data) all of which inform baseline characterisation. Further advice will be provided during the consultation on the interim baseline report, expected in Q4 2020.

#### Key species

We anticipate that the main focus of the ornithological assessment will cover impacts to SPA/pSPA qualifying interests including migratory species and don't envisage that any significant effects normally considered under EIA wouldn't already be reflected within the Habitats Regulations Appraisal (HRA) SPA/pSPA assessment.

There is still a need to complete the long list process despite the wealth of preceding ornithological assessment already undertaken in the Forth / Tay area, even though we are aware this gives a good indication of the likely key species to be considered. The forthcoming LSE screening report will therefore be an important step to evidence this process and agree key species and SPA/pSPA colonies/interests to be taken forward to the EIAR and HRA.

Going forward we advise that any figures provided for this receptor group in the EIAR should include the boundaries of the Outer Firth of Forth and St Andrews Bay Complex pSPA.

- **SPA connectivity**

We recommend (for the long list) using foraging ranges as published in Woodward et al. (2019)<sup>3</sup> to derive connectivity with SPA colonies and with additional colonies that may be used by seabirds foraging within the pSPA. The mean-maximum range +1SD should be used. Where such a value exceeds the maximum range recorded, then the maximum figure should be used. After consideration of the long list it may be that just the mean or mean-maximum value will be used for apportioning, depending on the number of sites considered to have connectivity to the development. This is considered a precautionary approach, in that the long list is devised in such a way that it is unlikely that impacts are overlooked, but the apportioning of

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<sup>3</sup> Woodward, I., Thaxter, C.B., Owen, E., and Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724.

impacts is undertaken in a manner that does not make it an overly onerous task, nor lead to excessive dilution of impacts across multiple populations.

- **Seabird sensitivity**

Sensitivity assessments for judging plausible impact pathways for entry onto the long list should consider Furness & Wade (2012)<sup>4</sup>, Furness et al. (2013)<sup>5</sup> and Wade et al. (2016)<sup>6</sup>.

- **Reference populations**

For the vast majority of colonies and species the 4th National Seabird Census, 'Seabird Count' has produced updated counts. Although these have not been collated and published, they are available from the Seabird Monitoring Programme Database<sup>7</sup> – please seek further guidance from JNCC at [SMPWebsiteAdmin@jncc.gov.uk](mailto:SMPWebsiteAdmin@jncc.gov.uk). Where possible, we therefore advise use of these latest figures for assessment of impacts on breeding populations. For any sites or species without updates, then we advise use of Seabird2000 consensus figures (Mitchell et al. 2004)<sup>8</sup>. For comparative purposes (e.g. apportioning) where colonies included in apportioning do not have updates, then all colonies will need to use values taken from a similar time period.

## **Key impact pathways to consider**

- **General comments**

The key impact pathways (collision risk, barrier/displacement, disturbance and impacts to prey species) have been captured in Table 7.16. We note that disturbance from noisy pre-construction activities (such as UXO detonation and geophysical surveys) have not been considered however we acknowledge there is limited evidence available to indicate that significant disturbance from underwater noise is likely. Mitigation measures necessary to reduce impacts to marine mammals species will help reduce any impacts to diving seabird species in the absence of such evidence.

We agree that pollution impacts can be scoped out as per Table 7.17 however we consider that it is too premature to scope out impacts associated with the installation of the export cable, especially given the significant overlap with the Outer Firth of Forth and St Andrew's Bay Complex pSPA<sup>9</sup>. This is less likely cause an adverse impact given the slow speed employed by the installation vessel(s), but additional detailed information on cabling activities and associated vessel movements/sizes, including nature of works, locations, duration and timing, will be required to assess potential impacts on seabirds. There is also need to consider effects on prey resources, including prey-supporting benthic habitats, within the pSPA (see below). Closer to shore consideration is also needed for the inshore qualifying interests such as the diver, grebe and seaduck species many of which demonstrate high or very high behavioural sensitivity to

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<sup>4</sup> <https://www2.gov.scot/resource/0038/00389902.pdf>

<sup>5</sup> Furness, R.W., Wade, H.M. and Masden, E.A. 2013. Assessing Vulnerability of Marine Bird Populations to Offshore Wind Farms. *Journal of Environmental Management*, 119, 56-66.

<sup>6</sup> Wade, H.M., Masden, E.A., Jackson, A.C. and Furness, R.W. 2016. Incorporating data uncertainty when estimating potential vulnerability of Scottish seabirds to marine renewable energy developments. *Marine Policy*, 70: 108-113

<sup>7</sup> <https://app.bto.org/seabirds/public/about.jsp>

<sup>8</sup> P. Ian Mitchell, Stephen Newton, Norman Ratcliffe & Tim E. Dunn (eds) 2004. 'Seabird Populations of Britain and Ireland', T & AD Poyser

<sup>9</sup> <https://www.nature.scot/sites/default/files/2017-11/Marine%20Protected%20Area%20%28Proposed%29%20-%20Advice%20to%20support%20management%20-%20Outer%20Firth%20of%20Forth%20and%20St%20Andrews%20Bay%20Complex.pdf>



visual disturbance (see e.g. Jarrett et al. 2017<sup>10</sup>; Goodship and Furness 2019<sup>11</sup>). This may be exacerbated by cumulative disturbance from other projects active within the pSPA and wider Forth / Tay area. Therefore assessment of the export cable route and activities will need to be included and justified in the EIAR.

- **Prey species**

Table 7.16 captures indirect impacts on prey availability. More consideration is required in the EIAR to ensure that impacts to key prey species and their habitats within the wind farm are considered across all development phases for Berwick Bank alone and in combination with other wind farms in the Forth / Tay area, particularly given the importance of this area for foraging seabirds (Wakefield et al 2017)<sup>12</sup>. We recognise most EIARs concentrate on receptor specific impacts, however increasingly we need to understand the impacts at the ecosystem scale. Consideration across key trophic levels will enable better understanding of the consequences (positive or negative) of any potential changes in prey distribution and abundance on ornithological interests and how this may influence population level impacts. Drivers of change could include habitat loss and potential change in species composition away from those dependant on sandy substrates to fish species favouring rocky substrates. We provide further advice in our benthic interests and fish/shellfish appendices which should be helpful in this regard.

## **Approach to impact assessment**

We outline below our advice with respect to assessment methodologies to be used for those key impact pathways as discussed above. Overall, we are content with the approach outlined in section 7.4 of the Scoping Report for impact assessment. We will continue to engage through the Scoping Road Map process and have sought to identify below where we envisage the need for further discussion to refine and agree assessment methods.

NatureScot guidance on seasonal definition for birds in the Scottish Marine Environment should be used for breeding and non-breeding season definitions<sup>13</sup> - this is currently being updated however the content of the note remains unaltered other than the need for 5 years phenology data for use in any local variation.

- **Barrier/displacement**

Displacement should be assessed using the SNCB (2017) matrix methods<sup>14</sup> for the three auk species during both the breeding and non-breeding season. We support the use of the SeaBORD tool (Searle et al. 2018) for assessing barrier/displacement during the breeding season for those species with tracking data. The displacement rate and mortality rates to be used should be discussed and agreed in consultation with Marine Scotland. For the non-breeding season, population sizes should be derived from the zones determined by the BDMPS Report (Furness, 2015). The exception to this being guillemot where the population and impacts should be based on an assessment area derived from the breeding season foraging range.

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<sup>10</sup> D Jarrett, A S C P Cook, I Woodward, K Ross, C Horswill, D Dadam and E M Humphreys. 2018. Short-Term Behavioural Responses of Wintering Waterbirds to Marine Activity: Quantifying the Sensitivity of Waterbird Species during the Non-Breeding Season to Marine Activities in Orkney and the Western Isles. Scottish Marine and Freshwater Science Vol 7 No 9, 88pp. DOI: 10.7489/12096-1 <https://data.marine.gov.scot/dataset/short-term-behavioural-responses-wintering-waterbirds-marine-activity-quantifying>

<sup>11</sup> Goodship, N. & Furness, R.W. 2019. Seaweed hand-harvesting: literature review of disturbance distances and vulnerabilities of marine and coastal birds. Scottish Natural Heritage Research Report No. 1096.

<sup>12</sup> Wakefield et al. 2017. Breeding density, fine-scale tracking, and large-scale modelling reveal the regional distribution of four seabird species <https://doi.org/10.1002/eap.1591>

<sup>13</sup> Tyler. 2018. Seasonal Periods for Birds in the Scottish Marine Environment - <https://www.nature.scot/guidance-suggested-seasonal-definitions-birds-scottish-marine-environment>

<sup>14</sup> Joint SNCB Interim Displacement Advice Note 2017 - <http://data.incc.gov.uk/data/9aecb87c-80c5-4cfb-9102-39f0228dcc9a/Joint-SNCB-Interim-Displacement-AdviceNote-2017-web.pdf>

Modelling undertaken by CEH for Forth & Tay<sup>15</sup> indicates that gannet suffered no significant energetic costs or impacts on survival or productivity from displacement. For kittiwake, collision risk and displacement were previously considered to be mutually exclusive impacts, and as such we advised that assessment focuses on collision risk as the impact of most concern (presenting a greater risk of population consequences), however we advise for Berwick Bank that further discussion and agreement on impact pathways and assessment methods in consultation with Marine Scotland is required for this species.

- **Collision risk**

#### *Biological parameters*

We expect the BTO Birdfacts<sup>16</sup> to be the main reference source for biological parameters to be used in the collision models. These should be discussed and agreed in advance in consultation with Marine Scotland. It would also be helpful to agree the definition to be used for consideration of nocturnal activity (i.e. civil twilight). Nocturnal activity scores haven't changed from those previously used, other than for gannet, where values derived from the recent review of tagged birds (Furness, 2018)<sup>17</sup> should be used.

#### *Densities*

Once the interim baseline report is available further discussion and agreement in consultation with Marine Scotland is needed to decide which monthly values (e.g. mean monthly or monthly max) are used for density estimates.

#### *Models, options and scenarios*

We expect the basic and extended Band (2012)<sup>18</sup> models to be used primarily with option 2 and 3 for the worst case and most likely scenario. Further discussion and agreement on use of flight height data derived from the site-specific boat surveys is required in relation to use of options 1 and 4. For the other options, Johnston et al. (2014)<sup>19</sup> (with corrigendum for option 2) remains appropriate<sup>20</sup>. For flight speed, we rely on published data (i.e. Pennycuik 1997; Alerstam et al. 2007), however we recognise 'in the field' measurements are contributing to new evidence so would welcome further discussion on appropriate, evidence-based values to be used, in consultation with Marine Scotland.

We note and support the intention to also use the stochastic collision risk model (sCRM) developed by Masden (2015).

#### *Avoidance rates*

SNCB guidance (2014)<sup>21</sup> on avoidance rates should be used with a standard deviation of +/- 2. For species where there are no agreed avoidance rates we recommend use of 98% as default. Where there are terrestrial estimates based on the species in question those rates should be used. Any deviations from this advice will require clear justification and evidence.

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<sup>15</sup> CEH original displacement model for the Forth & Tay, further information available from: <http://www.gov.scot/Topics/marine/marineenergy/Research/SB7>

<sup>16</sup> Robinson, R.A. 2005. BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford <http://www.bto.org/birdfacts>

<sup>17</sup> Furness, R.W., Garthe, S., Trinder, M., Matthiopoulos, J., Wanless, S. and Jeglinski, J., 2018. Nocturnal flight activity of northern gannets *Morus bassanus* and implications for modelling collision risk at offshore wind farms. Environmental Impact Assessment Review, 73, pp.1-6. <https://doi.org/10.1016/j.eiar.2018.06.006>

<sup>18</sup> Band collision risk model, guidance and model spreadsheets - <https://www.bto.org/our-science/wetland-and-marine/soss/projects>

<sup>19</sup> Johnston, A., Cook, A.S.C.P., Wright, L.J., Humphreys, E.M. & Burton, N.H.K. 2014. Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. Journal of Applied Ecology, 51, 31– 41. With corrigendum Journal of Applied Ecology 51. Pp 1126-1130.

<sup>20</sup> Flight height data available from - <https://www.bto.org/science/wetland-and-marine/soss/projects>

<sup>21</sup> <https://www.nature.scot/sncb-position-note-avoidance-rates-use-collision-risk-modelling>

### *Presentation of outputs*

Outputs from each model should be supplied in full as appendices with input parameters stored. There is not as yet a standard approach for sCRM output reports, but as a minimum presentation of results should be accompanied by input values used. Where tables are used column titles should be standardised as far as possible to allow comparisons to be made where this is appropriate.

### *Strategic collision risk*

Potential collision risk to migratory species should be assessed qualitatively with reference to the survey results and the Marine Scotland commissioned strategic level report (Marine Scotland, 2014)<sup>22</sup>. To note, MS are also in the process of commissioning an updated strategic review of migratory routes via ScotMER, this update should be used if available within assessment timescales.

- **Apportioning**

In order to consider any population consequences arising from displacement and estimated collisions, the overall impacts will need to be apportioned by season, between SPAs and across age classes.

Age class apportioning should be based on stable age population models. For half months the collisions calculated for that month should be split equally between breeding and non-breeding period. In respect of sabbaticals we recommend that all adults recorded during survey work are considered as breeding adults. This is a precautionary assumption and it may be possible to refine it, depending on the choice and structure of population models. For the breeding season, we recommend apportioning between adults and immatures on the basis of developers site-specific survey work.

### *Breeding season*

Emerging Marine Scotland guidance (due to be published imminently) should be used for guillemot, razorbill and kittiwake (and shag, if required) and for all other species that require detailed consideration in the assessment we advise use of our (2018) interim guidance<sup>23</sup>.

### *Non-breeding season*

The BDMPS Report (Furness, 2015) should be used for species where the majority of birds are wintering elsewhere rather than in the northern North Sea. Further discussion will be needed to finalise the approach, with respect to birds who largely remain in the northern North Sea during the non-breeding season, but at present if non-breeding season assessment of displacement of guillemot is required, then we would wish to see the non-breeding season population defined in terms of the mean maximum foraging range (Woodward et al. 2019)<sup>24</sup>.

- **Population consequences (PVA)**

The impacts of collision and displacement will need to be considered in the context of relevant SPA breeding colonies particularly where the assessed effects exceed a change to the adult annual survival rate of 0.2%. Where apportioned impacts are large and / or the SPA populations are small, it is likely that population models will be required to establish whether or not there could be long-term impacts on

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<sup>22</sup> Marine Scotland strategic CRM, report available from: <http://www.gov.scot/Resource/0046/00461026.pdf>

<sup>23</sup> NatureScot (SNH) guidance on apportioning breeding season impacts - <https://www.nature.scot/interim-guidance-apportioning-impacts-marine-renewable-developments-breeding-seabird-populations>

<sup>24</sup> Woodward, I., Thaxter, C.B., Owen, E., and Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724

population viability. As well as modelling the individual impact of Berwick Bank wind farm, we expect modelling for cumulative impacts with the other Forth & Tay developments (see below).

We highlight that it is more difficult to make predictions over a longer time-frame as uncertainty in the model outputs increases with the length of model run. For SPA seabird species this may make it harder to conclude no long-term impacts on population viability and no adverse impact on site integrity.

#### *Type of model*

We recommended the NE PVA tool is used<sup>25</sup>. We request that the modelling of impacts is undertaken over two time periods; 25 years and 50 years due to increased uncertainty in interpreting outputs from model predictions further than 25 years ahead which necessitates a more cautious approach to their interpretation. No recovery period should be applied to either model run. Impacts should be applied to all ages in agreement with the age apportioning approach, and sabbatical rates of adult birds should be taken into account.

#### *PVA metrics to be presented*

We advise the two ratio metrics<sup>26</sup> which are generally termed 'Counterfactual (ratio) of final population size' and 'Counterfactual (ratio) of population growth-rate' should be presented.

### **Cumulative impacts**

Cumulative assessment should focus on Berwick Bank in combination with the other Forth & Tay (consented) wind farms covering Seagreen, Neart na Gaoithe and Inch Cape. There may also be a need to include additional wind farms located in Scottish and English waters. Further discussion and agreement is needed in consultation with Marine Scotland.

#### *Breeding season*

For the breeding season, the cumulative assessment should consider effects from projects within mean-max foraging range of the colony SPA under consideration, based on Woodward et al. (2019).

#### *Non-breeding season*

Cumulative assessment in the non-breeding season should include all relevant developments within the region defined for the species, either by BDMPS or other agreed approach.

### **Mitigation and monitoring**

Where significant impact pathways have been identified, we advise that the full range of mitigation techniques and published guidance is considered and discussed in the EIAR. There may also be a need to consider the process for derogation under the Habitats Regulations. This should be discussed further with both Marine Scotland and ourselves.

Extensive discussions have been held by the FTRAG ornithology sub-group regarding post-consent monitoring requirements. Any requirement for such strategic monitoring at Berwick Bank will be considered in light of agreed monitoring for the Forth and Tay consented wind farms and at other sites and any conclusions, if available during the assessment process.

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<sup>25</sup> Searle, K., Mobbs, D., Daunt, F. & Butler, A. 2019. A Population Viability Analysis Modelling Tool for Seabird Species. Natural England Commissioned Reports, Number 274. <http://publications.naturalengland.org.uk/publication/4926995073073152> also see [https://github.com/naturalengland/Seabird\\_PVA\\_Tool](https://github.com/naturalengland/Seabird_PVA_Tool)

<sup>26</sup> Cook, A.S.C.P. & Robinson, R.A. 2016. Testing sensitivity of metrics of seabird population response to offshore wind farm effects. JNCC Report No. 553. JNCC, Peterborough.

**Transboundary impacts**

Further discussion will be required regarding transboundary / cross-border impacts on receipt of both the HRA screening report and the interim bird's baseline report. It is likely that impacts will occur to seabird populations that breed outside Scotland as well as to wintering water birds that originate outside the UK.

## NatureScot ADVICE FOR BERWICK BANK OFFSHORE WIND FARM

### APPENDIX B – MARINE MAMMALS

Marine mammal interests are considered in Section 7.3 (p146 - 165) of the Berwick Bank scoping report. We have responded to the scoping questions raised within our advice below.

#### Study area

Figure 7.11 and section 7.3.2 proposes the North Sea Management Unit (MU) as the area for identifying potential cumulative projects and to inform consideration of designated sites for marine mammals. We disagree that this large area is the most appropriate given it relates to harbour porpoise, whereas the corresponding areas for bottlenose dolphin and seal species are much smaller. We therefore advise that the species specific MU should be used as the baseline reference population and for informing the assessment / designated site screening, as outlined below. The current aerial survey campaign will inform the proposed development to provide an indication of marine mammal presence.

#### Baseline

Most of the key data sets have been captured in Table 7.11 or referenced elsewhere within section 7.3. Where we have identified missing resources, these are referenced within our advice below.

We support the ongoing digital aerial surveys to update the existing baseline and note the reference to ongoing work to inform correction factors for availability bias. We are not aware of an agreed approach and so expect any recommendation for this to be sufficiently evidenced and preferably based on peer reviewed work. Further discussion is needed through the Scoping Road Map process to agree density values to be used.

#### Key species

We are aware that the IAMMWG (2015)<sup>27</sup> MU abundance estimates are currently being updated by JNCC et al. however please note the MU boundaries are not currently being revised. Abundance estimates have been updated recently for some cetacean MUs in Scottish waters, a summary can be found in Table 3 of the recently published Regional Baselines Report<sup>28</sup>.

- **Harbour porpoise**

For harbour porpoise, we advise that the reference population against which to judge impacts under EPS licensing is that of the North Sea MU (IAMMWG, 2015). The population abundance estimate has recently been updated – please refer to Regional Baselines Report. Recent data from the Small Cetaceans in European Atlantic waters and the North Sea survey (SCANS III)<sup>29</sup> can be used to consider impacts at a regional scale – please refer to survey block R (east coast). Predicted density surface for harbour porpoise within Scottish waters has been provided as part of the Regional Baselines report using SCANS III survey data.

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<sup>27</sup> IAMMWG. 2015. Management Units for cetaceans in UK waters (January 2015), [JNCC Report No. 547](#)

<sup>28</sup> E L Hague, R R Sinclair and C E Sparling. 2020. Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters. [Scottish Marine and Freshwater Science Vol 11 No 12](#).

<sup>29</sup> Hammond et al. 2017. Estimates of Cetacean Abundance in European Atlantic Waters in Summer 2016 from the SCANS-III Aerial and Shipboard Surveys.

- **Bottlenose dolphin**

For bottlenose dolphin we advise that there is connectivity with both the cable route and wind farm array area and the Moray Firth Special Area of Conservation (SAC). The reference population against which to judge impacts under HRA and EPS licensing is that of the Coastal East Scotland MU (IAMMWG, 2015) and we advise using Cheney et al. (2013)<sup>30</sup> for the most up-to-date population estimate.

- **White beaked dolphin**

For white beaked dolphin, we advise the reference population against which to judge impacts under EPS licensing is that of the Celtic and Greater North Sea MU (IAMMWG, 2015). We are mindful that this is a very large MU to assess potential impacts against, therefore we also advise assessment with regional scale data - please refer to SCANS III survey block R (east coast). Predicted density surface for white beaked dolphins within Scottish waters has been provided as part of the Regional Baselines report using SCANS III survey data.

- **Minke whale**

For minke whale, we advise the reference population against which to judge impacts under EPS licensing is that of the Celtic and Greater North Sea MU (IAMMWG, 2015). Similar to white beaked dolphin, this is a large MU to assess impact against. We advise assessment at a regional scale - please refer to SCANS III survey block R (east coast). Predicted density surface for minke whale within Scottish waters has been provided as part of the Regional Baselines report using SCANS III survey data.

- **Harbour seal**

For harbour seal, we advise that there is connectivity with the cable route and the Firth of Tay and Eden Estuary SAC. The wind farm array area is beyond the usual 50km screening buffer used for HRA purposes, however unidentified seals were detected in the wind farm array area (and buffer) during the HiDef Year 1 aerial surveys and previous tagging data undertaken by SMRU for the FTOWDG also indicates harbour seal tracks within the Berwick Bank wind farm area. There has been a serious decline in this population – East Scotland seal management unit (SMU) as defined by SCOS<sup>31</sup>. We advise further discussion is needed to agree the assessment process for this species.

- **Grey seal**

For grey seal, we advise that there is connectivity with the cable route and both the Isle of May SAC<sup>32</sup> as well as Berwickshire and North Northumberland Coast SAC. For grey seals, SACs were designated on the basis of the numbers of pups born during the breeding season and therefore the reference population should be the wider pup production areas. Both the Isle of May SAC (IOM) and Berwickshire and North Northumberland Coast SAC (BNNC) fall into the North Sea pup production area. As this is a large area, we recommend the use of the Firth of Forth area for the IOM, and the Firth of Forth plus the Farne Islands for BNNC (see SCOS 2019). BNNC SAC crosses the border between Scotland and England<sup>33</sup> which needs to be

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<sup>30</sup> Cheney et al. 2013. Integrating multiple data sources to assess the distribution and abundance of bottlenose dolphins *Tursiops truncatus* in Scottish waters. Mammal Review, 43, 71-88

<sup>31</sup> <http://www.smrु.st-andrews.ac.uk/files/2020/08/SCOS-2019.pdf>

<sup>32</sup> <https://sitelink.nature.scot/site/8278>

<sup>33</sup> <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0017072&SiteName=berwi&SiteNameDisplay=Berwickshire%20and%20North%20Northumberland%20Coast%20SAC&countyCode=&responsiblePerson=&SeaArea=&IFCArea=&NumMarineSeasonality=1&HasCA=1#hlco>

considered in the assessment. A summary of the most up-to-date abundance estimates can be found in Table 2 of the Regional Baselines report. Consideration of non-breeding season impacts (particularly underwater noise) may also be required for grey seal.

- **Designated seal haul outs**

The nearest designated seal haul out<sup>34</sup>, Fast Castle, is located some 3km to the south of the proposed landfall locations / cable route. The offence of harassment (intentional and reckless) relates to seals present on the actual haul-out (i.e. on land), where they are most vulnerable, rather than to the sites themselves in the absence of seals or to the neighbouring sea areas. Given this distance it is unlikely that construction works at landfall or activities associated with cable installation are likely to affect any individual hauled out using this site and so we advise it can be screened out, based on the information presented.

- **European Protected Species (EPS)**

All cetaceans (species of whale, dolphin and porpoise) are classed as European protected species. Please take into account for all activities that differing sets of Habitats Regulations apply within 12nm and beyond 12nm. Guidance for the inshore waters has recently been updated by the Scottish Government<sup>35</sup>. Advice is given above on appropriate MUs and reference populations.

## **Key impact pathways**

We broadly agree with potential impacts to be scoped in and out as per Tables 7.13 and 7.14 and provide below some additional advice on these together with a number of elements which we notice are missing.

### *Pre-construction noise impacts*

There are a range of activities likely to be undertaken during the pre-construction period which can emit significant underwater noise e.g. UXO clearance and some geophysical surveys. Impacts will require consideration under EPS licensing and potentially in combination with other noisy activities depending on the noise outputs, timings and duration. These should be considered in the EIAR rather than post-consent.

### *Foundation installation methods*

Underwater noise is also likely to be generated from foundation installation using impact piling driving as well as other methods such as drilling. The EIAR therefore needs to assess the likely disturbance effect which will inform HRA and EPS licensing requirements.

### *Floating foundations*

We note the project envelope also includes floating foundations albeit on a demonstration basis. Nevertheless, there are a number of potential impact pathways associated with this foundation type that are missing from section 7.3 which need further consideration. These include: entanglement risk, EMF, changes in prey density and distribution and displacement/barrier effects.

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<sup>34</sup> Information on seal haul outs designated Under Section 117 of the Marine (Scotland) Act 2010 - <https://www.gov.scot/policies/marine-environment/seal-haul-out-sites/>

<sup>35</sup> The Protection of Marine European Protected Species from Injury and Disturbance - <https://www.gov.scot/publications/marine-european-protected-species-protection-from-injury-and-disturbance/>



### *Disturbance from vessel use and other construction activities*

Disturbance from vessel use and other construction activities are grouped together as one impact in Table 7.13. Other construction activities captures a large range of potential activities most of which emit some level of underwater noise, as do vessels. We wish to see separation of the effects from vessel noise and presence (given the differing sizes, types and number of vessels needed for the differing stages of development) and these other activities, and how the influence of such may change depending on the marine mammal species being considered. Cumulatively it will be important to understand the likely level and effect of such disturbance and whether it could result in population level effects on marine mammals.

### *Change in prey species availability*

Table 7.13 captures changes in prey availability. More consideration is required in the EIAR to ensure that impacts to key prey species and their habitats from the wind farm are considered across all development phases for Berwick Bank alone and in combination with other wind farms in the Forth / Tay area. We recognise most EIARs concentrate on receptor specific impacts, however increasingly we need to understand the impacts at the ecosystem scale. Consideration across key trophic levels will enable better understanding of the consequences (positive or negative) of any potential changes in prey distribution and abundance on marine mammal (and other top predator) interests and how this may influence population level impacts. Advice within the benthic interests and fish/shellfish appendices will be helpful in this regard.

### *Decommissioning impacts*

Decommissioning impacts should be assessed with as close to full removal of all deposits as possible, in line with draft MS decommissioning guidance.

## **Approach to underwater noise modelling**

As part of the Scoping Road map process, the methodology and metrics for underwater noise modelling and assessment of cumulative effects will require to be discussed and agreed. To assist this process we provide initial advice as outlined below. We anticipate modelling will be necessary for any piling driving activity and UXO clearance.

- **Marine mammal densities**

Marine mammal densities within the zone of impact are required in order to predict the number of individuals which might be impacted by underwater noise. Information should be available from SCANS for cetaceans<sup>5</sup> and from SCOS / Marine Scotland for seals (Russell et al. 2017)<sup>36</sup>. For bottlenose dolphin, Quick et al. (2014)<sup>37</sup> provides an estimate for the Forth & Tay based on data up to 2013, with more recent updated provided by Arso Civil et al. (2019)<sup>38</sup>. Data is constantly being gathered, so the most up to date information should be checked and agreed.

We note that Marine Scotland's passive acoustic monitoring network (ECOMMAS)<sup>39</sup> on the Scottish East coast is likely to give background context in relation to dolphin species and harbour porpoise.

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<sup>36</sup> Russel et al. 2017. Updated Seal Usage Maps: The Estimated at-sea distribution of grey and harbour Seals. Scottish Marine and Freshwater Science Vol 8, No 25. <https://data.marine.gov.scot/sites/default/files/SMFS%200825.pdf> and data available through NMPI.

<sup>37</sup> N. J Quick et al. 2014. The East Coast of Scotland bottlenose dolphin population: Improving understanding of ecology outside the Moray Firth SAC. Report to the UK Department of Energy and Climate Change's Offshore Energy Strategic Environmental Assessment Programme (14D/086).

<sup>38</sup> Arso Civil et al. 2019. Changing distribution of the east coast of Scotland bottlenose dolphin population and the challenges of area-based management. Aquatic Conserv: Mar Freshw Ecosyst. 2019;29(S1):178–196. <https://doi.org/10.1002/aqc.3102>

<sup>39</sup> East Coast Marine Mammal Acoustic Survey - <http://marine.gov.scot/information/east-coast-marine-mammal-acoustic-study-ecommas>

- **Assessing injury risk**

We advise that consideration of both instantaneous and accumulated permanent threshold shift (PTS) is required, and that this is addressed using thresholds for impulsive and/or non-impulsive (relevant for the sound in question) as per Southall et al. (2019)<sup>40</sup> and NMFS (2018)<sup>41</sup>. Instantaneous PTS should be provided as unweighted zero-to-peak SPL and will inform the choice of pre-piling mitigation methods. While accumulated PTS should be provided as weighted cumulative SEL and will inform any required assessment of population consequences. The information provided needs to include detail of all parameters/choices used in the noise modelling environment, including assumptions made on fleeing responses and any use of ADD mitigation. This should be based on the latest available information. Information should be presented on the predicted number of animals for both instantaneous and accumulated PTS.

We have some concerns regarding the use of the 1% conversion factor methodology to estimate the source level. Noise measurements in the Moray Firth suggest that this was a poor fit for the soft start impact piling of the pin piles (estimated at >10% CF). If the conversion factor methodology is to be employed, we will need further evidence that it is appropriate for the particular piling type (i.e. pin piling vs mono-piling).

- **Assessing disturbance risk**

For behavioural disturbance, we advise that assessment incorporates a dose-response function (to address the range of individuals' responses to noise), rather than relying on a single-number threshold (e.g. TTS should only therefore be used for UXO assessments). Dose response information is available for harbour porpoise (Graham et al. 2019)<sup>42</sup> and harbour seal (Russell et al. 2016)<sup>43</sup> with updated information available from Whyte et al. 2020<sup>44</sup> - there may also be other recent work available. Information presented should include the predicted number of animals to be disturbed relative to the appropriate reference population.

## **Population consequences and cumulative impacts**

In order to consider the significance of underwater noise disturbance to marine mammals and the consequences of this on relevant populations, we advise the application of the iPCoD approach (interim population consequences of disturbance model)<sup>45</sup>.

Any requirements for population modelling will be determined by the outputs from underwater noise modelling, and will only apply to key species. Therefore, at the appropriate time, any requirements for population modelling should be discussed and agreed.

We will also need to agree the approach to cumulative impact assessment for marine mammal interests for HRA, EIA and EPS licensing requirements.

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<sup>40</sup> [https://www.aquaticmammalsjournal.org/index.php?option=com\\_content&view=article&id=1886:marine-mammal-noise-exposure-criteria-updated-scientific-recommendations-for-residual-hearing-effects&catid=174&Itemid=326](https://www.aquaticmammalsjournal.org/index.php?option=com_content&view=article&id=1886:marine-mammal-noise-exposure-criteria-updated-scientific-recommendations-for-residual-hearing-effects&catid=174&Itemid=326)

<sup>41</sup> <https://www.fisheries.noaa.gov/resource/document/technical-guidance-assessing-effects-anthropogenic-sound-marine-mammal-hearing>

<sup>42</sup> I. M. Graham et al. 2019. Harbour porpoise responses to pile-driving diminish over time. *R.Sco.open sci* 6:190335 <https://doi.org/10.1098/rsos.190335>

<sup>43</sup> D, J. Russell et al. 2016. Avoidance of wind farms by harbour seals is limited to pile driving activities. *Journal of Applied Ecology*. <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.12678>

<sup>44</sup> Whyte et al. 2020. Estimating the effects of pile driving sounds on seals: Pitfalls and possibilities. *JASA* <https://doi.org/10.1121/10.0001408>

<sup>45</sup> <http://www.marine.gov.scot/information/interim-population-consequences-disturbance-model-ipcod>

## Mitigation and monitoring

Where impact pathways have been identified, we advise that the full range of mitigation techniques and published guidance is considered and discussed in the EIAR.

Extensive discussions have been held by the FTRAG and MFRAG marine mammal sub-groups regarding potential mitigation and monitoring methods in relation to underwater noise disturbance particularly as a result of pile-driving activity. We anticipate that the approach to noise mitigation for Berwick Bank will be informed by best available evidence including any outputs from work undertaken during construction of the wind farms in the Moray Firth and elsewhere in the Forth / Tay area and English waters. We also refer to our commissioned reports on noise abatement<sup>46</sup> and entanglement<sup>47</sup> which may be helpful.

## Transboundary impacts

The basis for screening in marine mammals as a mobile species for transboundary effects is not adequately described, with little accompanying assessment to indicate how the conclusion of no expected impact has been reached. Cross border consideration with respect to Berwickshire and North Northumberland Coast SAC is discussed above.

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<sup>46</sup> Verfuss, U.K., Sinclair, R.R. & Sparling, C.E. 2019. A review of noise abatement systems for offshore wind farm construction noise, and the potential for their application in Scottish waters. Scottish Natural Heritage Research Report No. 1070. <https://www.nature.scot/naturescot-research-report-1070-review-noise-abatement-systems-offshore-wind-farm-construction-noise>

<sup>47</sup> S Benjamins et al. 2014. Understanding the potential for marine megafauna entanglement risk from renewable marine energy developments. Scottish Natural Heritage Commissioned Report No. 791. <https://www.nature.scot/naturescot-commissioned-report-791-understanding-potential-marine-megafauna-entanglement-risk>

## NatureScot ADVICE FOR BERWICK BANK OFFSHORE WIND FARM

### APPENDIX C – SEASCAPE, LANDSCAPE AND VISUAL IMPACT ASSESSMENT (SLVIA)

Seascape/landscape interests are considered in Section 8.5 (p239 - 270) of the Berwick Bank scoping report. We have responded to the scoping questions raised within our advice below. Our advice does not cover the cultural heritage aspects as this is outwith our remit and advice should be sought from the relevant local authorities / Historic Environment Scotland in this regard.

#### Study area

An initial ZTV to 50km has been provided with reference made to our visualisation guidance<sup>48</sup>. We consider however, that the proposed turbines - up to 310m in height (to blade tip), will be visible beyond this distance and therefore advise that the study area should be extended – see comment below re baseline.

#### Baseline

We note that Seagreen is missing from Figure 8.12 - the assessment and baseline mapping should include all relevant offshore wind farms that are built, under construction, consented and proposed. We also advise that indicative information is included in the EIAR for the proposed Marr Bank wind farm.

As well as the resources listed in Table 8.1.5, the LVIA and SLVIA should use the baseline coastal character assessment previously undertaken by the Forth & Tay offshore wind developer's group (FTOWDG) as a starting point. The extended area (as above) should consider the increased turbine height and visibility to include areas of Angus, Fife, East Lothian and Scottish Borders where the wind farm array is likely to be seen both in combination with the consented Forth / Tay wind farms, as well as being the only wind farm on the horizon. Accordingly we would be looking for viewpoints to represent and clarify likely extent of visibility from:

- Angus coast
- East Fife
- Isle of May
- East Lothian including North Berwick Law and Dunbar
- Scottish Borders, St Abb's Heads

This extension to this existing work will be helpful for assessment purposes and should take into account the locations of both Berwick Bank and the Marr Bank proposals, as well as the consented wind farms. We would be happy to discuss this further.

#### Key landscape and visual receptors

- Land-based receptors

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<sup>48</sup> Visual Representation of Wind Farms: Guidance, Version 2.2, published by SNH (2017b).  
<https://www.nature.scot/visual-representation-wind-farms-guidance>

The preliminary list (as provided on page 275) covers a good range of land-based receptors. A similar range should be included for the extended study area as discussed above.

- **Marine receptors**

Prior to COVID 19, recreational sailing and use of marinas as well as cruise ship operators were increasing along the east coast, some consideration in the assessment should be carried out for these receptors. Ferry routes should also be included where relevant, for example the route from Rosyth (were it to reopen) should be included to futureproof the assessment.

## **Key issues**

We agree with those impacts scoped in as per Table 8.16 and scoped out as per Table 8.17 other than the likely effects of night-time lighting which should be scoped into the assessment (see below).

- **Night-time lighting**

In our experience, turbine lighting is visible at 50+km. We therefore do not agree that the landscape and visual impacts of turbine lighting should be scoped out. Accordingly the SLVIA should include an assessment of long term impacts of night-time lighting on both visibility and coastal character. We would welcome further discussion on a likely lighting scenario in consultation with Marine Scotland to help inform suitable viewpoint selection (see below for advice on visualisations).

## **Impact assessment including cumulative**

We agree with the assessment approach outlined in section 8.5.4 and welcome the principle of *maximum adverse scenario*. This approach enables consultees and communities to understand the likely worst case in both extent and visibility of the turbines. Accordingly, we base our comments on turbine height of maximum 310m to blade tip and <242 turbines (as per section 3.3.3).

## **Visualisations**

We expect that all visualisations should be provided as per our guidance (see above). Relevant constructed, consented and proposed wind farms within the study area should be included (colour coded as appropriate).

For night-time visualisations we advise that baseline images are rendered to show a noticeable contrast between the land, sea and sky. Low light levels represent typical twilight conditions (i.e. dawn / dusk) and allow some consideration of the landscape context and we refer you to the night time visualisations in the submitted Moray West material which we consider to be good examples because:

- The level of apparent darkness and contrast is good. It is dark enough to look like night-time but just enough light to make out some landform and the sea;
- The sky is reasonably consistent, i.e. it's taken in the evening so avoids the more complex light that comes with sunrise; and
- In our experience of east coast turbine lighting we consider that the rendering of the (strength of the) turbine lights appears 'realistic'.

The construction over the next few years of Neart na Gaoithe, Inch Cape and Seagreen will introduce widespread change and significant landscape and visual impacts along the Scottish east coast from south

Aberdeenshire, through Angus and Fife south, East Lothian to Scottish Borders. The scale and extent of development is unprecedented within Scotland (onshore or offshore) in recent times.

The proposed location of Berwick Bank – south of Seagreen and further offshore than both Neart na Gaoithe and Inch Cape – will extend the influence of wind farm development further southwards to include the Borders.

### **Mitigation and monitoring**

We welcome the intention to achieve appropriate design and layout of wind turbines within the array area and to minimise the loss of landscape features at the landfall site. We support the principles and measures proposed in section 8.5.5 and detailed further in Table 8.16, but are mindful of the competing interests that may also influence turbine layout. We would welcome explanation and further discussion of the design objectives for Berwick Bank taking the neighbouring wind farms into account, in particular Seagreen. In this context, there should be a clear statement of the design rationale, including any technical constraints which are likely to influence the turbine layout.

### **Transboundary impacts**

We agree there are unlikely to be any transboundary (or cross border) impacts for seascape, landscape and visual impacts.

## NatureScot ADVICE FOR BERWICK BANK OFFSHORE WIND FARM

### APPENDIX D – BENTHIC INTERESTS

Benthic interests (both subtidal and intertidal) are considered in Section 7.1 (p109 - 128) of the Berwick Bank scoping report. We have responded to the scoping questions raised within our advice below and have incorporated advice received from JNCC on the Firth of Forth Banks Complex nature conservation MPA.

#### Study area

We are content with the proposed *development* study area which comprises the development site and cable route and will inform baseline characterisation and identification of benthic receptors that require further assessment. However, we are unclear why the *regional* study area (as per Figure 7.1) covers such a large area - the northern North sea - particularly as there is then no further reference to this wider area or how it will be used to inform the assessment of impacts. Instead, we suggest that a regional study area covering the 3 neighbouring (consented) wind farm as well as the proposed Marr Bank wind farm in the Forth / Tay area and their export cable routes are considered. This would enable focussed consideration of the cumulative impact to key benthic interests including those features of the Firth of Forth Banks Complex ncMPA as discussed below.

#### Baseline

Table 7.1 captures key desktop datasets and reports, however it should also include and consider FEAST – Feature Activity Sensitivity Tool<sup>49</sup>. We welcome the planned benthic and intertidal surveys to help inform baseline characterisation.

We recommend that once the site-specific surveys are complete that the results are provided as part of the Scoping Road Map process to ensure that the baseline is adequately captured prior to assessment and presentation within the EIAR Benthic Subtidal and Intertidal Ecology Technical Report.

#### Key species and habitats

Table 7.3 identifies protected sites with benthic interests that overlap or are in close proximity to the wind farm array area and cable route. For sites that fall in Scotland, we agree that Firth of Forth Banks Complex ncMPA<sup>50</sup> (wind farm and export cable) and Barns Ness Coast SSSI<sup>51</sup> (export cable) should be screened in. Impacts on the geodiversity feature of Barns Ness Coast SSSI must be assessed, however the habitat features are not found near to the cable landfall site, and these features do not need to be assessed.

The Firth of Forth Banks Complex ncMPA is designated for ocean quahog aggregations, offshore subtidal sands and gravels, shelf banks and mounds and moraines representative of the Wee Bankie key geodiversity area. Please see Appendix E for our advice with respect to the ocean quahog aggregations and Appendix F for advice with respect to both the shelf banks and mounds large-scale feature and the moraines feature. We expect the EIAR to make a clear assessment against all designated features of the Firth of Forth Banks Complex ncMPA.

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<sup>49</sup> <https://www.marine.scotland.gov.uk/FEAST/>

<sup>50</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-1-Background-v1.0.pdf>

<sup>51</sup> <https://sitelink.nature.scot/home>

In addition, we would expect consideration of Priority Marine Features (PMFs)<sup>52</sup> and key Annex 1 habitats of conservation importance such as biogenic reefs (including *Sabellaria* reefs<sup>53</sup>). We have not seen or are used to the term - important ecological features - we would not expect to see this going forward, but rather consideration of features which are Annex 1 and /or PMF.

### **Key impact pathways to consider**

Section 3.3.5 provides summary tables for each of the foundation types being considered in the design envelope, however the lack of presentational consistency between these makes it difficult to cross reference or clearly identify the worst case scenario (WCS). It will also be important to consider the worst case scenario – this may differ within and outwith the ncMPA, and how these will be addressed, therefore the tables for each foundation type should include the impact of each option on the ncMPA and its three composite areas. We envisage the worst-case foundation type as being the option with the greatest seabed footprint including the need for scour protection as this changes the physical characteristics of the benthic habitat, which is of particular concern with respect to the ncMPA.

- **Habitat loss / disturbance**

Habitat loss and disturbance (both temporary and long term) is a key impact pathway captured in Table 7.4 for construction, operation and maintenance and decommissioning activities. All appropriate pre-construction seabed preparation works should also be included.

In Section 6.1.6, we noted that sediment scour has been scoped out of the assessment. We notice from the seabed features chart (Figure 6.5) that there are erosion areas with the proposed wind farm array boundary. Whilst these are particularly prevalent in the north of the site, there are some areas which appear to overlap with the site's southern footprint on the ncMPA. We therefore disagree with the scoping out of sediment scour at this stage, particularly as foundation types are still to be decided. Further information should be provided to assess this within the EIAR for the ncMPA as the introduction of protective materials for scour protection may have an impact on the designated features of the site due to the introduction of a different sediment type (alteration of habitat). Further comments in relation to hard structures are provided below.

- **Suspended sediments**

The potential creation and dispersal of settlement of suspended sediments may vary with differing foundation types and / or construction / decommissioning methods. It will be important to consider if this will have significant effects and for this to be quantified and the impacts correctly assessed. There will be differing impacts on different habitats and species, and each of these should be carefully considered.

- **Colonisation of hard structures**

We agree with the consideration and inclusion of hard structure colonisation in Table 7.4. As discussed in section 7.1.6 this is important in considering the potential spread of marine invasive non-native species and ensuring appropriate mitigation is embedded to combat this, both of which may differ depending on the foundation type(s) to be used. This will also be of use from an engineering perspective - depending on the

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<sup>52</sup> <https://www.nature.scot/professional-advice/protected-areas-and-species/priority-marine-features-scotlands-seas>

<sup>53</sup> <https://data.marine.gov.scot/dataset/status-sabellaria-spinulosa-reef-moray-firth-and-aberdeenshire-coasts-and-guidance>



hard structure in question, removal of encrusted growth may be necessary throughout the life time of the wind farm development, and if so, should be factored in.

The introduction of hard structure (e.g. turbine and OSP foundations, scour protection and cable protection) could also result in a change in community type from species typical of sedimentary habitats to those typical of hard substrata. We recognise that the long-term effect of such introduction is not fully understood at present, and that this change may provide positive and/or negative effects for different receptors and as such should be carefully considered. This will also help inform how any local increase in species diversity may influence prey species availability (see below).

It would therefore also be helpful if commentary is provided in the EIAR on stabilisation operations to allow further understanding of the potential nature conservation impact. This would include:

- Location of dump sites
- Type/ size / grade of rock to be used
- Tonnage / volume to be used
- Contingency tonnage / volume to be used
- Method of delivery to the seabed
- Footprint of rock
- Assessment of the impact (particularly in the ncMPA and its 3 composite areas)

Where protective material cannot be avoided, we recommend using a more targeted placement method e.g. fall pipe vessel rather than using vessel-side discharge methods. We also recommend that consideration is given to minimise the amount of hard substrate material used during the operations, and maintenance, of the wind farm and that the worst-case quantity is assessed for the lifetime of the project. Where materials have to be used we also encourage that consideration is given to choice of materials (composition and size) and their ability to be recovered during decommissioning.

- **Change in prey species availability**

Table 7.4 doesn't capture changes in prey availability as a result of habitat loss or disturbance. More consideration is required in the EIAR to ensure that impacts to key prey species and their habitats from the wind farm are considered across all development phases for Berwick Bank alone and in combination with other wind farms in the Forth / Tay area, particularly given the importance of this area for a number of prey species<sup>54</sup>. We recognise most EIARs concentrate on receptor specific impacts, however increasingly we need to understand the impacts at the ecosystem scale. Consideration across key trophic levels will enable better understanding of the consequences (positive or negative) of any potential changes in prey distribution and abundance as a result of impacts to benthic habitats on and how this may influence population level impacts for marine mammal (and other top predator) interests.

We agree with those impact pathways to be scoped out as per Table 7.5. Confirmation is required that scour protection will be used (with detail provided on the type and quantity needed) and how this will avoid scour from developing beyond these protection measures i.e. the modelling prior to scour protection being used and the monitoring once in place, if used. Further information provided in Appendix F may be helpful.

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<sup>54</sup> <http://data.jncc.gov.uk/data/4d478592-6a82-4a75-97ad-de7057da9e8a/FFBC-3-ApplicationMPASelectionGuidelines-v5.0.pdf>

## Approach to impact assessment

Limited information is provided on how impacts to benthic interests will be assessed other than reference to the matrix approach described in section 5.3.5.

The EIAR should where possible quantitatively describe the impact of habitat loss / disturbance (temporary and permanent) from the development of Berwick Bank alone and in combination with neighbouring wind farms. This will be particularly important for assessing impacts to features of the Firth of Forth Banks Complex ncMPA and other habitats of conservation importance. If it is not possible to quantify impacts, then further discussion around a qualitative assessment will be required.

- **Firth of Forth Banks Complex nature conservation MPA**

Firth of Forth Banks Complex ncMPA is a composite site and the boundaries of each of the three areas reflect the presence and extent of the important features contained within them. All three areas within the ncMPA need to be considered, both alone and in-combination with respect to the offshore subtidal sands and gravels feature, as part of the assessment on the site. The EIAR should therefore include detailed information and figures on the potential impact to the three areas, as well as the overall ncMPA. More detailed maps which include the Firth of Forth Banks Complex ncMPA, particularly in relation to the Berwick Bank, Marr Bank and Seagreen wind farm developments should be included in EIAR. We also advise that further maps should be included which show the location of protected features within the ncMPA – please see JNCC mapper<sup>55</sup> for further information. This will aid in the interpretation of the information presented and allow us to provide accurate advice. Further information on the conservation objectives<sup>56</sup> for this ncMPA including supplementary advice<sup>57</sup> can be found on the JNCC site information centre (SIC)<sup>58</sup>.

- **PMF assessment**

We expect the assessment to quantify where possible the likely impacts to key PMFs and consider whether this could lead to a significant impact on the national status of the PMFs being considered<sup>59</sup>.

## Cumulative impacts

As discussed above, the EIAR must consider the cumulative effect of key impacts such as habitat loss / change from Berwick Bank wind farm in combination with the neighbouring wind farms in the Forth / Tay area especially in relation to impacts across the Firth of Forth Banks Complex ncMPA as discussed above. It would be beneficial for the analysis to contain tables, or another format, to enable accurate assessment of the impact of the project alone and in combination with the neighbouring offshore wind projects, and any other relevant marine activities, which will occur in the Firth of Forth Banks Complex ncMPA. This will need to cover the three areas of the ncMPA, as well as overall for this composite site.

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<sup>55</sup> <https://jncc.gov.uk/mpa-mapper/?zoom=9&center=-1.652,56.398&layerIds=65,85,63,48,46,74&baseLayerId=-2&activeFilters=>

<sup>56</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-2-ConservationObjectives-v1.0.pdf>

<sup>57</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-3-SACO-v1.0.pdf>

<sup>58</sup> <https://jncc.gov.uk/our-work/firth-of-forth-banks-complex-mpa/#conservation-advice>

<sup>59</sup> <https://www.nature.scot/priority-marine-features-guidance>

**Mitigation and monitoring**

Where impact pathways have been identified and are scoped in, we advise that the full range of mitigation techniques and published guidance is considered and discussed in the EIAR.

There may be a need for strategic monitoring to understand the impact of hard structure colonisation and change in community structure and local species diversity – noting by the time of submission, research may be available / planned that could be helpful for assessment and / or monitoring purposes.

**Transboundary impacts**

We advise there are unlikely to be any transboundary or cross border impacts for subtidal and intertidal benthic features.

## NatureScot ADVICE FOR BERWICK BANK OFFSHORE WIND FARM

### APPENDIX E – FISH AND SHELLFISH INTERESTS

Fish and shellfish interests are considered in Section 7.2 (p129 - 145) of the Berwick Bank scoping report. We have responded to the scoping questions raised within our advice below and have incorporated advice received from JNCC on the Firth of Forth Banks Complex nature conservation MPA.

#### Study area

We are content with two study areas defined in section 7.2.2.

#### Baseline

A summary of key data sets have been captured in Table 7.6 or referenced elsewhere within section 7.2 however we note little information on the migratory behaviour of selected diadromous fish species has been included in this table. A further review of published literature is needed to capture more up to date data such as Godfrey et al. (2015) and consideration of other projects such as the Moray Firth Tracking Project<sup>60</sup>. Recent discussions within the ScotMER Diadromous Fish evidence group means it is likely that such a review will be occurring, but the timeframe for this review is not yet known.

We welcome the addition of the epibenthic beam trawl surveys which will contribute a partial update to the existing baseline although we highlight the conflicting statements in section 7.2.3.2 on site-specific fish ecology surveys.

#### Key species and habitats

Table 7.7 identifies those protected sites / features with fish / shellfish interests that overlap with the wind farm array area and/or cable route or where there is reasonable likelihood of connectivity. These include SACs and their qualifying species - the forthcoming LSE screening report will be an important step to present evidence and agree key species to be taken forward to the EIAR. The Firth of Forth Banks Complex ncMPA<sup>61</sup> has however been omitted. We expect the EIAR to make a clear assessment against all designated features of the Firth of Forth Banks Complex ncMPA (see below).

Turbot Bank MPA located some 96.2km from the proposed development should be screened out – there is no connectivity with this site as set out in the MPA assessment process.

We also advise that Priority Marine Features (PMFs) which are ecologically important as a key prey species should be considered (see below).

- **Diadromous fish**

Those SACs for diadromous fish species in the proximity of the proposed development are summarised in Table 7.7. Please note however that Atlantic salmon is also a feature of the River Teith SAC (currently Table 7.7 only refers to sea lamprey and river lamprey as features of this site). Noting that at our knowledge of

<sup>60</sup> <https://atlanticsalmontrust.org/our-work/morayfirthtrackingproject/>

<sup>61</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-1-Background-v1.0.pdf>

individual river populations of each species is extremely limited and so practically for assessment this should be covered within the EIAR rather than the HRA.

Diadromous fish species are assumed to be present with the array area and/or export cable corridor during key migration periods. The timing of ‘fish migration’ is referred to in section 7.2.3.3 as an important element of the baseline characterisation – we seek further clarification on this statement as we are unclear whether the applicant is proposing to ascertain the timing of Atlantic salmon smolt migration from relevant rivers. The assessment should also reflect the behavioural characteristics of adult fish whilst in the marine environment. Noting, for example, adult Atlantic salmon can enter rivers at any time of the year.

- **Marine fish**

In order to inform impact assessment for seabirds and marine mammals, the EIAR should consider those fish species which provide an important function as a key prey resource, noting many of these are PMFs. Relevant species are likely to include herring, sandeels and sprat however we advise, through the Scoping Road Map process, that further discussion is needed to agree relevant species and assessment process.

- **Shellfish**

Ocean quahog aggregations are feature of the Firth of Forth Banks Complex ncMPA and should be included within the fish and shellfish assessment in the EIAR.

We support the consideration of freshwater pearl mussel given that Atlantic salmon (and other salmonids) are integral to the life cycle of this species therefore any impacts to salmonids that prevent them from returning to their natal rivers may have a resulting effect on FWPM populations.

- **Spawning and / or nursery grounds**

The offshore subtidal sands and gravels feature of the Firth of Forth Banks Complex ncMPA provides suitable spawning habitats for sandeels and herring. While impacts to this MPA feature are assessed primarily under the benthic chapter of the EIAR (see Appendix D), consideration of impacts to this feature as spawning habitat is also required given its functional importance.

We note the intention to undertake a further review of spawning and nursery grounds for herring (as per section 7.2.3.2) however, no further information is provided to indicate what this review seeks to inform. Any further review should identify patches of suitable habitat for sandeels and herring spawning to inform impact assessment and the need for mitigation. We agree with those species outlined in Table 7.8 however the narrative is very heavily weighted towards these as commercial species with no regard to their PMF status or ecological importance as prey species.

### **Key impact pathways to consider**

We agree with the impact pathways identified in Table 7.9 however these are very generic and little consideration has been given to which species and which parts of their life stage(s) each impact may effect. As such there is little cohesion between what’s proposed to be scoped in or out and the baseline narrative provided.

The impact will vary depending on the foundation type / installation methods used – careful presentation of information will be needed to enable cross-referencing and identification of the worst case scenario.

- **Habitat loss / disturbance**

Habitat loss and disturbance (both temporary and long term) is a key impact pathway captured in Table 7.9 for construction, operation and maintenance and decommissioning activities. All appropriate pre-construction seabed preparation works should also be included.

- **Underwater noise / particle motion**

Disturbance from construction-related noisy activities should be assessed depending on the foundation type / installation method. Some pre-construction activities such as UXO clearance will also require assessment. The impact of this noise in terms of disturbance or potential for auditory injury will depend on the hearing ability of the fish species - particle motion will be important in this regard and we note it is missed from the narrative in this section.

- **Increased suspected sediments**

The potential creation and dispersal of settlement of suspended sediments may vary with differing foundation types and / or construction / decommissioning methods. It will be important to consider if this will have significant effects and for this to be quantified and the impacts correctly assessed for each species.

- **EMF**

We agree that assessment of this impact should be scoped in for relevant fish species which will help inform mitigation requirements going forward. This is particularly relevant for floating wind farm where the inter-array cables are within the water column.

- **Colonisation of hard structures**

The colonisation of hard structures has been scoped into the benthic ecology section (see Appendix D) to allow consideration of the potential spread of marine invasive non-native species and to ensure the potential change in community type from species typical of sedimentary habitats to those typical of hard substrata can be assessed. We recognise that the long-term effect of such introduction is not fully understood at present, and that this change may provide positive and/or negative effects which need to be considered from a fish habitat / community perspective too, including how this may influence the availability of prey species. We do not agree with Table 7.10 that it should be scoped out.

- **Change in prey species availability**

Table 7.9 does not capture changes in prey availability as a result of habitat loss or disturbance. More consideration is required in the EIAR to ensure that impacts to key prey species and their supporting habitats within the wind farm are considered across all development phases for Berwick Bank alone and in combination with other wind farms in the Forth / Tay area, particularly given the importance of this area for a number of prey species<sup>62</sup>. We recognise most EIARs concentrate on receptor specific impacts, however increasingly we need to understand the impacts at the ecosystem scale. Consideration across key trophic levels will enable better understanding of the consequences (positive or negative) of any potential

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<sup>62</sup> <http://data.jncc.gov.uk/data/4d478592-6a82-4a75-97ad-de7057da9e8a/FFBC-3-ApplicationMPASelectionGuidelines-v5.0.pdf>

changes in prey distribution and abundance on marine mammal (and other top predator) interests and how this may influence population level impacts. Therefore consideration of how this loss/disturbance may affect the recruitment of key prey (fish) species through impacts to these important spawning and or nursery ground habitats should also be assessed.

### **Approach to impact assessment**

Limited information is provided on how impacts to fish and shellfish interests will be assessed other than reference to the matrix approach described in section 5.3.5.

The EIAR should where possible quantitatively describe the impact of habitat loss / disturbance (temporary and permanent) from the development of Berwick Bank alone and in combination with neighbouring wind farms. If it is not possible to quantify impacts, then further discussion around a qualitative assessment will be required. This should consider both the impacts but also indirect effects to predator species.

- **Diadromous fish**

With reference to our advice above, agreement on the scope of the assessment for diadromous fish should be agreed via the Scoping Road Map process.

- **Firth of Forth Banks Complex ncMPA**

Firth of Forth Banks Complex ncMPA is a composite site and the boundaries of each of the three areas reflect the presence and extent of the important features contained within them. All three areas within the ncMPA need to be considered with respect to ocean quahog aggregations, both alone and in-combination, as part of the assessment on the site. The EIAR should therefore include detailed information and figures on the potential impact to the three areas, as well as the overall MPA. More detailed maps which include the Firth of Forth Banks Complex ncMPA, particularly in relation to the Berwick Bank, Marr Bank and Seagreen wind farm developments should be included in EIAR. We also advise that further maps should be included which show the location of protected features within the MPA – please see JNCC mapper<sup>63</sup> for further information. This will aid in the interpretation of the information presented and allow us to provide accurate advice. Further information on the conservation objectives<sup>64</sup> for this MPA including supplementary advice<sup>65</sup> can be found on the JNCC site information centre (SIC)<sup>66</sup>.

- **PMF assessment**

We expect the assessment to quantify where possible the likely impacts to key PMFs and consider whether this could lead to a significant impact on the national status of the PMFs being considered<sup>67</sup>.

### **Cumulative impacts**

As discussed above, the EIAR should consider the cumulative effect of key impacts such as habitat loss / change from Berwick Bank wind farm in combination with the neighbouring consented wind farms in the Forth / Tay area especially in relation to diadromous fish as well as key fish and shellfish species that

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<sup>63</sup> <https://jncc.gov.uk/mpa-mapper/?zoom=9&center=-1.652,56.398&layerIds=65,85,63,48,46,74&baseLayerId=-2&activeFilters=>

<sup>64</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-2-ConservationObjectives-v1.0.pdf>

<sup>65</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-3-SACO-v1.0.pdf>

<sup>66</sup> <https://jncc.gov.uk/our-work/firth-of-forth-banks-complex-mpa/#conservation-advice>

<sup>67</sup> <https://www.nature.scot/priority-marine-features-guidance>

contribute ecological importance as a prey resource. This may differ depending on the life stage being considered.

### **Mitigation and monitoring**

Where impact pathways have been identified and are scoped in, we advise that the full range of mitigation techniques and published guidance is considered and discussed in the EIAR.

There may be a need for strategic monitoring to more fully understand aspects around diadromous fish migration and the impact of hard structure colonisation and change in community structure and local species diversity – noting by the time of submission, research may be available / planned that could be helpful for assessment and / or monitoring purposes.

### **Transboundary impacts**

We note that a number of countries (Norway, Denmark, Germany and the Netherlands) have been identified for consultation. We acknowledge there are gaps in relation to the marine behaviour of diadromous fish species however, no reasoning has been provided for the selection of these countries, in relation to each relevant species. It is also unclear whether there is any cross border effects to be discussed with England in respect of any species.



## **NatureScot ADVICE FOR BERWICK BANK OFFSHORE WIND FARM**

### **APPENDIX F – PHYSICAL PROCESSES / ENVIRONMENT**

Physical processes / environment are considered in Section 6.1 (p62 - 84) of the Berwick Bank scoping report. We have responded to the scoping questions raised within our advice below and have incorporated advice received from JNCC on the Firth of Forth Banks Complex nature conservation MPA.

#### **Study area**

We agree with the study area discussed in section 6.1.3.1.

#### **Baseline**

In general we are content with the data sets identified (Table 6.1) and approach outlined for baseline characterisation as per sections 6.1.3.

#### **Key features and processes**

We advise that the large-scale geodiversity features of Firth of Forth Banks Complex ncMPA should be included within the assessment of physical processes / environment in the EIAR. This should address both the Shelf Banks and Mounds feature and the Moraines feature.

#### **Key impact pathways to consider**

We recognise that geodiversity (including physical processes) underpins all other receptors in the marine environment and that the results of numerical modelling will be used to support assessment of other receptors. As such we expect this to be clearly demonstrated.

We are broadly content with the potential impacts scoped in and out as per Table 6.3 and Table 6.4 – however, we advise there are three elements that require further consideration as outlined below.

- **Physical change to features of the ncMPA**

The large-scale features of the ncMPA could be adversely impacted by direct physical change, particularly to the Moraines which are relict landforms, and/or by changes to hydrodynamics and sediment transport, particularly the Shelf Banks and Mounds which are dependent on these physical processes. These changes will differ according to foundation type and construction / maintenance processes.

- **Coastal recession**

Coastal recession over the project lifespan brought about by (predicted) sea-level rise could increase the risk of cable re-exposure. This is an important process that needs to be addressed under the assessment of changes to beach morphology, hydrodynamics or sediment transport (due to buried landfall cable(s) becoming exposed) as referred to in Table 6.3 (p82). In considering this risk, we recommend that potential beach lowering is explored which will then inform appropriate cable burial depth, in order to provide necessary adaptation to this aspect of climate change.

- **Sediment scour**

We do not agree with section 6.1.6 and Table 6.4 that scour of seabed sediments should be scoped out on the basis that scour protection will be used, as this can itself cause scour. Also, with reference to the seabed features chart (Figure 6.5) we note the areas of erosion within the proposed wind farm array area. Whilst, these are particularly prevalent in the north of the site, there are some areas which appear to overlap with Firth of Forth Banks Complex ncMPA. Further information should be provided in the EIAR to assess this, as the introduction of protective materials for scour protection may have an impact on the designated features of this site due to the introduction of a different sediment type (alteration of habitat).

## **Approach to impact assessment**

We are broadly content with the assessment approach outlined in section 6.1.6.1 subject to the advice outlined below.

- **Hydrodynamic and hydro-sedimentary modelling**

We advise that further discussion should be undertaken through the Scoping Road Map process on the methodology for hydrodynamic and hydro-sedimentary modelling. This will enable agreement on the spatial and temporal scope, nature of outputs (and their presentation) and key modelling assumptions, etc.

- **Firth of Forth Banks Complex nature conservation MPA**

Firth of Forth Banks Complex ncMPA is a composite site and the boundaries of each of the three areas reflect the presence and extent of the important features contained within them. All three areas within the ncMPA will need to be considered, both alone and in-combination with respect to the geodiversity features, as part of the assessment of the site. The EIAR should therefore include detailed information and figures on the potential impact to the areas, as well as the overall ncMPA. More detailed maps which include the Firth of Forth Banks Complex ncMPA, particularly in relation to the Berwick Bank, Marr Bank and Seagreen wind farm developments should be included in EIAR. We also advise that further maps should be included which show the location of protected features within the ncMPA – please see JNCC mapper<sup>68</sup> for further information. This will aid in the interpretation of the information presented and allow us to provide more accurate advice. Further information on the conservation objectives<sup>69</sup> for this ncMPA including supplementary advice<sup>70</sup> can be found on the JNCC site information centre (SIC)<sup>71</sup>.

## **Cumulative impacts**

As discussed above, the EIAR must consider the cumulative effect of key impacts such as physical change from Berwick Bank wind farm in combination with the neighbouring wind farms in the Forth / Tay area especially in relation to impacts across the Firth of Forth Banks Complex ncMPA as discussed above. It would be beneficial for the analysis to contain tables, or another format, to enable accurate assessment of the impact of the project alone and in combination with the neighbouring offshore wind projects, and any other relevant marine activities, which will occur in the Firth of Forth Banks Complex ncMPA. This will need to cover the three areas of the ncMPA, as well as the overall site.

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<sup>68</sup> <https://jncc.gov.uk/mpa-mapper/?zoom=9&center=-1.652,56.398&layerIds=65,85,63,48,46,74&baseLayerId=-2&activeFilters=>

<sup>69</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-2-ConservationObjectives-v1.0.pdf>

<sup>70</sup> <https://hub.jncc.gov.uk/assets/92fb7e5e-5e68-4e66-bde3-afd9c27d6b14#FFBC-3-SACO-v1.0.pdf>

<sup>71</sup> <https://jncc.gov.uk/our-work/firth-of-forth-banks-complex-mpa/#conservation-advice>

**Mitigation and monitoring**

Where impact pathways have been identified and are scoped in, we advise that the full range of mitigation techniques and published guidance is considered and discussed in the EIAR.

**Transboundary impacts**

We advise there are unlikely to be any transboundary or cross border impacts for the features considered for physical processes / environment.

## Lees E (Emma)

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**From:** Karen Taylor <Karen.Taylor@nature.scot>  
**Sent:** 18 February 2021 15:47  
**To:** Bamlett R (Rebecca); Lees E (Emma)  
**Cc:** Holland G (Gayle); Erica Knott  
**Subject:** Berwick Bank Scoping Advice - Gannet displacement - NatureScot advice - Updated

Hi Rebecca

We're aware the Marine Scotland Science have recently advised that displacement impacts should be considered for gannet with respect to Berwick Bank offshore wind farm. We had previously advised within our scoping advice (letter dated 07/10/20) that *"modelling undertaken by CEH for Forth & Tay<sup>15</sup> indicates that gannet suffered no significant energetic costs or impacts on survival or productivity from displacement"*. On further consideration of 1) emerging (but as yet unpublished) evidence from post consent monitoring indicating gannets may displace over larger distances; and 2) the increased number of wind farms being proposed and therefore larger cumulative effect, we would agree with MSS that it is now time to reconsider this advice, and start to include displacement impacts within our assessments for gannet.

I hope this helps clarify the situation going forward.  
Best wishes,  
Karen

### Reference

<sup>15</sup>CEH original displacement model for the Forth & Tay, further information available from:  
<http://www.gov.scot/Topics/marine/marineenergy/Research/SB7>

### Karen Taylor | Marine Sustainability Adviser

NatureScot | The Enterprise Centre | Kilmory Industrial Estate | Lochgilphead | Argyll | PA31 8SH

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[nature.scot](http://nature.scot) | [@nature\\_scot](https://twitter.com/nature_scot) | Scotland's Nature Agency | Buidheann Nàdair na h-Alba

**\*\*Please note I am working from home as a result of the Covid-19 pandemic. Due to the current set of restrictions I am working reduced hours. If your email is urgent please resend to [marineenergy@nature.scot](mailto:marineenergy@nature.scot) where it will be prioritised by the casework manager\*\***

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**From:** Jennifer Mouat <jenny.mouat@btinternet.com>  
**Sent:** 07 October 2020 17:23  
**To:** Wilson J (Jessica)  
**Subject:** Re: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Jessica

Thank you got the opportunity to comment on the Scoping Report for the Proposed Section 36 Application and Marine licence for Berwick Bank Offshore Wind Farm.

I have received a number of comments which I will summarise below. The overall consensus is the request to ensure that the Inshore fleet's interests and input are considered at each stage of the application process. The comments below reflect the interests of the inshore fleet and do not touch on the more technical aspects of the project on which I am sure others will have made comment.

Section 1 states

1. "The proposed export cable corridor is illustrated in Figure 1.1 and is approximately 80 km in length. The Applicant is currently assessing the feasibility of one or both selected landfall locations on the East Lothian coast, one at Thorntonloch (hereafter referred to as 'Thorntonloch Landfall') and one at Skateraw Harbour (hereafter referred to as the 'Skateraw Landfall')'. Both cable landfalls may be utilised."

I would ask that the inshore fleet are fully consulted on the landfall site to ensure that the least amount of disruption or exclusion is caused. It seems as though this decision making process has already begun so I urge you to engage to ensure you have the best information.

Section 3 makes reference to the type of foundations being used and I would urge that the future application considers the restrictions which can occur for fishing operations when using, for example ,Floating Foundations.

Chapter 4 would benefit from early engagement with the fishing industry, we were pleased to have the SSE Consent Manager present at a recent North & East Coast Regional Inshore Fishery Group and would ask for continued communication. The experience of those fishing in the area will be essential to the project.

Chapter 6 refers to the science base for the scoping report we believe that there is a wealth of Scientific information and learning from previous developments and this should be drawn on. In particular on the impact to fishing operations as well as the marine environment and marine mammals. We would like to see as inclusive approach as possible to ensure that all aspects of impact are considered including noise and in particular to those receptors which are particularly sensitive to noise.

Chapter 7 - There has been a concern raised with regard to the impact of construction on shellfish, juveniles and spat and would ask that actual survey work is undertaken on the prescribed development area to accurately measure the impact. Furthermore, the reports being used as reference should be up to date and relevant and should include all the species likely to be impacted. This includes nephrops and lobster.

Both displacement, restricted access and complete loss of fishing areas is of concern to the inshore fleet. It is essential that these issues are within the scope of the application. Safety at sea is of paramount importance particularly when fishing activities may be compromised by developments within the marine environment.

Chapter 8 – At the recent North & East Coast Regional Inshore Fishery Group the issue of the interaction with the Firth of Forth MPA Complexes and the Berwick Bank Wind Farm was raised. The management measures which are put in place could mean that activity is restricted in this area and along with any fishing restrictions as a result of this development the cumulative impact must be considered.

In addition to the safety issues mentioned earlier we would like to see a commitment to over trawling surveys of any cables within the development. This is not only a safety issue but should be seen as best practice.

We look forward to further engagement and communication with the Developers as the project progresses.

Kindest regards

Jennifer Mouat

Chair NECRIFG



# Northern Lighthouse Board

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Edinburgh EH2 3DA

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Website: [www.nlb.org.uk](http://www.nlb.org.uk)  
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Your Ref: Berwick Bank OWF – S36/ML Scoping Request  
Our Ref: AL/OPS/ML/O6\_02\_669

Ms Jessica Wilson  
Marine Licensing Casework Manager  
Marine Scotland – Marine Planning and Policy  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

7 September 2020

**REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION AND MARINE LICENCES FOR  
BERWICK BANK OFFSHORE WIND FARM LOCATED 39.2 KILOMETRES EAST OF EAST LOTHIAN**

**Regulation 14 of the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (As Amended)**

**Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (As Amended)**

**Regulation 13 and Schedule 4 of the Marine Works (Environmental Impact Assessment) Regulations 2007 (As Amended)**

Thank you for your e-mail correspondence dated 7<sup>th</sup> September 2020, requesting Northern Lighthouse Board's comment on the proposed Section 36 and Marine Licence applications for the Berwick Bank Offshore Wind Farm, 39 kilometres offshore East Lothian.

As stated within the Offshore Scoping Report, NLB has already engaged with the applicant with regard to navigational issues that may arise from the development of the Berwick Bank Offshore Wind Farm, and will continue to do so as the project progresses.

Within Section 8.2.3.3 (Navigational Features), reference is made to additional offshore wind farms that have been consented within the Outer Firth of Forth area. Northern Lighthouse Board consider it of great importance that traffic patterns are monitored throughout the development of these wind farms, and that any changes to the patterns are noted.

NLB respects your privacy and is committed to protecting your personal data.  
To find out more, please see our Privacy Notice at [www.nlb.org.uk/legal-notice/](http://www.nlb.org.uk/legal-notice/)

Northern Lighthouse Board also note within Section 8.2.5 (Embedded Mitigations) that the applicant has already given consideration to navigational lighting and marking through both the Construction and Operations & Maintenance phases of the wind farm project. Allowing for the likelihood of changing marine traffic patterns, NLB wish to remain in frequent dialogue with the applicant to ensure that the most appropriate lighting and marking scheme is provided.

Northern Lighthouse Board have no objection to the content of the Scoping Report, and if any further information is required, please do not hesitate to contact the Navigation team at [navigation@nlb.org.uk](mailto:navigation@nlb.org.uk),

Yours sincerely

[Redacted]

Peter Douglas  
Navigation Manager





# Northumberland

## County Council

Marine Scotland  
Licensing Operations Team  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

Your Ref:  
Our Ref: Berwick Bank Offshore Wind Farm  
Enquiries to: Kevin Tipple  
Direct Line: 01670 623631  
E-mail: kevin.tipple@northumberland.gov.uk  
Date: 19 October 2020

Dear Sir or Madam

### **Berwick Bank Offshore Wind Farm Consultation on Scoping Report**

Thank you for providing Northumberland County Council with an opportunity to comment on the above scoping report. We have reviewed the document and have the following comments to make.

### **Berwickshire and North Northumberland Special Area of Conservation (SAC)**

It is noted that the above designation, which overlaps with Northumberland, is identified in the scoping document as occurring close to the proposed development. It is agreed that this designation should be considered in the EIA and HRA.

### **Landscape and cultural heritage**

It is noted that the scoping report establishes a 50 kilometre Zone of Theoretical Visibility (ZTV) around the proposed wind turbine array. The ZTV overlaps with the north of the County around Berwick upon Tweed and Holy Island. This includes part of the area covered by the Northumberland Coast Area of Outstanding Natural Beauty (AONB) designation. The proposal therefore has the potential to impact on the special qualities of this designated landscape and cause harm to the heritage assets located within this area.

Table 8.14 on Page 241 of the Scoping Report identifies the Northumberland Landscape Character Assessment and the Northumberland Coast AONB Management Plan as relevant key desktop reports. A new management plan covering the period from 2020 to 2024 has more recently been published and this supersedes the management plan covering the period from 2014 to 2019 currently referenced in the scoping report. It is also considered that the 'Northumberland Coast AONB Landscape Sensitivity and Capacity Study' (August 2013) is relevant and should be used to inform the assessment of this proposal.

**Rob Murfin, Director of Planning**

County Hall, Morpeth, Northumberland, NE61 2EF  
T: 01670 625542 E: rob.murfin@northumberland.gov.uk  
www.northumberland.gov.uk



In relation to site specific survey data (Page 241 of the Scoping Report), we agree that the Northumberland Coast AONB Partnership and Natural England are key stakeholders and that they should be actively involved in identifying potential visual receptor and key viewpoints.

On Page 247, the Scoping report identifies the landscape character areas within Northumberland that coincide with the seascape, landscape, visual resources and cultural heritage setting array study area. We agree with the landscape character areas that have been identified in Northumberland.

In relation to the land-based receptors with the coastal landscape of the ZTV, we support the identification key visual receptors listed on Page 250. The first bullet point identifies walkers, equestrians and cyclists using the public rights of way network including the Berwickshire Coastal Path. As well as the Berwickshire Coastal Path key receptors are likely to include those using the Northumberland Coast Path and the proposed England Coast Path in this area and this should be included in the assessment.

In relation to cultural heritage (Page 255 of the Scoping Report), it is recognised that the scoping report has identified the relevant assets in Northumberland, including those around Berwick upon Tweed and Holy Island. While Lindisfarne Priory and Lindisfarne Castle appear to lie just outside of the ZTV (by around 1 kilometre) it is important that these are recognised in the assessment and the potential for harm to the significance of these heritage assets as a result of this proposal is assessed. Therefore, the identification of a viewpoint at Lindisfarne Castle in a landscape and visual impact assessment is supported.

Consideration should also be given to the identification of a viewpoint at Berwick upon Tweed given the presence of the heritage assets associated with this historic walled town, occupiers of residential properties, and tourists and visitors.

I trust that these comments are of some assistance. If you have any queries or would like to discuss any matters further, please do not hesitate to contact me.

Yours faithfully

[Redacted]

**Rob Murfin**  
**Director of Planning**

## Lees E (Emma)

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**From:** Andrew Boon <andrew.boon@nifca.gov.uk>  
**Sent:** 14 October 2020 12:14  
**To:** Lees E (Emma)  
**Cc:** nifca; Mark Southerton; Environmental  
**Subject:** Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion  
- Nil Response

Hi Emma,

Thank you for contacting us regarding this consultation. I can confirm that NIFCA has felt that as the scope of this project falls outside of our district, and given the lack of any direct impacts to activities that NIFCA is responsible for managing, we felt it not appropriate for us to comment on the consultation. NIFCA has a statutory duty to manage the exploitation of sea fisheries resources, and given the only impacts proposed in this report to areas within the district are visual, this falls outside of our remit somewhat.

We were also made aware of this consultation by one of our Authority members in Berwick and we are very interested to see how the project progresses, so please do keep us updated as the project develops.

I am aware that in the scoping report that some of the desk-based fisheries monitoring work may fall into the northern-most areas of our district, however we would be unable to provide such region-specific fisheries statistics for such a relatively small area of our district.

Despite this, if we can be of any further help going forward, please don't hesitate to get in touch.

Thanks

**Andrew Boon**

**Acting Senior Environmental IFCO**

Northumberland Inshore Fisheries  
and Conservation Authority

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01670 797 676



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## Lees E (Emma)

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**From:** Ben King <Ben.king@redrockpower.co.uk>  
**Sent:** 12 October 2020 10:46  
**To:** Lees E (Emma); MS Marine Renewables  
**Cc:** Wilson J (Jessica)  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020 - Nil Response

Dear Emma,

Thank you for getting in contact. We did not feel a need to respond to the scoping report for Berwick Bank but would like to remain a consultee.

Kind regards,

Ben

**Ben King**

Offshore Consents Manager



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Email: Ben.king@redrockpower.co.uk

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**Jessica Wilson**  
**Casework Manager**  
**Compliance Monitoring**  
**Marine Scotland Licensing Operations Team**

by email e. [jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot) / [MS.MarineRenewables@gov.scot](mailto:MS.MarineRenewables@gov.scot)

21<sup>st</sup> October 2020

Dear Ms Wilson,

**SCOPING OPINION REQUEST FOR THE PROPOSED SECTION 36 AND MARINE LICENCE APPLICATION FOR THE BERWICK BANK OFFSHORE WINDFARM.**

RSPB Scotland welcomes this opportunity to comment on the scoping report for the above noted proposed offshore windfarm and thank you for granting us an extension to the consultation deadline.

RSPB Scotland is supportive of the renewable technology that is needed to achieve our Net-Zero emission targets but believes projects must be carefully selected to avoid negative impacts on sites and species of conservation importance. The Berwick Bank offshore wind farm is located within a known environmentally sensitive region and is adjacent to the proposed Firth of Forth and St Andrew's Bay Complex marine Special Protection Area (SPA) and within foraging range of a number of breeding seabird colony SPAs. Given this proximity, this project poses significant risk to these seabird populations. In addition, the potential for in-combination impacts with other offshore projects, including the consented Neart Na Gaoithe, Inch Cape, Seagreen Alpha and Bravo projects is of particular concern, with additional windfarm proposals potentially needing inclusion in the long list when the assessment of connectivity is undertaken.

A robust environmental assessment is required, including an Environmental Impact Assessment (EIA) and Habitats Regulations Appraisal (HRA). To ensure the population-scale effects of the proposal are clearly understood by the decision-maker, use must be made of the latest and best available science.

Given the circumstances, with consented offshore wind development in the outer Firth of Forth region, there exists the potential that adverse effects on integrity of the Natura network cannot be ruled out, due to Berwick Bank impacts in isolation or in-combination. We believe it is appropriate for consideration to be given to the need, or otherwise, for compensatory measures for European sites to be prepared on a 'without prejudice' basis. Our recommendation is provided as a means to avoid lengthy delays in the

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Patron: Her Majesty the Queen    Chairman of Council: Professor Steve Ormerod, FIEEM  
Chairman, Committee for Scotland: Prof. Colin Galbraith    Director, RSPB Scotland: Anne McCall  
RSPB is a registered Charity: England & Wales no 207076, Scotland no SC037654

licensing process and we would welcome further discussion on this particular issue as the assessment progresses.

We have focussed our attention on Chapter 7.4 of the scoping report. Overall, the report proposes a sensible structure and range of issues for the Environmental Impact Assessment Report (EIAR). The proposed structure of the EIAR appears to allow all of the pertinent issues to be addressed; we are unable to identify at this stage any new sections that might require to be added in order to ensure that all of the relevant impacts are able to be addressed.

We feel the questions posed in Section 7.4.7 of the Scoping Report are useful and have provided answers to them and other more detailed comments in Annex 1.

We would welcome an opportunity to discuss our comments further and would be pleased to provide additional advice on the assessment as it progresses.

Yours sincerely,

[Redacted]

Toby Wilson  
Senior Conservation Officer

Cc	Erica Knott	NatureScot
	Martha Lovatt	SSE

## **ANNEX: RSPB Scotland scoping response**

We have responded to the questions posed in Section 7.4.7 of the Scoping Report:

### **1. Do you agree with the identification of the offshore and intertidal ornithology study areas, offshore ornithology regional study area and approach to offshore ornithology cumulative study areas?**

Yes, we broadly agree with these study areas and the approach to offshore study areas. However, while we welcome the use of mean-maximum + 1 S.D. from Woodward *et al.*, (2019), we would also recommend that site specific data are examined and where the maximum foraging range from the colony exceeds the generic value, that the site-specific value is used. We note that not all of the designated sites that may be affected by the proposal are listed but agree that there is likely to be the greatest potential for effect on:

- Forth Islands SPA;
- Fowlsheugh SPA;
- St Abb's Head to Fast Castle SPA;
- Outer Firth of Forth and St Andrew's Bay Complex pSPA.

### **2. Do you agree that the baseline surveys currently completed and proposed provide a suitable data set for the assessment? Are there further baseline surveys or variations to the proposed programme of surveys that you feel are necessary for the assessment?**

Yes, we agree that they provide a suitable data set for the assessment. We welcome the use of data from both the previous boat-based surveys (2009 to 2011), along with a new programme of surveys in July and August 2020 and April and May 2021 and aerial surveys undertaken in 2019 – 2021.

### **3. Do you agree with the proposed analytical approaches for displacement, collision risk, apportioning and population assessment? Are there alternatives that you recommend alongside or instead of the proposed methods?**

There is little detail provided as to the analytical approaches suggested, so while we agree with the proposed *overall approach*, we note the intention to refer to additional guidance as it emerges and to engage in discussion regarding the correct use of these. These discussions should also involve the best parameterisation of the modelling carried out. We would also recommend that the findings of the Marine Bird Impact Assessment Guidance Workshop held by SNH on 20<sup>th</sup> February 2020 be taken into account.

We welcome the use of the SeaBORD modelling tool, supported by a matrix approach where SeaBORD is not applicable. There is a need for further discussion around displacement and mortality values to be used.

For Collision Risk Modelling we recommend the use of the stochastic CRM shiny app developed by Marine Scotland Science, and that the full output reports are provided. We will welcome further discussion on the model options used and parameterisation of them. In particular, we welcome discussion as to the use of flight height distributions derived from boat-based surveys carried out 2020- 2021.

We recommend that the NE PVA shiny is used to assess population scale impacts for both projects alone and in-combination assessments. We welcome further discussion as to the parameterisation of the models. The full output report should also be provided and counterfactual metrics be given for both 25 and 50 years.

**4. Are there additional data sources not referenced within this chapter that you feel would be valuable for the assessment?**

The assessment should also use the data from the latest Seabird Census.

**5. Do you agree with the list of impacts scoped into and out of the assessment?**

We agree that the seabird species on which assessment should focus on for the Proposed Development are:

- gannet;
- kittiwake;
- guillemot;
- razorbill;
- puffin.

Combined displacement and collision risk should also be considered for gannet.

**Additional**

The assessment should also consider the overall carbon payback period for the development, including any impacts on 'blue carbon' from habitats affected by the proposal.



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1 October 2020

Jessica Wilson  
Casework Manager – Compliance Monitoring  
Marine Scotland Licensing Operations Team  
Scottish Government, Marine Laboratory,  
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[ms.marinerenewables@gov.scot](mailto:ms.marinerenewables@gov.scot)

Dear Ms Wilson,

**MS/20/105 - Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion**

I have read the relevant parts of the above consultation document. I welcome the commitment to undertake a Navigational Risk Assessment and that the RYA will be consulted. The reference should, however, be to RYA Scotland as any communications sent to the RYA on this topic will be forwarded to me for response. I work closely with the RYA on such matters.

*Do you agree that the existing data relating to navigation features available to describe the shipping and navigation baseline is sufficient to inform the assessment of shipping and navigation impacts?*

There is sufficient information on recreational boating. I will be happy to provide further information, and explanation of the movements of recreational craft. Note that about 25% of cruising vessels in these waters transmit an AIS signal.

*Do you agree that the existing data relating to navigation features available to describe the shipping and navigation baseline is sufficient to inform the assessment of shipping and navigation impacts?*

There is sufficient information on recreational boating. I will be happy to provide further information, and explanation of the movements of recreational craft. Note that about 25% of cruising vessels in these waters transmit an AIS signal.

*Do you agree that the embedded measures described provide a suitable means for managing and mitigating the potential effects of the Proposed Development on shipping and navigation receptors?*

The embedded measures are largely those that have been agreed for other wind farm developments off the Scottish coast. However, Notices to Mariners and Kingfisher are not effective ways of communicating with recreational sailors. As pointed out before there is now a large number of bodies issuing NtMs on the east coast sometimes only for short periods and it is unrealistic to expect skippers of recreational craft, which may have come from outside the UK, to track down all relevant NtMs. Kingfisher is only used by the fishing community. I will be happy to explain how the developer can best communicate information about the development to recreational sailors.

*Do you agree that all necessary organisations have been considered within the consultees listed in section 8.2.4?*

The list is comprehensive except that, as mentioned above, the RYA should be replaced by RYA Scotland. The North and East Coast Regional Inshore Fisheries Group should also be consulted.

Yours sincerely,

[Redacted]

Dr G. Russell FRMetS MCIEEM

Planning and Environment Officer, RYA Scotland

Dear Sir

**THE ELECTRICITY ACT 1989 SECTION 36  
THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND)  
REGULATIONS 2017  
THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2007  
SCOPING OPINION REQUEST FOR PROPOSED APPLICATION UNDER SECTION 36  
FOR BERWICK BANK OFFSHORE WIND FARM  
OUR REF: 20/01037/SCO**

I refer to your above consultation of 7 September 2020 and your email of the 21 September 2020 confirming that the consultation period ran until 21 October 2020. The following advice constitutes the formal scoping comments of Scottish Borders Council who will be a “relevant authority” consultee in the event of a Section 36 Application being submitted to the Scottish Government for determination.

### **Policy Context**

The main Local Development Plan policy to be considered is Policy ED9: Renewable Energy Development, which states that, *‘The Council will support proposals for both large scale and community scale renewable energy development including commercial wind farms, single or limited scale wind turbines, biomass, hydropower, biofuel technology, and solar power, where they can be accommodated without unacceptable significant adverse impact considerations’*. Renewable energy developments, including wind energy proposals, will be approved provided that there are no relevant unacceptable significant adverse impacts or effects that cannot be satisfactorily mitigated. Policy ED9 also states that, *‘If there are judged to be relevant significant adverse or effects that cannot be satisfactorily mitigated, the development will only be approved if the Council is satisfied that the wider economic, environmental and other benefits of the proposal outweigh the potential damage arising from it’*.

Policy ED9 also lists a range of Development Management considerations which are taken from para 169 of Scottish Planning Policy. Consequently it is important that the Environmental Assessment refers to the various issues identified within the Scoping response in order that they are fully addressed as part of the subsequent planning application submission.

It should be noted that the Council’s Supplementary Guidance (SG) on Renewable Energy, has also now been approved and adopted as part of the Local Development Plan. Any S36 application at Berwick Bank will need to be supported by an EIA that references and assesses the scheme against the new SG. Impacts on the Berwickshire Coastline are likely to be of significant importance in this assessment against the SG.

### **Pre-application Contact**

Although mentioned in the Scoping Report (2.3.2) there are no specifics of who may be consulted within the Scottish Borders. It is confirmed that the subject of consulting relevant coastal Community Councils, as well as this Council, was discussed in an MS Teams meeting between the applicant and the Council recently. This is recommended to the applicant.

### **Offshore Biological Environment**

The Council Ecology Officer states that relevant matters relating to the ecological interest of the designated sites in our region will be dealt with by the statutory agencies.

## Offshore Human and Socio-Economic Environment

### Aviation

Impacts and comment on potential effects will be expected from the MOD, Edinburgh/Aberdeen Airports and NATS. Policy ED9 in the Council's Local Development Plan takes account of defence and aviation safety matters and would reflect any comments from the aforementioned bodies. However, the issue of lighting is a separate matter considered under landscape and visual effects.

### Seascape, Landscape, Visual Resources and Cultural Heritage

Para 8.5.2.1 – details a 50km radius based upon guidance from SNH referring to turbines 150m high or taller. The proposed turbines are double the height which was unlikely to have been envisaged in the SNH guidance. It is, therefore, suggested that if visibility to the human eye dictated the 50km distance based upon 150m + tip heights, turbines that are double that height would be potentially more visible to human eye beyond the 50km study zone.

In a recent Scoping Request to the ECU for the Grayside Wind Farm near Biggar, Arcus stated at para 5.2 regarding Study Areas, the following:

*“...the study area for the LVIA of the Development will cover a radius of 45km from the nearest turbine.....This is considered to be the maximum radius within which a significant landscape and/or visual effect could occur given the height of the turbines that are being considered”.* Those turbines were 200m to tip. To therefore effectively scope out impacts at 51km from 300m tip height turbines seems unjustified, given the position that Arcus have taken that there could be potential significant effects up to 45km from 200m tip height turbines.

The 50km line does potentially mean that important receptors outwith that line will not be taken into account or impacts assessed through viewpoint selection. This includes Cockburnspath and surroundings, the Southern Upland Way and various other elevated locations and receptors west of the A1. It also means that Cockburnspath Conservation Area is not included for assessment.

Para 8.5.3.2 – would request that Scottish Borders Council be included within the consultation for identification of receptors and viewpoint locations. Some of the obvious viewpoints within the ZTV would include several from the Berwickshire Coastal Path including St Abbs Head and Tun Law NT892691. Eyemouth should also be represented as should the coastal Eyemouth Caravan Park.

Para 8.5.7 – should the Scoping Report not be identifying the wind farms used as a baseline for assessing cumulative impacts ? The assessment of the impacts of the Berwick Bank scheme from the Borders will be very much influenced by other offshore schemes in particular. This is indicated in Figure 8.34 but the Figure could be much clearer with annotations of the names of the other wind farms.

P 382 – disagree at this stage that the assessment of navigation and aviation warning lights are scoped out. More information is needed on their intensity, number, positioning and oscillation.

The following comments are from the Council Landscape Architect:

*“SBC Supplementary Guidance on Renewable Energy requires that an*

*EIA is carried out in support of this application and a Seascape, Landscape and Visual Impact Assessment (SLVIA) is required as part of the assessment.*

#### *Study Area and ZTV*

*Two separate Zones of Theoretical Visibility (ZTV) have been identified, one for the offshore and one for the landfall elements of the project. With regard to the offshore element a 50km radius ZTV study area from the outer boundary of the array has been selected. This is based on the SNH guidance 2017 Visual Representation of Wind Farms which recommends a 45km distance ZTV for turbines of 150m or taller. Under 'Extent of ZTV' at item 48 of the SNH guidance this recommendation is qualified by the statement.*

*'Greater distances may need to be considered for the larger turbines used offshore'.*

*As demonstrated in the guidance, turbine height informs the extent of the ZTV required due to potential increased visibility of the turbines. In this case the turbines proposed are double the height of the tallest mentioned in the guidance. It is therefore not unreasonable to expect that an increased radius ZTV is required to illustrate the theoretical visibility of the proposal.*

#### *Visibility*

*A wireline visualisation is provided at Fig.8.28 of viewpoint 4 at Fast Castle at 44km distance to the nearest turbine. At 300m tall these turbines are far greater in height than any we are now familiar with on or off shore. However, in terms of scale, without visual references at sea but with the vast visual scale of the seascape back drop the effect will be for the windfarm to appear relatively small, aided by the distance from sensitive receptors of 40km or more. On its own this development may well be below thresholds of visual dominance although in conjunction with existing, consented and proposed wind farms and other infrastructure this may not be the case. The nature and scale of the seascape, landscape and visual and cumulative effects of this proposal during daytime and night time is required to establish the potential for significant effects on views and visual amenity of receptors in the Scottish Borders.*

#### *Landscapes Designations*

*The applicants scoping report states that*

*'There are no designated landscapes within the seascape, landscape, visual resources and cultural heritage setting array study area or the seascape, landscape, visual resources and cultural heritage setting proposed export cable corridor study area within Scotland'*

*Although there are no National designations within the study area the local landscape designation of Berwickshire Coast Special landscape Area (SLA) should be assessed for significant effects on the special qualities of the SLA.*

#### *Sensitive receptors*

*Changes to the views and visual amenity should be assessed at representative view points and sequential viewpoints and at higher elevations as experienced along transport and travel routes including the Berwickshire Coastal path, Southern Upland Way, A1 and rail network. Visual sensitivity may be greater where the large scale windfarm is seen in the context of the rugged and intricate Berwickshire coastline and on isolated coastal headlands in contrast to areas of coastline that have a simple straight forward relationship with the seascape. Sensitive receptors also include areas where human activity is focused e.g. Coldingham, Eyemouth, beaches and caravan parks. These should be considered for representation in viewpoints in light of both local use and the study area being an important visitor destination. I request that SBC is consulted on the selection of viewpoints and identification of sensitive receptors.*

#### *Lighting*

*Turbine lighting will be required for marine navigation and aviation safety. Lighting can be an issue in views and for visual amenity during both day and night time. Lighting has been scoped*

*out without detailing the lighting types, numbers, intensity and the likely cumulative position. The impacts and cumulative impacts of lighting should be assessed for potential significant effects on sensitive receptors."*

### Cultural Heritage

Page 269 – It is not agreed that the impacts on cultural heritage assets should be scoped out on the basis that the distance diminishes the impacts, given that the tip heights are 300m and the wireline from Fast Castle indicates relatively clear visibility.

Please note the following advice is from the Council Archaeology Officer:

*"This application 20/01037/SCO proposes the construction of an offshore windfarm and the associated infrastructure in the laying of a cable from the windfarm to an onshore location in the adjoining portion of East Lothian adjoining the northern border of the Scottish Borders Council area. I have examined the submitted Scoping Report prepared by SSE on the Marine Scotland website, but found this the only document, with regard to the application. I have, nonetheless, read the archaeological and cultural heritage chapters 8.4 and 8.5, and grateful for the opportunity to comment upon this application.*

*There is the potential for impact upon Scottish Borders archaeological and cultural heritage receptors in the development of this application. These include both those on land, as well as those offshore - both close into the Scottish Borders and further out into the Firth of Forth approaches and North Sea - associated with this site as the Scoping Report acknowledges. Additionally such maritime sites and finds may relate to the periods when this was land (as the Scoping Report alludes to), those that have come to rest in the North Sea through circumstance, such as being shot down aircraft or vessels that sank whilst using the water. It has been helpful to consider the North Sea Prehistory Research and Management Framework (NSPRMF) 2009 and a number of topics are apposite for this part of the North Sea as well for what the historic environment in this location is.*

*The provision of ArcGIS compatible shapefiles would be a great help in assessing the location of this application against the Scottish Borders Historic Environment Record (HER) for the area of the windfarm, its cable routes and associated study area. No information request for the windfarm area itself been carried out, and the for the route of the cable information from the HER has been previously requested but the results of that report have not been seen to date. Information is held in the HER that would assist in the assessment of both land and offshore archaeology and cultural heritage sites and finds, and it is noted that the applicant proposes the use of Canmore for this (whose online pages note that this should not be used commercially and for land-use changes). The offshore components of the historic environment relevant to this proposed scheme will appear variously in the East Lothian and Scottish Borders HERs, and both should be consulted.*

*The offshore geophysical surveys mentioned in the Scoping Report have not been seen, though these may be useful to see for the better assessment of the recorded information (8.4.3.2). This chapter does little to address the potential for ordnance that its title includes, but the potential must be recognised for across the whole area of the windfarm array, cable and intertidal locations.*

*The baseline characterisation (8.4.3.3) is wholly unreferenced throughout and makes the assertion that at times the seabed would have formed dryland, but gives the likes of no dates or particular locations that would be impacted upon in the construction of the windfarm or the associated laying of cables. Whilst 'Doggerland' or 'Northsee-land' has been encountered in*

offshore developments in the southern North Sea, there remains equally potential in this area as well and particularly in the near to shore portions there may be evidence still to be encountered and referred to in the relevant geological and natural history literature (such as relevant Geological Survey Memoirs of the area and adjacent coast). The variability of such remains is a recognised topic of interest (see NSPRMF A.3) and the uneven nature of survival and potential is noted; even if the reworking of the area is noted then this is still of particular interest to palaeogeographers (as NSPRMF B.1, F.1 and F.3). Whilst a low potential may be recognised (one would like to see the reports of such) of peats and organic sediments, these deposits would be of importance nonetheless in what they contain (NSPRMF B.4) and ideally damage avoided or mitigated against. Additionally inorganic sediments would be of interest as well as the potential that the Storegga Slide of approximately 8220 BP could be identified in this area through this work should also be investigated. The assessment for archaeological potential is orientated to material of anthropogenic origin, rather than such landscape features being established to target the locations where such material (outside of the likes of vessels) may be found, but nothing indicating how the significance of these will be assessed, for they are important remains too.

The nuances of maritime archaeology are briefly recognised in the Scoping Report and the potential for unexpected remains to be discovered in the limits of the proposed development acknowledged. However in the presentation of the mapped information a slightly misleading impression is given to the discrete nature of the possible and more definite wreck sites as points, and no separation made by the accuracy of the location and the possibilities of more debris fields of their actions of sinking or any post-depositional movement of materials or artefacts to be more scattered than as to be encountered as point-based sites alone - and when Table 8.13 suggests a 50m buffer around sites with known important archaeological potential, this may require some better qualification depending on the nature of the vessel in question (such as light aircraft moving location on a flat seabed, as opposed to heavier vessel on a rocky seabed location). (The Chartered Institute for Archaeologists Standard and guidance for historic environment desk-based assessment, as an aside, has been recently revised and is now in a 2020 iteration). Nothing is indicated within 8.4.4.1 that indicates what how the significance of the vessels encountered will be assessed for their importance and therefore avoidance, beyond certainty being made in their anthropogenic nature.

Within 8.4.4.2 it is not clear to me if any seismic data will be obtained as this can give additional information to sonar and magnetometer work, such as on the composition or layering of any subsurface deposits, and no locations have been so far highlighted which will need special work or avoidance. The further assessments should look to provide such details. The various NSPRMF targets include much for such and highlight I.1 and I.2 of particular relevance.

With regard to the Scoping Report's Questions in 8.4.7 in their order of appearance;

- given the nature of the maritime records, it may be useful to consider a larger area with regard to the casualty records which are more generally known. In particular the imprecisely known records of vessels may need to be considered, such as 10 and/or 1km grid square edges outside of the study area to be considered given the previous practices of the southwestern corner at these locations being meant for the whole of the 10 and/or 1km grid square being meant.
- nothing seems to have been mentioned for how the likes of on-going cable movements may be minimised beyond the initial construction impacts in Table 8.14 (though in 8.4.6 this notes undergrounding to be carried out in the intertidal zone). The proposed mitigation work should also include provision for the recording and reporting of such work, such as to the relevant HERs, as well as national, regional and local journals, conferences and proceedings as necessary as befits the work.
- no, I think it would be necessary to consider the whole of the application in the round. The construction of the windfarm offshore has land-based impacts and it would be useful to

*consider those in the Environmental Impact Assessment of the windfarm itself, as well as in the associated onshore works (as the Scoping Report itself does).*

*It may be useful to consider the rash of recent publications on 'Doggerland' and its presence in this part of the North Sea for what evidence may remain of the landscape, as well as more of a desk based assessment for this area of the North Sea with regard to the completeness for vessels - both aircraft and seacraft - likely. Recent work by Fjordr Consulting examined the East Coast War Channels and highlighted many wrecks, and their significances, for the First World War.*

*In the Cultural Heritage chapter 8.5 it is noted that a wider buffer around the export cable corridor and the windfarm array itself given. This therefore extends beyond East Lothian and Scottish Borders Council areas and other local authority archaeology teams may also wish to comment. It may be useful to consider the North East Historic Seascape Characterisation for any similarities of seabed and the likelihood of what archaeological sites and preservation there may be of them in this Berwick Bank location as well.*

*It may be worth noting in Table 8.15 that The National Trust appears, but not the National Trust for Scotland which may be of particular Scottish Borders interest given their extensive landholdings at St Abbs Head. This is briefly mentioned in passing for the Key Visual Receptors and it is worth noticing that many of the land-based receptors are also cultural heritage sites, so visualisations from these location would be particularly useful from my point of view also. It is disappointing, therefore, that no visualisation has been provided for St Abbs Head. Whilst Fast Castle in the Scottish Borders has been included, this site is at a lower level above the coastline than the 19th century lighthouse and early medieval Kirk Hill site at St Abbs Head locations. It would be helpful to see visualisations from these locations which are more elevated positions above the shoreline, though still not so high as the windfarm's turbines themselves.*

*With regard to the Scoping Report's Questions in 8.5.9 in their order of appearance;*

- it may be useful to conduct an HER search of the Scottish Borders HER for what heritage assets are recorded within the land-based zone of theoretical visibility as only a very few Scheduled Monuments have been considered (as per the comments on Fast Castle immediately above, others at more elevated coastal cliff and higher inland may also be useful, such as at the St Abbs locations and others named above).*
- such visualisations as suggested above would help provide that suitable means desired for more detailed assessment and commentary.*
- (as above and as the earlier answer) no, I think it would be necessary to consider the whole of the application in the round.*
- no, I think it would be necessary to consider the whole of the application in the round.*

*Additionally in the Table 8.13 it mentions a document with the reference to 'TCE (2014)' which is presumably The Crown Estate - but nothing with a 2014 date is mentioned in the bibliography, only 2012, so it would be helpful to know if there is something missing here or is it a typo?*

*It would also be helpful to see the Wessex Archaeology model clauses that are referred to in the bibliography as they are mentioned in Draft in July 2020, though I do not recall seeing those passed around the Association for Local Government Archaeological Officers (ALGAO) mailing lists for comment. I have not heard of this in my attendance at the North East Maritime Archaeology Forum meetings that I have attended since 2018 onwards.*

*It may also be useful to note that the Scottish Borders Local Development Plan has recently been adopted and this should be consulted with regard to the historic environment policies*



*within as this is unremarked upon though it contains a number of historic and general environmental policies relevant.”*

#### Socio-economic impacts and tourism

Information on the positive and negative economic effects of the development (in addition to environmental/carbon offset benefits and impacts) would be welcome in order to achieve a rounded understanding of the positive and negative aspects of the development. This Authority would, particularly, wish to be assured that the specific impacts of this development would not have unacceptable effects on established local rural (particularly tourist) businesses and tourism generally, given the important nature of the Berwickshire Coastline to the recreational and tourism sector in the Borders.

It does not seem justified to scope out the Scottish Borders from the socio-economics study area, given the fact the site appears closer to the Berwickshire Coastline than it does to East Lothian. Table 8.23 should be taking into account the operational impacts on tourism and recreation and the associated economy, taking into account all major tourist routes such as the A1, Coastal Path and Southern Upland Way, as well as tourist accommodation and businesses within an enlarged study area.

The intention to draw information from several sources on this matter is recommended. The use of established studies on socio-economic and tourism impacts would be advised, together with experience and knowledge. Please note that financial benefits to local communities unrelated to the planning application, would not be accounted for.

#### Infrastructure and Other Users

##### Traffic and Transport

The following comments have been received from the Council Roads Planning Service:

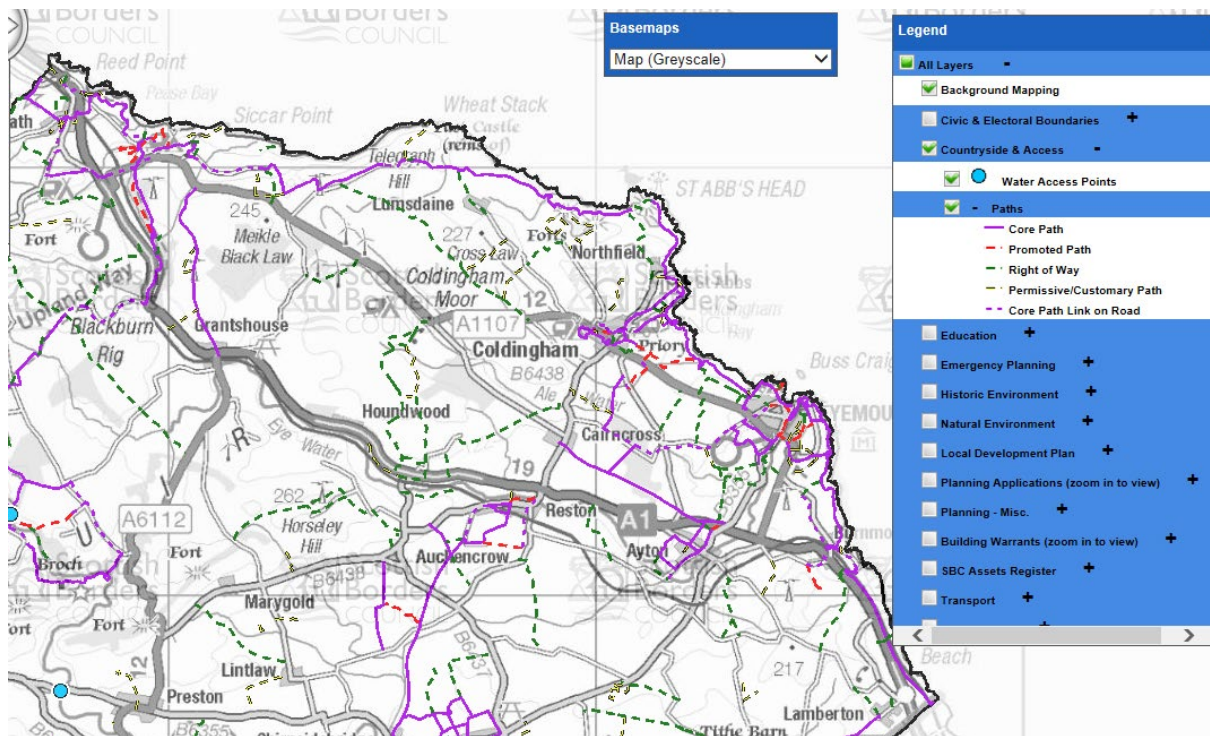
*“This proposal will not have an impact on the public road network within the Scottish Borders Council area, as such I have no objections to this proposal.”*

The following advice has been received from the Council Access Officer:

*“The development will be visible from virtually the entire length of the Berwickshire Coastal Path, one of Scotland’s Great Trails and I would suggest that a scoping viewpoint location be added at Tun Law NT892691 as this is the highest point on the Berwickshire Coastal Path.*

*There are a number of other core paths, rights of way and promoted paths from which the development will also be visible (see map below).*

*Mapping of the wider path network across the Scottish Borders can be found at: [www.scotborders.gov.uk/mapadvanced](http://www.scotborders.gov.uk/mapadvanced)”*



I hope that these Scoping comments are of assistance to yourselves in providing your Scoping Response to the applicant,

## Lees E (Emma)

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**From:** Cagnoni, Silvia <Silvia.Cagnoni@sepa.org.uk>  
**Sent:** 16 September 2020 14:49  
**To:** Wilson J (Jessica)  
**Cc:** Lees E (Emma); Wright H (Hamish)  
**Subject:** FW: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Jessica,

Thank you for your email.

SEPA only deals with the on-shore aspects of the project and therefore we have no comments to make on this consultation.

We have already responded to the Council's consultation for the on-shore EIA scoping report on the 9 September (our ref: PCS/172695).

Regards

Silvia

## Silvia Cagnoni-Watt

### Senior Planning Officer

SEPA, Strathallan House , Castle Business Park, Stirling, FK9 4TZ , tel: **01786 452430/07876392191** email: [silvia.cagnoni@sepa.org.uk](mailto:silvia.cagnoni@sepa.org.uk)

working hours: **Monday, Tuesday, Thursday: full day, Wednesday, Friday: morning only;**

### CORONAVIRUS

In response to recent Government announcements, SEPA is seeking to continue to deliver its services with the minimum of business disruption. Most of our officers will be working from home as of 17 March, and staff have been advised against attending face-to-face and instead to use teleconferencing where possible. To help minimise non-urgent phone calls, please contact us by email in the first instance, via [planning.se@sepa.org.uk](mailto:planning.se@sepa.org.uk) . We will endeavour to continue to respond to planning consultations as usual, but there may be delays or further disruption should the situation with coronavirus worsen as it is predicted to do. We will issue further updates as and when required.

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**From:** [jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot) <[jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot)>  
**Sent:** 07 September 2020 15:20  
**Cc:** [Emma.Lees@gov.scot](mailto:Emma.Lees@gov.scot); [Hamish.Wright@gov.scot](mailto:Hamish.Wright@gov.scot); [jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot)  
**Subject:** Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Dear Sir/Madam,

## Response to Scoping Request by Berwick Bank SFF/SWFPA & SSER

### Chapter 3

- P29, 3.3.3 bullet 3. 2280 cubic metres of scour protection must be scoped in.
- P31, 3.3.5, para 2. Floating foundations are seen as closed to fishing so must be scoped in. Same point at page 37. Para 3 does not seem to resonate with decommissioning being the return to pre-development state? Should be scoped in.

### Chapter 6

- Page 79
  1. Datasets don't show any input from Marine Scotland Science reports?
  2. Due to the lack of verified science, we would expect an assessment of real Suspended Particulate Matter (SPM), to confirm or otherwise the desktop study. There are opportunities throughout the scoping to engage in real world science in tune with MS Science and ScotMER. Furthermore, given the recent controversial deaths of many sea mammals, there is a need to monitor any seismic activity. Airborne noise and thrumming should be scoped in too, in order to prove the numerical modelling is good. (ref P89)
  3. Regarding the embedded mitigation, it looks like replacing one problem with another, so it's not really mitigation.
  4. The SFF would prefer to see more real time science applied. Numeric modelling is not verified or strong enough without it.
  5. No comment.
- Page 95
  1. No, airborne noise needs to be assessed and monitored.
  2. No, as we point out above, thrumming and noise still need to be assessed to prove they are not dangerous.
  3. No
  4. No, they should be scoped in, tied into expanding the scientific data base for offshore wind.
- Page 104
  - No comments on air quality.

### Chapter 7

- P111, table 7.1. The ecosystem approach to the benthic ecology would be enhanced by the inclusion of commercial fisheries catch & bycatch. Discussion with ScotMER should help define baselines and long-term monitoring for real benefits to stakeholders.
- P123, table 7.4, benthic surveys are essential to back up the numerical modelling of SPM, and should be scoped in to assess the impact on shellfish and spat from smothering

- P125, Colonisation of hard structures, should be scoped in to assess the extent of the impact of the moving species, do they aggregate or does the population grow.
- Page 128
  1. Yes
  2. Yes
  3. No, detailed above
  4. No, we believe they should be scoped in.
- P134, whilst the two reports cited on spawning and nursery grounds are useful, both reports are old and would be seen as out of date and needing review, which could form part of the scoping or mitigation. Similarly, we think there should be a *Nephrops* survey to validate the claims of non-existence.
- 7.2.7. The SFF cannot believe that all impacts are localized, given the vast expanse of seabed being disturbed in the area, so would request real surveys to back up the claims, and give clarity to the cumulative impacts
- Page 140
  1. Yes, we agree with the areas.
  2. Existing desktop data is insufficient to properly describe the baseline. Herring in particular, should take cognisance of ICES advice and not interfere with genuine spawning grounds.
  3. Table 7.9 should not simply rely on modelling, but take the time to survey fully.
  4. Given that studies onshore are finding negative impacts arising from thrumming that should be scoped in. Colonisation should also be scoped in to extend the available knowledge of the adaptation by animals and the extent thereof. Recent studies have found that EMF can have negative impacts on Lobsters and their fecundity, so should be scoped in.
- P192, table 8.2. the embedded mitigation does not adequately compensate for any temporary loss or restricted access, during either construction or operation, so it should be scoped in.
- P194, similarly the embedded mitigation does not address displacement, so should be scoped in.
- P195. Safety issues must be recognised as the fishing industry's biggest concern about the introduction of infrastructure to the Marine Environment. This is a completely different slant to the Shipping and Navigation assessment, and should be scoped in its own right.
- P197
  1. The SFF would like to see any numerical modelling backed up by up to date science.
  2. No, this does not cover the sale of fish and the supply chain which will be impacted
- P198, as in the previous comment fishing operations are so different from Shipping & Navigation, it should be assessed separately.
- P218, questions, as above this chapter is not the right place to assess fishing operations.

- P272. Supporting baseline datasets has no fishing identified. Therefore, P281 8.6.9 first answer is, no, there's not enough of a baseline.
- P288 onwards, the selection of areas for the socio-economic needs to be done at a level that ensures the fishing industry factors are visible, particularly in areas now used as commuter belt for Edinburgh and Dundee and Glasgow and Aberdeen.
- P323- 342 – Annex A the SFF can agree with these proposals if some real time verification of the numerical modelling takes place.
- P343. Pollution should be scoped in.
- P344 – 346, the only issue would be that accidental pollution is scoped out.
- P347 – Colonization should be scoped in, data is lacking.
- P354 – 366, agreed.
- P378 on does not give clarity on Cultural Heritage.
- P383 – 385 – should also model of no Scottish expenditure in the supply chain as appropriate, and worst case scenario for employment.

Jessica Wilson  
Marine Scotland  
Scottish Government  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

Your ref:

Our ref:  
GB01T19K05

Date:  
05/10/2020

[ms.marinerenewables@gov.scot](mailto:ms.marinerenewables@gov.scot)  
[jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot)

Dear Sirs,

## **REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION AND MARINE LICENCES FOR BERWICK BANK OFFSHORE WIND FARM LOCATED 39.2Km EAST OF EAST LOTHIAN**

With reference to your recent correspondence on the above development, we acknowledge receipt of the Scoping Report prepared by RPS in support of the above development.

This information has been passed to SYSTRA Limited for review in their capacity as Term Consultants to Transport Scotland – Roads Directorate. Based on the review undertaken, we would provide the following comments.

### **Proposed Development**

We understand that the proposal includes both the offshore and onshore infrastructure required to generate and transmit electricity from an array area to a Scottish Power Transmission (SPT) 400kV Grid Substation located at Branxton, south-east of Torness Power station. The array area is likely to contain up to 242 wind turbines with a maximum blade tip height of 310m above LAT located in the outer Firth of Forth and Firth of Tay, 39.2km east of the East Lothian coastline. The nearest trunk road to the site is the A1(T).

### **Construction**

We understand that the development will take approximately 3 years to construct. Foundations will be fabricated off-site, stored at a suitable port facility (if required) and transported to site on specialist vessels. Turbines, foundation structures and offshore platform structures will be transported from the pre-assembly harbour where sub-assemblies (nacelle, rotor blades and towers) will be loaded onto an installation vessel or support vessel. At the installation location, the wind turbine towers will be erected first, followed by the nacelle and blades. It is noted that the specific port locations where vessels will travel to and from to support the offshore construction has not yet been identified, however it is likely to be an established commercial/industrial port on the east coast of Scotland.

## Assessment of Environmental Impacts

From the detail provided within the SR, it is not clear whether the construction materials, components of the turbines and the foundation materials will travel to the chosen port facility by road or sea. Transport Scotland would, therefore, request confirmation of the potential impact of any increase in HGV traffic on the trunk road network if it is to be used in relation to the construction of the development. Potential trunk road related environmental impacts such as driver delay, pedestrian amenity, severance, safety etc will require to be considered and assessed where appropriate (i.e. where Institute of Environmental Management and Assessment Guidelines for further assessment are breached). These specify that road links should be taken forward for assessment if:

- Traffic flows will increase by more than 30%, or
- The number of HGVs will increase by more than 30%, or
- Traffic flows will increase by 10% or more in sensitive areas.

In the case of the EIA report, the methods adopted to assess the likely traffic and transportation impacts on traffic flows and transportation infrastructure, should comprise:

- Determination of the baseline traffic and transportation conditions, and the sensitivity of the site and existence of any receptors likely to be affected in proximity of the trunk road network;
- Review of the development proposals to determine the predicted construction and operational requirements; and
- Assessment of the significance of predicted impacts from these transport requirements, taking into account impact magnitude (before and after mitigation) and baseline environmental sensitivity.

Where significant changes in traffic are not noted for any link, no further assessment needs to be undertaken.

## Abnormal Loads Assessment

No indication is given as to whether the construction phase of the development will involve the use of abnormal load vehicles on the trunk road network or whether materials will all be shipped in and out by sea. In the event that there are Abnormal Loads to be transported, Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate the selected route and that transportation will not have any detrimental effect on structures within the trunk road route path.

A full Abnormal Loads Assessment report should be provided with the Environmental Impact Assessment (EIA) that identifies key pinch points on the trunk road network. Swept path analysis should be undertaken and details provided with regard to any required changes to street furniture or structures along the route.

I trust that the above is satisfactory and should you wish to discuss any issues raised in greater detail, please do not hesitate to contact Alan DeVenny at SYSTRA's Glasgow Office on 0141 343 9636.



Yours faithfully  
[Redacted]

**Gerard McPhillips**

**Transport Scotland  
Roads Directorate**

cc Alan DeVenny – SYSTRA Ltd.



**Lees E (Emma)**

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**From:** Robert Merrylees <RMerrylees@ukchamberofshipping.com>  
**Sent:** 07 September 2020 16:48  
**To:** MS Marine Renewables  
**Cc:** Wilson J (Jessica)  
**Subject:** FW: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Dear Marine Scotland,

The Chamber welcomes the consultation on Berwick Bank Scoping Opinion and opportunity to respond. May I ask however that I am added to the circulation list.

The Chamber would like to make the following points:

The Chamber of Shipping does not support the limiting of the 10nm study area to 7nm in the western reaches without strong explanation or other compensatory measures to ensure the full impact on shipping and navigation is scoped in.

The Chamber would recommend that MAIB accident data be sought back farther than 2008 to enhance safety and build as complete a picture as possible.

The Chamber recognises and agrees that Summer 2020 data may not be representative of normal traffic levels due to Covid-19 and suggests caution and supplementary data from 2019 or future years is necessary.

The Chamber is encouraged that cumulative impacts of other offshore wind developments are being taken into consideration, but would like more information about the regional shipping and navigation study and the area of study.

The Chamber is pleased to see that any updates/amendments to MGN 372 and 543 will be taken into consideration.

The Chamber has some concerns over the potential deviation required by east west commercial traffic, albeit we recognise that such issues will be fully dealt with during the NRA process.

The Chamber looks forward to early engagement with SSE on the project and should MS wish for any further comments or detail should not hesitate to contact me.

Kind regards,

Robert  
**Robert Merrylees**  
Policy Manager (Safety & Nautical) & Analyst

**UK Chamber of Shipping**  
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Please consider the environment before printing this email.

## Lees E (Emma)

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**From:** Wilson J (Jessica)  
**Sent:** 08 September 2020 08:46  
**To:** Sarah Dolman  
**Cc:** Lees E (Emma)  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Hi Sarah,

Sorry to hear that, thanks for the update.

All the best,

Jessica

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**From:** Sarah Dolman <sarah.dolman@whales.org>  
**Sent:** 07 September 2020 16:30  
**To:** Wilson J (Jessica) <jessica.wilson@gov.scot>  
**Subject:** RE: Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

Dear Jessica

Most of the WDC team are on furlough and we don't have the capacity to respond to case work currently.

Apologies.  
Sarah

**Sarah Dolman**  
Policy manager  
*End Bycatch Programme Lead*

**WDC, Whale and Dolphin Conservation**  
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[whales.org](http://whales.org)



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**From:** [jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot) <[jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot)>  
**Sent:** 07 September 2020 15:20  
**Cc:** [Emma.Lees@gov.scot](mailto:Emma.Lees@gov.scot); [Hamish.Wright@gov.scot](mailto:Hamish.Wright@gov.scot); [jessica.wilson@gov.scot](mailto:jessica.wilson@gov.scot)  
**Subject:** Berwick Bank Offshore Wind Farm - Consultation on Request for Scoping Opinion - Response Required by 7 October 2020

**CAUTION:** This email originated from outside of the organization.

Dear Sir/Madam,