T: +44 (0)131 244 2500
E: MS.MarineRenewables@gov.scot

Marine Scotland - Licensing Operations Team Scoping Opinion

THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED)

THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017 (AS AMENDED)

SCOPING OPINION FOR THE PROPOSED SECTION 36 CONSENT AND ASSOCIATED MARINE LICENCE APPLICATION FOR THE REVISED NEART na GAOITHE CAPE OFFSHORE WIND FARM AND REVISED NEART na GAOITHE OFFSHORE TRANSMISSION WORKS

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Note regarding changes to the Environmental Impact Assessment Directive

On the 16 May 2017 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (herein referred to as 'The Electricity Works 2017') and The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (herein referred to as "The Marine Works 2017") came into force, transposing the requirements of the 2014 amendment (2014/52/EU) to the Environmental Impact Assessment ("EIA") Directive. The Electricity Works 2017 and The Marine Works 2017 were subsequently amended by The Environmental Impact Assessment (Miscellaneous Amendments) (Scotland) Regulations 2017 which came into force on 30 June 2017 and introduced minor changes. The Electricity Works 2017 and The Marine Works 2017 are hereinafter referred to together as "the 2017 EIA Regulations".

The 2017 EIA Regulations revoke The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (as amended) ("The Electricity Works 2000) and The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) ("The Marine Works 2007") for Scotland (i.e. out to 12 nautical miles). The 2017 EIA Regulations contain transitional arrangements and revocations and provide that in certain circumstances they will apply, in a modified form, in cases pre-existing as of the 16 May 2017. This is where an applicant for a section 36 consent or a marine licence for an EIA project has, before the 16 May 2017, either – (1) submitted an environmental statement in connection with an application to the Scottish Ministers; (2) made a request to the Scottish Ministers for a scoping opinion in connection with the project; or (3) made a request to the Scottish Ministers for a screening opinion.

As Neart na Gaoithe Offshore Wind Limited ("NnGOWL") submitted their Scoping Report on 15 May 2017 the 2017 EIA Regulations therefore now apply under the transitional arrangements.

1 Executive Summary

This is the scoping opinion adopted by the Scottish Ministers as to the scope and level of detail of information to be provided in the Environment Impact Assessment report ("EIA report") for the proposed Revised Neart na Gaoithe Wind Farm and Revised Neart na Gaoithe Offshore Transmission Works ("OfTW") as described in the Scoping Report submitted by Neart na Gaoithe Offshore Wind Limited ("NnGOWL").

This document sets out the Scottish Ministers' opinion on the basis of the information provided in the Scoping Report of 15 May 2017. The scoping request relates to the Revised Neart na Gaoithe Offshore Wind Farm and Revised Neart na Gaoithe Offshore Transmission Works ("Revised Development") to be situated in the same area of the Firth of Forth as the previously consented Neart na Gaoithe Offshore Wind Farm.

The previous offshore consents (Section 36 and Marine Licence) were granted in 2014 for the construction and operation of the Neart na Gaoithe Offshore Wind Farm and associated OfTW in the Firth of Forth ("Original Development"). In 2015 NnGOWL applied for a Section 36 Consent Variation in order to modify a number of parameters related to the wind turbine generators. The Section 36 Consent Variation was awarded in March 2016. The wind farm had a potential generating capacity of up to 450 MW. These consents were subject to Judicial Review. Legal proceedings brought by the Royal Society for the Protection of Birds ("RSPB") are ongoing. The RSPB were initially successful in their challenge, however the decision was overturned by the Inner House Court of Appeal. It is not yet known whether the case will be heard by the Supreme Court. In parallel with the Judicial Review NnGOWL intends to pursue a new consent application for the Revised Development. The Revised Development is intended to take advantage of new developments in relation to offshore wind technology, whilst at the same time being likely (because of the reduced scale and scope of the Project) to lead to a reduction in the associated potential environmental impacts (when compared to the Originally Consented Project).

This opinion can only reflect the proposal as currently described by NnGOWL. The matters addressed by NnGOWL in the Scoping Report have been carefully considered and use has been made of professional judgment (based on expert advice from stakeholders and Marine Scotland in-house expertise) and experience in order to adopt this opinion. It should be noted that when it comes to consider the Environmental Impact Assessment Report ("EIA Report"), the Scottish Ministers will take account of relevant legislation and guidelines (as appropriate). The Scottish Ministers will not be precluded from requiring additional information if it is considered necessary in connection with the EIA Report submitted with the application for

section 36 consent and associated marine licence.

This Scoping Opinion has a shelf life of 12 months from the date of issue. If an application is not received within 12 months then NnGOWL must contact the Scottish Ministers to determine whether this Scoping Opinion requires updating.

The Scottish Ministers have consulted on the Scoping Report and the responses received have been taken into account in adopting this opinion. A series of scoping meetings were held with stakeholders and NnGOWL to discuss the Scoping Report further. The Scottish Ministers are satisfied that the topics identified in the Scoping Report encompass those matters identified in Schedule 4 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 and Schedule 3 of the Marine Works (Environmental Impact Assessment) Regulations 2007, as required by the transitional arrangements of the 2017 EIA regulations.

The Scottish Ministers draw attention to the general points and those made in respect of the specialist topics in this opinion. Where significant effects were identified in the Original Development Environmental Statement ("ES") and Addendum of Supplementary Environmental Information ("Addendum"), and the assessment remains relevant, these matters must still be reported in the forthcoming EIA Report, but may be scoped out of further assessment work. Matters are not scoped out unless specifically addressed and justified by NnGOWL and confirmed as being scoped out by the Scottish Ministers. Detailed information is provided in the specialist topic sections.

2 Introduction

2.1 Background to this scoping opinion

2.1.1 We refer to your letter of 15 May 2017 requesting a scoping opinion from the Scottish Ministers under Regulation 7 of the Electricity Works 2000 and Regulation 13 and Schedule 4 of the Marine Works 2007. The request was accompanied by a Scoping Report containing a plan sufficient to identify the site which is the subject of the proposed development and a brief description of the nature and purpose of the proposed development and of its possible effects on the environment. The Scoping Report used the Original Development ES and Addendum to provide an evidence base for scoping certain topics out using the following process:

i. Were significant residual impacts identified in the Original EIA? If no,
ii. Has there been an increase in relevant worst case design parameters? If no,
iii. Are the technical studies and baseline data valid and sufficient? If yes,
iv. Has there been a change to relevant policy, guidance or legislation that may invalidate the approach to the original assessment? If no, then NnGOWL concluded that the topic could be scoped out of the Revised Project EIA.

2.1.2 The Scoping Report was accepted on 03 June 2017.

2.1.3 Where, following consultation with statutory consultation bodies and other environmental stakeholders, the Scottish Ministers have confidence that previous assessments may be relied upon to inform a conclusion that there will be no significant environmental effects, the Scottish Ministers are content to conclude that certain topics can be scoped out, as described in 2.1.1, from the environmental assessment to be undertaken in relation to the Revised Development.

2.2 The requirement for Environmental Impact Assessment

2.2.1 Under the 2017 EIA Regulations, the Scottish Ministers are required to consider whether any proposal is likely to have a significant effect on the environment. Any proposal to construct or operate an offshore power generation scheme with a capacity in excess of 1 megawatt (“MW”) and within 12 nautical miles (“nm”) requires the Scottish Ministers’ consent under section 36 of The Electricity Act 1989 (“the Act”). The Revised Development

falls under Schedule 2 of The Electricity Works 2017.

2.2.2 The Developer is required to give consideration to the UK Marine Policy Statement, Scotland's National Marine Plan ("NMP"), Scottish Planning Policy, other relevant Policy and National Policy Planning Guidance, Planning Advice Notes, the relevant planning authority's Development Plans and any relevant supplementary guidance.

2.3 The content of the scoping opinion

2.3.1 With regard to your request for a scoping opinion on the proposed content of the required EIA Report, the Scottish Ministers have, in accordance with the 2017 EIA Regulations, considered the documentation provided to date and consulted with the appropriate consultation bodies and advisors (see Appendix I and II) in reaching their scoping opinion.

2.3.2 Please note that the EIA process is vital in generating an understanding of the biological, chemical and physical processes operating in and around the proposed development site and those that may be impacted by the proposed activities. We would however state that references made within the scoping opinion with regard to the significance of impacts should not prejudice the outcome of the EIA process. It is therefore expected that these processes will be fully assessed in the EIA Report unless scoped out.

2.4 Duration of consent

2.4.1 The consent granted for Original Development had an operational period of 25 years, the Revised Development is proposed to be 50 years. Scottish Ministers consider that the Original Development ES assessment of the effects of a 25 year consent duration is appropriate to inform decisions on scoping topics in and out of the EIA. The topic most likely to be affected by the increased consent duration is ornithology. In order to address this Scottish Ministers advise that for the bird species of concern population modelling must be provided for both a 25 year and 50 year time period as detailed in section 8.10.4 .

2.4.2 NnGOWL are advised to identify and, if possible, quantify, the uncertainties associated with modelling population effects over different timescales.

2.5 Consent conditions

2.5.1 The Scottish Ministers recommend that NnGOWL continue to engage with relevant stakeholders, prior to submission of any application, to help resolve any issues. Time could be saved post consent if agreements could be

reached and agreed by both parties. Where disagreements remain it is suggested that Marine Scotland-Licensing Operations Team ("MS-LOT") are included in discussions.

3 Description of development

3.1 Background to Original Development application and consent

3.1.1 In 2014 NnGOWL gained offshore consents (Section 36 and Marine Licence) for the construction and operation of the Neart na Gaoithe Offshore Wind Farm and associated OfTW, situated to the East of Fife Ness in the Firth of Forth. At that time, the consent allowed delivery of an offshore wind farm project with a potential generating capacity of up to 450 MW.

3.1.2 The determination of the offshore consents by the Scottish Ministers followed over five years of project development, including environmental surveys, engineering design studies and wide-ranging stakeholder engagement.

3.1.3 NnGOWL submitted an ES and Addendum of Supplementary Environmental Information (hereinafter the 'Addendum'), which presented the outcomes of the Original Development EIA and supported the Original Application. The outcomes of the ES were accepted as the basis for the determination of the offshore consents by the Scottish Ministers.

3.1.4 Further to this, in March 2016 the Scottish Ministers awarded a section 36 Consent variation to NnGOWL. The consent was varied to allow an increase in; the maximum rated turbine capacity, maximum turbine hub height above Lowest Astronomical Tide ("LAT") and the maximum turbine platform height above LAT. The maximum generating capacity remained as per the 2014 consent. The variation request was supported by further environmental information, in addition to the Original Development ES and Addendum.

3.1.5 The consents are currently the subject of an ongoing Judicial Review.

3.2 Background to the new applications for the Revised Development

3.2.1 NnGOWL is seeking new consent for the Revised Development, which is located in the same area as the Original Development (Figure 1). It will be comprised of an array of Wind Turbine Generators ("WTGs") connected to one another by subsea inter-array cables, which will in turn connect the WTGS to 1 or 2 Offshore Substation Platforms ("OSPs"), where power generated by WTGs is transformed and subsequently carried to an onshore landfall location (Thorntonloch, East Lothian) via offshore export cables.

3.3 Description of the Revised Development

3.3.1 The Revised Development will comprise of an offshore generating station with a capacity of greater than one MW and therefore requires Scottish

Ministers' consent under Section 36 of the Electricity Act 1989 (Section 36 consent) to allow its construction and operation. The Revised Development will also require a Marine Licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 to allow for the construction and deposit of substances and structures in the sea and on the seabed.

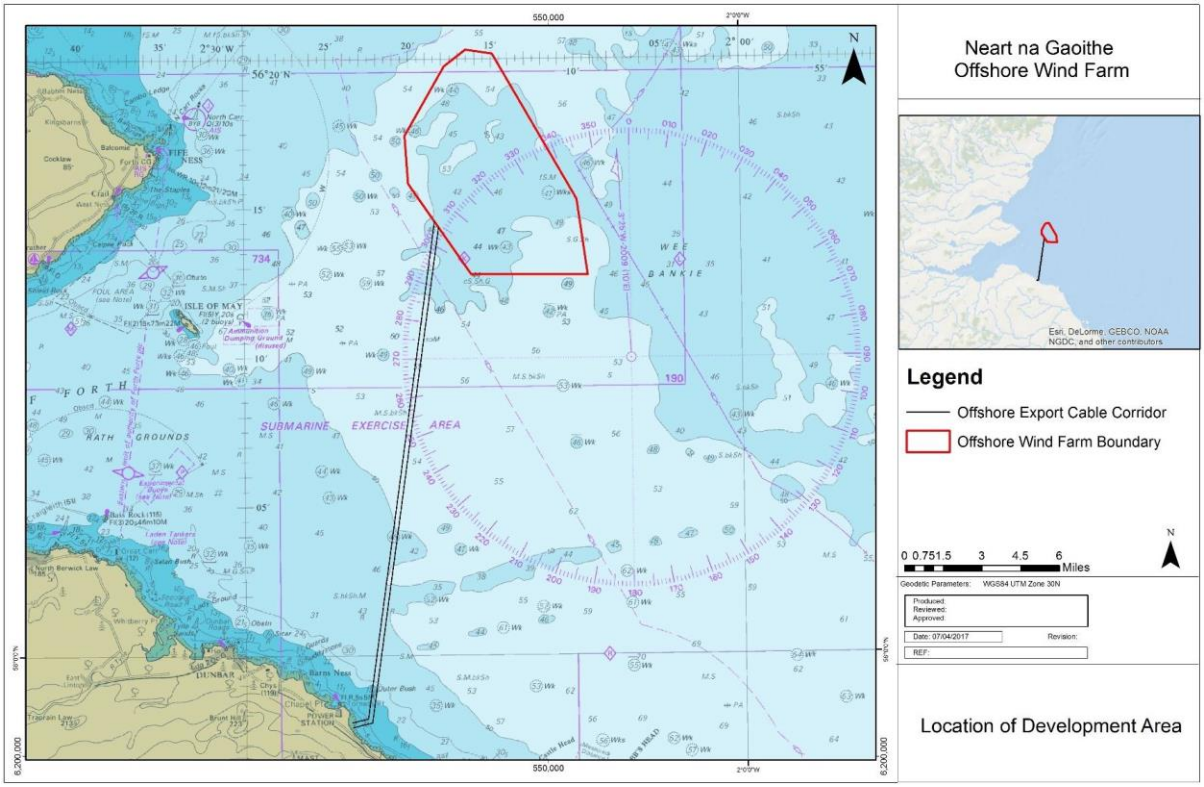

Figure 1 Location of the proposed development

3.3.2 The revised development will, in summary, consist of the following changes compared to the original application; it should be noticed that the consent granted in 2016 (varying the 2014 consent) was for 75 turbines:

- A reduction in the number of turbines from up to 125 to up to 56
- The maximum rotor tip height above LAT (m) from 197 up to approx. 230
- The hub height increases to up to 140m from 107.5m
- The rotor diameter increases to up to 180m from 126-152m
- The indicative minimum spacing between turbines would be approx. 800m from 450m
- The minimum blade clearance above LAT remains the same – 30.5m

3.3.3 For the substructure and pile foundations the main changes are as follows:

- An increase in number of piles per foundation to up to 6 from 3-4
- Removal of gravity base foundations, as included in the original

application

3.3.4 For the interarray cables the main changes are as follows:

- An increase of up to 8 turbines per collector circuit from up to 6
- Up to 14 circuits with a total of 140km of cable, inclusive of interconnector cables between OSPs, a decrease from up to 15 circuits.

3.3.5 For the offshore substation platforms the main change is:

- The level of topside above LAT increases to up to 21m from 18m

3.3.6 For offshore export cables the main change is:

- The length per cable increases from 33km to 43km

3.3.7 The Scoping Report provides more detail on these changes.

4 Aim of this Scoping Opinion

4.1.1 Scoping is a key phase of the EIA process, providing an opportunity for the applicant to identify those potentially significant environmental effects that should be considered for further assessment in the EIA report. This includes the scope of impacts to be addressed and the method of assessment to be used. The scoping process also allows consultees to have early input into the EIA process, to specify their concerns and to supply information that could be pertinent to the EIA process. In association with any comments herein, full regard has been given to the information contained within the Scoping Report.

4.1.2 The Scottish Ministers have also used this opportunity to provide advice in relation to the licensing requirements in addition to the EIA requirements (see Appendix V).

5 Consultation

5.1 The consultation process

5.1.1 On receipt of the scoping opinion request documentation, the Scottish Ministers, accordance with the EIA Regulations, initiated a 28 day consultation process, which commenced on 29 May 2017. The following bodies were consulted, those marked in **bold** provided a response, those marked in *italics* sent nil returns or stated they had no comments:

- **Angus Council "AC"**
- Arbroath Sailing and Boating Club
- Bond Offshore Helicopters
- Bristow Helicopters
- **British Telecom (Radio Network Protection Team) "BT"**
- Civil Aviation Authority
- *Chamber of Shipping "CoS"*
- CHC Helicopters
- Crown Estate Scotland
- **Defence Infrastructure Organisation "DIO"**
- **Dundee City Council "DCC"**
- **East Lothian Council "ELC"**
- *Esk District Salmon Fishery Board "Esk DSFB"*
- **Fife Council "FC"**
- Fife Fish Producers Organisation
- Firth of Forth Lobster Hatchery
- Fisheries Management Scotland
- *Fife Fishermens Association "FFA"*
- *Fishermens Mutual Association (Pittenweem) Limited "FMA"*
- **Forth District Salmon Fishery Board "Forth DSFB"**
- Forth Ports
- Health and Safety Executive
- **Historic Environment Scotland "HES"**
- Inch Cape Offshore Limited
- Marine Safety Forum
- Marine Scotland Compliance – Anstruther
- Marine Scotland Compliance – Eyemouth
- Marine Scotland Compliance – Aberdeen
- **Maritime and Coastguard Agency "MCA"**
- National Trust for Scotland
- **National Air Traffic Services "NATS"**

- North East Regional Inshore Fishery Group
- North Sea Regional Advisory Council
- **Northern Lighthouse Board "NLB"**
- Planning Aid Scotland
- **Royal Yachting Association (Scotland) "RYAS"**
- **Royal Society for the Protection of Birds "RSPB"**
- **River Tweed Commission "RTC"**
- **Scottish Borders Council "SBC"**
- *Scottish Canoe Association "SCA"*
- Scottish Enterprise
- Scottish Environment LINK
- Scottish Federation of Sea Anglers
- **Scottish Fishermen's Federation "SFF"**
- Scottish Fisherman's Organisation
- Scottish Government Planning
- **Scottish Natural Heritage "SNH"**
- Scottish Seabird Centre
- Scottish Surfing Federation
- Scottish Wildlife Trust
- Seagreen Wind Energy Limited
- *Scottish Environment Protection Agency "SEPA"*
- Surfers Against Sewage
- Tay District Salmon Fishery Board
- **The 10 Metre and Under Association**
- Torness Power Station
- **Transport Scotland "TS"**
- *Transport Scotland (Ports and Harbours) "TS(P&H)"*
- **Whale and Dolphin Conservation "WDC"**

5.2 Responses received

5.2.1 From the list above a total of 20 responses were received. Advice was also sought from Marine Scotland Science ("MSS"). The purpose of the consultation was to obtain advice and guidance from each consultee or advisor as to which potential effects should be scoped in or out of the EIA.

5.2.2 The Scottish Ministers are satisfied that the requirements for consultation have been met in accordance with the EIA Regulations. The sections below highlight issues which are of particular importance with regards to the EIA Report. Full consultation responses are attached in Appendix I and advice from MSS is attached in Appendix II and each should be read in full for detailed requirements for individual consultees. The Scottish Ministers

expect all consultee concerns to be addressed in the EIA Report unless otherwise stated.

5.3 Meetings with stakeholders

5.3.1 A series of meetings were arranged in order to facilitate structured discussion between the Scottish Ministers, NnGOWL and stakeholders. The meetings allowed for early engagement between stakeholders and NnGOWL.

5.3.2 The meetings were topic related and covered marine mammals, natural fish and benthic ecology, commercial fisheries and ornithology. A further meeting between MS-LOT, MSS, SNH and RSPB was held on 19 July 2017 to discuss the ornithology receptor further, including common approaches to cumulative impact assessment, collision risk modelling, displacement assessment and non-breeding season effects etc. for all three Forth and Tay projects. A further teleconference meeting was held between MS-LOT, MSS, SNH and WDC on 22 August 2017 to have further discussions on marine mammals.

5.3.3 The aim of the meetings was to provide clarity and answer any questions the stakeholders had with regard to the Scoping Report. This allowed an opportunity to discuss issues in detail in advance of stakeholders completing their scoping responses. The meetings took the form of an overview from the developer and then a discussion on specific issues of concern.

5.3.4 The minutes of each meeting were recorded and these have informed the scoping opinion in addition to the formal consultee scoping responses.

6 Contents of the Environmental Impact Assessment Report

6.1 Requirements from the EIA Regulations

6.1.1 The 2017 EIA Regulations require that the EIA Report is prepared by competent experts and must be accompanied by a statement from the applicant outlining the relevant expertise of qualification of those experts.

6.1.2 The EIA Report must be based on the Scoping Opinion and must include the information that may be reasonably required for reaching a reasoned conclusion, which is up to date, on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment.

6.1.3 EU guidance on EIA identifies the following qualities of a good Environmental Statement (now known as an EIA Report):

- Includes a clear structure with a logical sequence, for example describing existing baseline conditions, predicted impacts (nature, extent and magnitude),scope for mitigation, agreed mitigation measures, significance of unavoidable/residual impacts for each environmental topic.
- Includes a table of contents at the beginning of the document.
- Includes a clear description of the development consent procedure and how EIA fits within it.
- Reads as a single document with appropriate cross-referencing.
- Is concise, comprehensive and objective.
- Is written in an impartial manner without bias.
- Includes a full description of the development proposals.
- Makes effective use of diagrams, illustrations, photographs and other graphics to support the text.
- Uses consistent terminology with a glossary.
- References all information sources used.
- Has a clear explanation of complex issues.
- Contains a good description of the methods used for the studies of each environmental topic.
- Covers each environmental topic in a way which is proportionate to its importance.
- Provides evidence of good consultations.
- Includes a clear discussion of alternatives.
- Makes a commitment to mitigation (with a programme) and to monitoring.
- Has a Non-Technical Summary (“NTS”) which does not contain technical jargon.

- Further guidance can be found at http://ec.europa.eu/environment/eia/eia-support.htm

6.1.4 The Scottish Ministers are aware that the Commission is currently working on guidance to reflect the 2014 amendment to the EIA Directive. This guidance can be found using the above link when published.

6.2 Non-Technical Summary

6.2.1 This should be a concise stand-alone document written in a manner that is appealing to read and easily understood. The NTS should highlight key points set out in the EIA Report. The non-technical summary should include:

- a description of the project including a map and figures as appropriate;
- a description of the main environmental impacts the project is likely to have;
- a description of the measures envisaged to prevent, reduce and offset any significant adverse effects; and
- an outline of the main alternatives studied, including an indication of the main reasons for the primary choice of the project, taking into account the environmental effects of those alternatives and the project as proposed.

6.3 Mitigation

6.3.1 Within the EIA Report it is important that all mitigating measures are:

- clearly stated;
- accurate;
- assessed for their environmental effects;
- assessed for their effectiveness;
- fully described with regards to their implementation and monitoring; and
- described in relation to any consents or conditions

6.3.2 The EIA Report should contain a mitigation table providing details of all proposed mitigation discussed in the various chapters. Refer to Appendix I for consultee comments and Appendix II for MSS advice on specific baseline assessment and mitigation.

6.3.3 Where potential environmental impacts have been fully investigated but found to be of little or no significance, it is sufficient to validate that part of the assessment by stating in the EIA Report:

- the work has been undertaken;
- what this has shown i.e. what impact if any has been identified, and

- why it is not significant?

6.3.4 It is suggested that a chapter is included in the EIA Report which describes the robust scoping process which has been conducted in order to scope certain receptors out of the EIA Report.

6.4 Design Envelope

6.4.1 Where flexibility in the design envelope is required, this must be defined within the EIA Report and the reasons for requiring such flexibility clearly stated. NnGOWL must also describe the criteria for selecting the worst case, and the most likely, scenario and the impacts arising from these. The Scottish Ministers will determine the application based on the worst case scenario. The EIA may reduce the degree of design flexibility required and the detail will be further refined in a Construction Method Statement ("CMS") to be submitted to the Scottish Ministers, for their approval, before works commence. Please note however the information provided in Section 12 regarding multi-stage regulatory consent. The CMS will freeze the design of the project and will be reviewed by the Scottish Ministers to ensure that the worst case scenario described in the EIA Report is not exceeded.

7 Habitats & Birds Directives & Habitats Regulations

7.1 Background

7.1.1 The two most influential pieces of European legislation relating to nature conservation are the Habitats and Birds Directives. The Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora was adopted in 1992 and is commonly known as the Habitats Directive. It complements and amends (for classified SPAs) Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (this is the codified version of Directive 79/409/EEC as amended), commonly known as the Birds Directive.

7.1.2 The Birds Directive protects all wild birds, their nests, eggs and habitats within the European Community. It gives EU member states the power and responsibility to classify Special Protection Areas ("SPAs") to protect birds which are rare or vulnerable in Europe as well as all migratory birds which are regular visitors.

7.1.3 The Habitats Directive builds on the Birds Directive by protecting natural habitats and other species of wild plants and animals. Together with the Birds Directive, it underpins a European network of protected areas known as Natura 2000 comprising SPAs classified under the Birds Directive and

Special Areas of Conservation ("SACs") designated under the Habitats Directive.

7.1.4 The Habitats and the Birds Directive are transposed into domestic law in Scotland by the "Conservation (Natural Habitats, &c.) Regulations 1994" which came into force on 30 October 1994 – usually called simply the Habitats Regulations. For all onshore elements that may be consented through the Town and Country Planning system these amended Habitats Regulations will apply. Certain provisions of The Conservation of Habitats and Species Regulations 2010, as amended (the "2010 Habitats Regulations") apply to Natura sites in Scotland where they may be affected by activities consented under section 36 or section 37 of the Electricity Act 1989.

7.1.5 The Habitats Regulations apply to the Scottish territorial waters, and the rules for the protection of marine Natura sites and marine European Protected Species ("EPS") apply here exactly as they do on land.

7.2 Habitats Regulations Appraisal

7.2.1 Where a plan or project could affect a Natura site, the Habitats Regulations require the competent authority (in this case Scottish Ministers) – the authority with the power to undertake or grant consent, permission or other authorisation for the plan or project in question – to consider the provisions of regulation 61. This means that the competent authority has a duty to:

- determine whether the proposal is directly connected with or necessary to site management for conservation; and, if not,
- determine whether the proposal is likely to have a significant effect on the site either individually or in combination with other plans or projects; and, if so,
- then make an appropriate assessment of the implications (of the proposal) for the site in view of that site's conservation objectives.

7.2.2 This process is now commonly referred to as Habitats Regulations Appraisal ("HRA"). HRA applies to any plan or project which has the potential to affect the qualifying features of a Natura site, even when those features may be at some distance from that site.

7.2.3 The Scottish Ministers, with advice from SNH, decides whether an appropriate assessment is necessary and carries it out if so. It is the applicant who is usually required to provide the information to inform the assessment. Appropriate assessment focuses exclusively on the qualifying

features of the Natura site affected and their conservation objectives. A plan or project can only be consented if it can be ascertained that it will not adversely affect the integrity of a Natura site (subject to Regulation 49 considerations).

7.3 Further information and advice on HRA

7.3.1 Further information on the qualifying features and the conservation objectives for each relevant Natura site is available from the SNH Sitelink database.

7.3.2 For further advice on the HRA process we direct NnGOWL to the SNH website, including the leaflet on "Natura sites and the Habitats Regulations" which provides a helpful summary. Some of the key concepts are explained in the European Commission's guidance on Article 6 of the Habitats Directive.

7.4 Proposed Special Protection Area

7.4.1 Information regarding HRA requirements is also included in the ornithology and marine mammal sections of this opinion. In addition to sites already designated, it has been highlighted in this scoping opinion that it will be necessary for NnGOWL to consider the Outer Firth of Forth and St. Andrews bay Complex proposed Special Protection Area ("pSPA"). In Scotland pSPAs receive policy protection, which effectively puts such sites in the same position as designated sites, from that point forward until a decision on classification of the site is made. This policy protection for pSPAs is provided by Scottish Planning Policy (paragraph 210), the UK Marine Policy Statement (paragraph 3.1.3) and the National Marine Plan for Scotland (paragraph 4.45).

7.4.2 The conservation objectives for the Outer Firth of Forth and St Andrews Bay Complex pSPA are currently in draft, further details can be found here.

7.5 HRA report – information to inform the appropriate assessment

7.5.1 Scottish Ministers advise that the HRA report (information to inform the AA) must be submitted along with the EIA report. It is appropriate for the HRA report to form a chapter within the EIA report.

8 Interests to be Considered Within the EIA Report

8.1.1 The Scoping Report contained a series of questions posed by NnGOWL and these are used to inform the structure of this opinion. Each question is addressed in turn below and the Scottish Ministers answers or advice provided. Where necessary, consultee comments have been incorporated to provide further relevant information. The page and table numbers contained within the boxes refer to the Scoping Report.

8.1.2 This section contains a summary of main points raised by consultees and the Scottish Ministers opinion on whether EIA topics should be scoped in or out. The consultation responses are contained in Appendix I and NnGOWL is advised to carefully consider these responses and use the advice and guidance contained within them and the Scottish Ministers decisions regarding this advice to inform the EIA Report. Where conflicting views have been given by consultees, Scottish Ministers have directed the approach to be followed.

8.1.3 NnGOWL has used an ES undertaken for the Original Development, which obtained consent in October 2014, for much of the baseline information in their Scoping Report and this is referred to as the Original Development ES in this opinion. An Addendum of Supplementary Environmental Information, referred to as the Addendum in this opinion, was also provided. The EIA Report to be submitted for the current project should be a standalone document without the need for users to refer back to the Original Development ES or the Addendum to understand the information contained within the 2017 EIA Report. The Scottish Ministers consider that it would be appropriate that where data from the Original Development are being used to inform the assessment is these could be contained in appendices so that the main text of the EIA Report for the current project is concise.

8.1.4 All potential significant impacts must be reported within the EIA Report for the Revised Development application regardless of whether additional assessment is required from that previously undertaken in the 2012 ES for the Original development. Relevant conditions attached to the Original Development consents will also be reported in the EIA Report.

8.1.5 ELC note in their consultation response that their view is that both onshore and offshore works are an integral part of the NnGOWL project. NnGOWL was granted planning permission for the onshore works by East Lothian Council in June 2013, the permission was subsequently amended by a Section 42 application in November 2015. ELC are of the view that the EIA Report for NnGOWL would require to consider the impacts of the offshore

works together with the impacts of the onshore works as consented and in respect of an up-to-date baseline. NnGOWL should consider the detailed comments provided by ELC and take these into account when preparing the EIA Report.

8.2 Geology and Water Quality

8.2.1 NnGOWL concluded that, based on the conclusions of the Original Development ES and taking into consideration the reduced scale of the Revised Development and the embedded mitigation to be adopted, that all of the potential effects on geology and water quality should be scoped out.

Scoping Question	Question
6.8 (Page 52)	Do you agree that the existing data available to describe the Geology and Water Quality baseline remains sufficient to describe the physical environment in relation to the Project? Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenario when compared to the Project? Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Geology and Water Quality receptors? Do you agree that the assessment of Geology and Water Quality receptors should be scoped out of the Project EIA? Do you agree that the cumulative effects on Geology and Water Quality receptors should be scoped out of the Project EIA?
ELC notes that its proposed Local Development Plan proposes the designation of a Local Geodiversity Site at Thorntonloch Coast, just to the south of where the proposed cable makes landfall. If this proposal is adopted there will need to be consideration for any impact on this site e.g. via changes to coastal processes. **The Scottish Ministers agree with all the questions above. The Scottish Ministers advise NnGOWL to take account of ELC's comments in relation to the proposed designation of a Local Geodiversity Site at Thorntonloch Coast. If this site is designated the EIA Report will need to consider whether there is potential for any impact on the site.**	

8.3 Physical processes

8.3.1 NnGOWL concluded that, based on the conclusions of the Original Development ES and taking into consideration the reduced scale of the Revised Development and the embedded mitigation to be adopted, that all of the potential effects on physical processes would not be significant and should be scoped out.

Scoping Question	Question
7.8 (Page 71)	Do you agree that the existing data available to describe the Physical Processes baseline remains sufficient to describe the physical environment in relation to the Project? Do you agree that the modelling of the potential effects on the Physical Processes receptors (and applying the worst-case scenario for the Original Consented Project cumulatively with the worst-case scenario for the Inch Cape and Seagreen projects) provide an appropriate and precautionary basis for assessing the potential impacts of the Project? Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenario when compared to the Project? Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Physical Processes receptors? Do you agree, considering the embedded mitigation in place, that the assessment of Physical Processes receptors should be scoped out of the Project EIA for the forthcoming Application? Do you agree that the cumulative effects on Physical Processes receptors should be scoped out of the Project EIA?
SNH note they are satisfied that the proposed use of fewer, larger turbines falls well within the 'worst case' previously assessed and that there is no need to update metocean modelling or modelling of suspended sediment. SNH also note that for the transmission works there are conditions that apply to the relevant marine licence and that these will be transferred across to any new licence. SNH state they do not identify any outstanding matters requiring reassessment. **The Scottish Ministers agree with all the questions above.**	

8.4 Air Quality

8.4.1 NnGOWL concluded that, based on the conclusions of the Original Development ES and taking into consideration the reduced scale of the Revised Development, that all of the potential effects on air quality should be scoped out.

Scoping Question	Question
8.8 (Page 80)	Do you agree that the existing data available to describe the Air Quality baseline remains sufficient to describe the atmospheric conditions in relation to the Project? Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenario when compared in the Project? Do you agree that the assessment of Air Quality receptors and the reduction in the scale of the Project, that Air Quality should be scoped out of the Project EIA for the forthcoming Application? Do you agree that the cumulative effects on Air Quality receptors be scoped out of the Project EIA?
ELC welcome the consideration of potential localised changes to meteorology including fog as this is potentially a noticeable change in terms of seascape. ELC notes that it is not clear in Original Development ES what the impacts from additional fog would be. ELC are content that the impacts from fog be scoped out as far as impacts on air are concerned but would want any consequent impact on seascape, in particular cumulatively, considered for inclusion. ELC notes that the Scoping Report assumes that fewer turbines would lead to a lower impact but points out that very little is known about the effects of offshore turbines on this scale and so it is difficult to be sure that there will not be meteorological effects. They therefore do not agree that local meteorological effects should be scoped out. **The Scottish Ministers note the concerns of ELC regarding impacts from the potential creation of additional fog. The Scottish Ministers also note that NnGOWL state that although the Original Development ES acknowledged that the wind turbines may enhance the effect local to turbines under conditions where fog is already present this was not considered significant given the low percentage of fog in the Firth of Forth. Taking into account that there will be fewer turbines in the Revised Development the Scottish Ministers agree with NnGOWL that the predicted effects are likely to be less than those presented**	

in the Original Development ES and that further assessment should be scoped out. The Scottish Ministers agree with the questions above.

8.5 Ornithology

8.5.1 This section of the scoping opinion is presented in a different format. The questions provided by NnGOWL are not answered individually but are dealt with by summarising the information from a meeting that was held on 19 July 2017 between MS-LOT, MSS, SNH and RSPB. The meeting took the form of answering very specific questions that had been raised in the consultee responses and by NnGOWL in the Scoping Report.

8.5.2 This led to a very focussed discussion and the following text is based on the outcome of that meeting. The meeting followed a step by step process of working through each stage of the assessment which will be required. In the majority of cases agreement was reached on the discussion points. Where there were differences of opinion MSS have provided advice and the Scottish Ministers have used all this information to come to a decision on what they require.

8.5.3 The information below should answer the questions posed by NnGOWL in the Scoping Report. Where this is not the case further detail is provided to answer specific questions.

Scoping Question	Question
9.8 (Page 105)	Are you satisfied that the three-year baseline survey dataset detailed in the Original ES is still valid and has not changed significantly since the submission of the Original Application?
SNH noted that no further baseline survey is required (see SNH advice note of 02 February 2017). SNH noted that this advice may change if the application is delayed. The RSPB noted that the dedicated three year ornithology site survey data is now 4.5-7.5 years old. They do not request an updated survey, however, RSPB wish to highlight the spatial and temporal variability of seabird distributions. As a consequence, the survey data may not represent an accurate account of seabird usage. This element of uncertainty will need to be taken into account within the assessment. **The Scottish Ministers agree that the ornithology site survey data for the Original Development EIA remain suitable for providing the baseline survey data for the Revised Development EIA but advise NnGOWL that if their application is delayed this advice may change. The Scottish Ministers advise**	

that this scoping opinion has a shelf life of 12 months from the date of issue. If an application is not received within 12 months then NnGOWL must contact the Scottish Ministers to determine whether the survey data require updating.

8.6 SPAs

8.6.1 It is the Scottish Ministers' opinion that the following SPAs/pSPA and qualifying features must be included in the assessment:

- Forth Islands SPA – gannet, kittiwake, herring gull, puffin, guillemot, razorbill
- Fowlsheugh SPA – kittiwake, herring gull, guillemot, razorbill
- Buchan Ness to Collieston Coast SPA and St Abb's Head to Fast Castle SPA should be scoped in due to connectivity. PVAs for these SPAs are required unless the cumulative effects from the Forth and Tay projects are estimated to be less than a reduction in annual adult survival of 0.2%.
- Firth of Forth and St Andrews Bay Complex pSPA - gannet, kittiwake, herring gull, puffin, guillemot, razorbill. The assessment carried out for these species at the breeding colony SPAs listed above should also be used for the assessment of the pSPA species. As there could be an overlap between the NnGOWL development and the pSPA there is a requirement for additional qualifying features from the pSPA other than those listed under 8.6.1 to be assessed. Assessment of potential seabird disturbance or displacement, and collision in relation to little gull, common gull and black-headed gull will need consideration if the turbines overlap with the pSPA.

8.6.2 For the existing colony SPAs the conservation objective relating to the population of the species as a viable component of the site should be the focus of the assessment, although justification should be provided within the EIA/HRA Report as to why the other conservation objectives are less relevant or are addressed via this conservation objective. For the NnGOWL project which overlaps with the pSPA, the conservation objective relating to the deterioration of the habitat should be considered.

8.6.3 The reference populations to be used for the SPAs are those detailed in appendix a(ii) of the SNH advice (see Appendix I of this scoping opinion). For Buchan Ness to Collieston Coast SPA herring gull the final report on the 2016/17 colony count is due to be published in November / December this year, but SNH are currently obtaining the raw count data which they hope to release to Marine Scotland mid-September, this can then be shared with NnGOWL.

8.6.4 Apportioning effects to colonies and SPAs should be via a two-step process (also see section 8.9):

- apportioning between SPA and non-SPA colonies should be done using Seabird 2000 data
- impacts apportioned between SPAs should use most recent colony counts (see appendix a(ii) of SNH advice)

8.6.5 In order to inform the appropriate assessment ("AA") for the pSPA NnGOWL should consider the the footprint of the wind turbines and also the cable route in relation to the qualifying interests and conservation objective regarding habitat deterioration.Scottish Ministers advise that information requested by SNH (in advice dated 07 September 2017) must be provided.

8.6.6 ***Commentary on the consideration of SPAs***: SNH and RSPB largely agreed on the species and sites to be included in the assessment, although RSPB also requested that great black backed gull and lesser black backed gull be included in the EIA. SNH noted that great black backed gull was included in EIA assessment previously carried out by all three Forth and Tay developers and they were content with these assessments. SNH noted that lesser black backed gull is on the HRA short list (SNH previous advice of 07 March 2014) and that they have no outstanding concerns and that their review of the Collision Risk Model ("CRM") indicates no significant risk to this species. MSS advice was sought on this point, and it was their view that the assessed effects were negligible and that these two species could be scoped out of the EIA. The Scottish Ministers do not require great black backed gull and lesser black backed gull to be included in the assessment.

8.6.7 RSPB and SNH both agreed on the SPAs to be considered and on the apportioning method. The RSPB highlighted that the RSPB tracking data could be useful in providing information which might not be captured by other data. NnGOWL should request this data from RSPB using the data request form which is available directly from RSPB or from MS-LOT. MSS advised that these data were incorporated into the MS commissioned Apportioning Tool.

8.6.8 SNH advised that for SPAs "the population of the species as a viable component of the site" should be used for all developments outwith the protected areas. RSPB advised that all conservation objectives should be taken into account in order to review whether they can be discounted.

8.6.9 SNH advised that population modelling would not be required for Buchan Ness to Collieston Coast SPA and St Abb's Head to Fast Castle SPA. RSPB advised that population modelling should be undertaken for these sites. MSS

advised that these sites should be scoped in due to connectivity and that PVA would be required unless the estimated cumulative effects from the Forth and Tay projects are less than a reduction in annual adult survival of 0.2%. This figure is intended to capture a scenario where the effects are predicted to be greater than expected based on our understanding of previous assessments carried out in relation to these SPAs for the Original Development.

8.6.10 For the pSPA SNH initially advised that it would not be necessary for the Forth and Tay developers to include an assessment of the cable route. It is the SNH view that any habitats or prey disturbed during the cable laying should not take long to recover. SNH do not consider that cable installation will give rise to any significant amount of permanent habitat loss and are satisfied that the previous assessments adequately address cable impacts for each of the Forth & Tay wind farms. SNH however do recognise that MS-LOT will need to address cable installation in any new appropriate assessment(s) for the pSPA, but that previous work could be relied on (email from SNH to MS-LOT & RSPB dated 09 August 2017, see page 158). RSPB in response to that email (email dated 31 August 2017, see page 159) accept that potential impacts on the pSPA from the export cabling from the Forth & Tay windfarms and NNG turbine array could be small, however this doesn't necessarily mean they are insignificant. RSPB consider it necessary that further information be provided to inform the requirements of the Birds & Habitats Directive. The RSPB suggest information on the scale and longevity of effect on the supporting habitats needs to be presented. Some areas within the pSPA are clearly more important than others, as the bird distribution maps and pSPA documentation illustrates.

8.6.11 Further advice was received from SNH (dated 07 September 2017) recognising that there may be insufficient detail on the cable routes from previous assessments to inform an AA and requesting that developers provide certain information. Although received after the formal scoping consultation, these emails and advice from SNH and RSPB are included in Appendix 1.

8.7 Displacement

8.7.1 It is the Scottish Ministers' opinion that a displacement assessment should be completed in the following way:

8.7.2 The species to be included are: puffin, guillemot, razorbill, kittiwake.

8.7.3 As no reference population exists for the little gull feature of the pSPA and that for common gull and black-headed gull the reference populations relate

to winter roost counts, a qualitative assessment of displacement impacts should be carried out for these species if the NnGOWL turbines overlap with the pSPA.

8.7.4 The breeding season months are those described in the SNH advice. Density estimates should be mean seasonal peaks and include a 2km buffer and should include all birds, both those in flight and on the water.

8.7.5 If available, the updated CEH model, (the SeaBORD tool) due for publication on 10 October 2017, should be used to estimate displacement and barrier effects on guillemot, razorbill, puffin and kittiwake during the chick-rearing period.

8.7.6 Estimates of breeding season displacement should also be presented following the Statutory Nature Conservation Bodies ("SNCB") guidance: (http://jncc.defra.gov.uk/pdf/Joint_SNCB_Interim_Displacement_AdviceNote_2017.pdf). Outputs from the SeabORD tool (if available) or, if not available, the CEH displacement modelling (Searle *et al.* 2014) should be used for context. The most appropriate values should be identified and justified in the assessment.

Searle *et al.* 2014 Population consequences of displacement from proposed offshore wind energy developments for seabirds at Scottish SPAs (CR/2012/03). Final report to Marine Scotland Science http://www.gov.scot/Resource/0046/00462950.pdf)

8.7.7 Where displacement effects are considered using the SNCB guidance this should be in relation to changes in adult survival rates (Scottish Ministers recognise that the CEH models give outputs both in relation to adult survival and to productivity.)

Non-breeding season effects

8.7.8 For non-breeding season effects use the SNCB advice on the matrix approach and a buffer of 2km as advised by SNH.

8.7.9 For kittiwake a qualitative assessment of non-breeding season displacement effects is required.

8.7.10 For non-breeding season displacement effects of guillemot and razorbill the approach described in the 2017 SNCB guidance should be used as it is not possible to use the CEH model for non-breeding season. For these two species, non-breeding season effects should be assigned to relevant SPAs as per the breeding season. It is acknowledged that this is likely to be highly

precautionary due to the non-breeding season dispersal of the species. However, using the Biologically Defined Minimum Population Scales ("BDMPS") reference population is likely to underestimate the effects on the Forth and Tay breeding population during the non-breeding season due to e.g. guillemots returning to their colony during this period. Therefore for guillemot and razorbill the breeding season reference populations should be used with discussion provided around why the estimated effects are likely to be overestimates and reference to the BDMPS made.

8.7.11 For the assessment of non-breeding season displacement effects NnGOWL should apportion impacts across all age classes based on stable age structure unless suitable at-sea survey data from the non-breeding season are available for kittiwake.

8.7.12 A displacement rate of 60% should be used for the auk species and 30% for kittiwake. A mortality rate from displacement of 2% for puffin and kittiwake (quantitative assessment is for the breeding season only) and 1% for guillemot and razorbill (same rate across breeding and non-breeding seasons) should be applied. The same rates should be used for immatures as for adult birds.

8.7.13 ***Commentary on the displacement assessment****:* SNH and RSPB largely agreed on the most appropriate displacement methodology. SNH advised that there was no need to include kittiwake, the data available from post construction monitoring indicates no significant avoidance behaviour by this species (e.g. Welcker and Nehls 2016 Mar Ecol Prog Ser 554:173-82; Krijgsveld 2014 – report for Rijjkswarerstaat Sea and Delta; and Robin Rigg Year 5 monitoring report). RSPB advised that kittiwake should be included in the assessment, as the references do not provide adequate evidence during the breeding season. MSS advice was sought on this point. MSS advised that displacement should be included in the kittiwake assessment. Macro avoidance/ displacement has been observed at some wind farms, and whilst displacement and collision effects may be mutually exclusive for individuals, this may not be the case at the population level. Also, the CEH displacement report (Searle *et al.*, 2014) indicated that displacement/ barrier effects have the potential to affect individuals and impact populations.

8.7.14 Both SNH and RSPB agree that gannet does not need to be considered in the displacement assessment.

8.7.15 There was agreement that a qualitative assessment of displacement impacts of little gull, common gull and black-headed gull should be carried out if the NnGOWL turbines overlap with the pSPA.

8.7.16 RSPB, although supporting the presentation of the SeaBORD model in principal, will need the opportunity to review the final model before coming to a formal view on its use.

8.7.17 RSPB suggested a 50% displacement rate for kittiwake, MSS advice was sought on this point. MSS advised that the displacement rate should be 30%. This value takes into account the advice from SNH (who do not consider that displacement of kittiwake is a potential effect that should be assessed), the advice from the RSPB, the approach taken in the original assessments for the Forth and Tay, and the lower number of WTGs (necessitating either a greater WTG spacing or reduced overall wind farm footprint) in the new applications.

8.7.18 With regards to the percentage mortality from displacement, SNH advised 2% for puffin and 1% for other species, RSPB advised 2% for all species. MSS advice for puffin, guillemot and razorbill agreed with that provided by SNH.

8.8 Collision Assessment

8.8.1 The Scottish Ministers note that the stochastic collision risk model commissioned by MSS will not be available until December 2017. Although, when completed, this may represent the best available method, the Scottish Ministers are aware of both the tight application timescales associated with all three Forth and Tay developments and a need for a consistent approach to the methods used to ensure comparable outputs that can be used by the Scottish Ministers to inform their decisions. In light of these requirements the Scottish Ministers advise that the Band 2012 collision risk model is used by all three developers. This is available to use and will allow a comparison of outputs from all three developments.

8.8.2 The Scottish Ministers advise that CRM is required for gannet, herring gull and kittiwake. The nocturnal activity scores of 2 (25%) should be used for herring gull and kittiwake and 1 (0%) for gannet.

8.8.3 The Scottish Ministers advise that for birds in flight, the mean monthly value should be used in the collision risk modelling, and density of birds in flight values should also have 95% confidence limits presented and discussed.

8.8.4 The Scottish Ministers confirm boat based bias should not be accounted for in density estimates.

8.8.5 The Scottish Ministers recommend that comparison is made of the proportion of birds at collision height using site specific flight height data and

the generic flight height data (Johnson *et al.* 2014 with corrigendum https://www.bto.org/science/wetland-and-marine/soss/projects). Any differences between the two should be discussed.

8.8.6 For kittiwake and gannet, the assessment should assume Option 2 using Johnson *et al.* (2014) with corrigendum. If sufficient site specific flight height data are available, outputs using Option 1 should also be presented. Option 2 (at a 98.9% avoidance rate) should be assumed for the PVA.

8.8.7 For herring gull, the assessment should present Options 2 and 3 using Johnson *et al.* (2014) with corrigendum flight height distributions. However, if sufficient site specific flight height data are available, outputs using Option 1 or 4 should also be presented. Option 3 (at a 99% avoidance rate) should be assumed for the PVA, this will allow effects across the Forth and Tay windfarms to be meaningfully compared and combined. However, discussion around how these estimates compare with those assuming Option 2, and how this helps inform the assessment, should also be included.

8.8.8 For avoidance rates the Scottish Ministers recommend using:

- Gannet – 98.9% (± 0.002)
- Kittiwake – 98.9% (± 0.002)
- Herring gull – 99.5% (± 0.001) for option 2, 99.0% (± 0.002) for option 3

8.8.9 The mean avoidance rate values should be used for PVA and the ± 2SD values can be used to inform conclusions. Uncertainty in collision estimates should be presented as ± 2SD and should take account of SNH advice provided in appendix A(iv) of their scoping response.

8.8.10 The Scottish Ministers note that the breeding season months as recommended by SNH are gannet (mid-March – September), kittiwake (mid April – August) and herring gull (April – August) and that non-breeding season effects should be included. The collisions attributed to the SPA should be as agreed in section 8.9.

8.8.11 The Scottish Ministers note that SNH have provided some advice with regard to how to update the flight height data in the Band collision risk model spreadsheets to Johnston *et al.* 2014. This is included in Appendix III.

8.8.12 The Scottish Ministers request (as noted by SNH) that CRM outputs are presented as described in the table below. This is to provide information on the largest number of smallest turbines (lower end in the table) and smallest number of largest turbines (upper end in the table). The missing information

is indicated by question marks. This information will allow comparisons with the 2014 'most likely' scenarios ("MLS") i.e. the parameters used in the Appropriate Assessment for the Original Development. The Scottish Ministers suggest that the lower end of the 2017 design scenario could act as a 'worst case' for the Revised Development. NnGOWL should clarify whether they would want to use this 'worst case' or whether they will define a 'most likely' 2017 scenario.

		2014 MLS	2017 lower end	2017 upper end
NnGOWL (consent variation)	no. of turbines	64	56	?
	rotor diameter	154m	?	180m
	height to blade tip	184.5m	?	230m

8.8.13 ***Commentary on collision assessment:*** There was agreement on most of the points raised at the meeting. There were some differences of opinion.

8.8.14 The main area of disagreement was that both SNH and RSPB advised using the monthly maximum at-sea survey data whereas MSS advised using the mean monthly value. At the meeting on 19 July 2017 SNH and RSPB indicated that they preferred the use of the maximum value as it would capture uncertainty. MSS advised that the approach taken by SNH and RSPB actually ignores uncertainty, is overly precautionary and runs the very high risk of producing an estimated effect that is highly likely to be unreasonable and unrealistically high. MSS advised that for birds in flight, the mean monthly value should be used in the collision risk modelling, and density of birds in flight values should also have 95% confidence limits presented. The Scottish Ministers have considered all the advice presented (see Appendices I and II) and agree with MSS that the mean monthly estimates are presented alongside confidence limits, and that the mean values are those assumed in the effects scenarios incorporated into the PVAs because this is the most robust approach, is consistent with previous assessments, and will provide information on the uncertainty around estimated values.

8.8.15 For the nocturnal activity scores RSPB agreed with SNH apart from gannet where they would prefer a score of 2 (25%) as they have concerns regarding at-sea survey periods omitting dawn and dusk, when gannet activity may be greatest. MSS advised using the scores as suggested by SNH as the justification from RSPB to use different scores for gannet appears to conflate nocturnal activity with colony attendance, foraging activity and timing of at-sea surveys and lacks an adequate empirical basis.

8.8.16 The flight height distribution and the Band CRM options to be used were discussed together. RSPB noted that comparison should be made of site specific and generic data and associated confidence intervals using Proportion at Collision Height ("PCH") as defined by survey height bands of both data sets. This should also include discussion of any significant differences. RSPB note such comparison does not necessarily need to involve running the CRM. There was agreement on this point.

8.8.17 RSPB agreed with the avoidance rates and Options advised by SNH with the exception of gannet where they advised that an avoidance rate of 98.0% should be applied during the breeding season. MSS advised that there was no evidence to support going against the advice provided by SNH and summarised in the joint SNCB document on avoidance rates.

8.9 Apportioning

Apportioning estimated effects from breeding season

8.9.1 It is the Scottish Ministers' opinion that apportioning should be carried out in the following way:

8.9.2 The methods that should be used are the SNH apportioning approach and (if available) the Apportionment tool being produced for Marine Scotland by CEH (though note that this uses Seabird 2000 data only).

8.9.3 The Scottish Ministers advise the two step approach as advised by SNH is used, the reference populations to be used for the SPAs are those detailed in appendix a(ii) of the SNH advice.

- apportioning between SPA and non-SPA colonies should be done using Seabird 2000 data
- impacts apportioned between SPAs should use most recent colony counts (see appendix a(ii) of SNH advice)

Apportioning estimated effects from non-breeding season

8.9.4 For gannet and kittiwake, apportioning the estimated effects from the non-breeding season the Scottish Ministers recommend using the biologically defined minimum population scales BDMPS (Furness, 2015) using the approach adopted in recent English casework e.g. Hornsea 2 and recommended by SNH. This will require two non-breeding apportioning calculations to cover spring and autumn. SNH guidance should be used to define the seasons. The overall non-breeding season is as follows; gannet –

Autumn, October to November; Spring, December to mid-March; kittiwake – Autumn, September to December; Spring, January to mid April.

8.9.5 For herring gull the Scottish Ministers recommend presenting the updated CRM outputs for the breeding and non-breeding seasons. If further quantitative assessment is needed, collisions during the non-breeding season from NnGOWL in isolation and in combination with the other Forth and Tay windfarms should be apportioned in the following way:

- Identify a suitable regional population for/around the Forth and Tay by considering the SPA summer population and any other non-SPA colonies.
- Review the position reached (including justifications and assumptions) in identifying a non-breeding season population for/around the Moray Firth, BOWL have applied a similar process to the Forth and Tay. The key steps are:
    a) estimate the non-breeding season population,
    b) estimate the percentage population of the non-breeding season population derived from regional SPA population
- For BOWL this approach equated to the non-breeding season population being 30% larger than the breeding season population and, of the non-breeding season population, 20% were estimated to be from the regional SPA population.
- Consider this against what is contained in the BDMPS report which indicates that 5.4% of birds in an area in the winter are likely to be from UK SPA colonies with the rest of birds coming in from non UK sources.
- Identify the winter regional population for the Forth and Tay.
- Calculate the Forth and Tay non-breeding season population likely to be connected to the SPAs by using either the methods in the Moray Firth – Beatrice application and / or BDMPS proportion.

8.9.6 For auks the Scottish Ministers advise no assessment is required for puffin in the non-breeding season and that for guillemot and razorbill all non-breeding season impacts should be assigned to SPAs as per breeding season (see 8.7.10). The Scottish Ministers recommend using the total SPA population, all ages, and apportioning impacts across age classes based on the PVA stable age structure.

Assigning estimated effects across age classes

8.9.7 The Scottish Ministers advise the following to assign effects between age classes:

- Breeding season gannet and kittiwake – effects apportioned to age classes using proportions derived from site survey data
- Non-breeding season gannet and kittiwake – effects apportioned to age classes using proportions derived from at sea survey data or, if not available, PVA stable age structure
- Breeding and non-breeding auks – effects apportioned to age classes using proportions from PVA stable age structure

8.9.8 ***Commentary on apportioning:*** SNH and RSPB were in agreement on most points. For apportioning estimated effects to non-adult age classes to SPAs, RSPB agree with the approach outlined by SNH and would prefer, if available, on site survey age structures for non-breeding gannet and kittiwake. MSS advise that for non-breeding gannet and kittiwake the age structure of the non-breeding season effects should be based on the age structure derived from the at sea survey data at this time of year. If this is not available then the PVA stable age structure will provide the best available evidence and should be used. For herring gull in the non-breeding season the advice on apportioning was recieved from SHN in an email dated 5 September 2017.

8.10 Population Viability Analysis (PVA)

8.10.1 The Scottish Ministers advise that PVA outputs are required for SPA breeding colonies where the assessed effects exceed a change to the adult annual survival rate of 0.2% and consider they are likely to be needed for the following:

- Forth Islands SPA – gannet, kittiwake, puffin, guillemot, razorbill
- Fowlsheugh SPA – kittiwake, guillemot, razorbill

8.10.2 PVAs should be produced for the estimated effects from:

- For guillemot, razorbill, puffin, gannet and kittiwake, the wind farm in isolation (effects throughout the year and on all age classes),
- For guillemot, razorbill, puffin, gannet and kittiwake, the wind farm in combination with the other three Forth and Tay wind farms (effects throughout the year and on all age classes)
- For gannet and kittiwake the breeding season effects from the Forth and Tay wind farms combined with the non-breeding season effects from the offshore wind farms in UK waters

8.10.3 For kittiwake, PVAs for the following should also be provided:

- Collision effects (throughout the year and on all age classes) in isolation *and*
- Collision effects (throughout the year and on all age classes) in combination with displacement effects (during the breeding season and on all age classes)

Table 1 below shows the minimum in terms of PVAs which are likely to be required.

Table 1. PVAs which are likely to be required

Key: (KI = kittiwake, PU = puffin, GU = guillemot, RA = razorbill, GX = gannet, FI = Forth Islands SPA, Fow = Fowlsheugh SPA, WF = wind farm in isolation, FTOWDG = NnGOWL, Inch Cape, Seagreen Alpha and Seagreen Bravo)

Species	SPA	Site(s)	Collision	Displacement	Collisions + Displacement
KI	FI	WF	Y		
KI	FI	FTOWDG	Y		
KI	FI	All UK	Y		
KI	FI	WF			Y
KI	FI	FTOWDG			Y
KI	FI	All UK			Y
KI	Fow	WF	Y		
KI	Fow	FTOWDG	Y		
KI	Fow	All UK	Y		
KI	Fow	WF			Y
KI	Fow	FTOWDG			Y
KI	Fow	All UK			Y
PU	FI	WF		Y	
PU	FI	FTOWDG		Y	
GU	FI	WF		Y	
GU	FI	FTOWDG		Y	
GU	Fow	WF		Y	
GU	Fow	FTOWDG		Y	
RA	FI	WF		Y	
RA	FI	FTOWDG		Y	
RA	Fow	WF		Y	
RA	Fow	FTOWDG		Y	
GX	FI	WF	Y		
GX	FI	FTOWDG	Y		
GX	FI	All UK	Y		

8.10.4 The Scottish Ministers advise that stochastic, density independent PVA models should be used. The model will need to include:

- All age classes
- Sabbaticals for which the following rates should be used:
  - Large gulls 35%
  - Kittiwake 10%
  - Guillemot (and Razorbill/Puffin) 7%
  - Gannet 10%
- Effects during the non-breeding season for all species listed above apart from puffin
- A baseline demographic rate based on site specific information where available or alternatively Horswill and Robinson 2015 Review of seabird demographic rates and density dependence. JNCC Report No. 552. Joint Nature Conservation Committee, Peterborough.
- The impacts should be assessed over both 25 years and 50 years with no recovery period. If NnGOWL intend to have an extended construction timeframe then the potential effects of this should be taken into consideration in the PVA.
- Presentation of the PVA metrics as

i. median of the ratio of impacted to unimpacted annual growth rate
ii. median of the ratio of impacted to unimpacted population size
iii. centile for unimpacted population that matches the 50th centile for impacted population

8.10.5 MSS have provided guidance on the presentation of the assessed change using the results of PVA (see Appendix IV). They advise that the outputs of the PVA should be presented using these metrics. SNH advised that i) and ii) should be presented, and the RSPB that ii) should be presented.

8.10.6 ***Commentary on PVA:*** There were differences of opinion as to how to carry out the PVA. There was general agreement between SNH and RSPB on sites and species to be included although the SNH did not consider that Buchan Ness to Collieston Coast SPA and St Abbs to Fast Castle SPA should be included. Advice was sought from MSS on this point who suggested a PVA is undertaken if the estimated cumulative effects from the Forth and Tay projects are a reduction in annual adult survival of more than 0.2%.

8.10.7 SNH noted that they could not provide final advice on whether population models were required until the outputs for the updated collision risk and displacement modelling were available. If further models were required SNH recommended that, as a minimum, deterministic, density independent Leslie Matrix Models were required. RSPB broadly agreed with SNH's view but considered stochastic models would also be helpful. MSS advice was sought on this point and they recommended stochastic models as they have been

found to be precautionary (Lande, R., Engen, S. & Sæther, B.-E. (2003) Stochastic populated dynamics in ecology and conservation. Oxford University Press, Oxford), are able to provide a greater range of potentially informative outputs, and are recognised as the best available information. There was agreement that the PVAs should be density independent.

8.10.8 SNH do not require kittiwake to be included in the assessment of displacement effects (see 8.7.13). To take account of this the Scottish Ministers have advised that the PVAs for kittiwake are presented as collision effects in isolation and collision effects in combination with displacement effects. This will provide outputs that will allow SNH to provide advice on the effects of concern to them (collision) and will also provide information on collision effects in combination with displacement to take account of the concerns of RSPB and MSS.

8.10.9 MSS initially advised running the PVA with 10% greater and 10% lower impacts than the estimated impacts to provide an indication of the potential implications to the populations of interest. However, having reviewed the full list of effects scenarios that will result from this approach MSS note that the inclusion of the proposed wind farm in isolation, in combination with other Forth & Tay windfarms, and in combination with other UK windfarms will provide an indication of sensitivity of conclusions to the magnitude of effects assumed. MSS therefore advise that it is not necessary to provide the effects scenarios assuming ± 10% as outlined in the original MSS advice (see Appendix II). However, this does not mean that the developer is not able to provide PVA outputs assuming different effect scenarios if they felt them relevant to their assessment.

8.11 Cumulative Impact Assessment

8.11.1 The Scottish Ministers have taken into account all the advice received and advise the following:

Breeding season effects

8.11.2 For the breeding season, the CIA should consider effects from projects within mean max foraging range of the colony SPA under consideration.

Non-breeding season effects

8.11.3 For guillemot and razorbill, the CIA should incorporate non-breeding season displacement effects from the Forth and Tay wind farms (Inch Cape and Seagreen), apportioning effects as to SPA and non-SPA colonies in the same manner as the breeding season.

8.11.4 For gannet and kittiwake, the CIA should estimate non-breeding season collision effects from the Forth and Tay wind farms (Inch Cape and Seagreen) in isolation, and in combination with the other UK wind farms.

8.11.5 For herring gull, if the CRM figures indicate an issue then non-breeding season impacts are assessed for windfarms and associated herring gull collisions as suggested at section 8.9.5.

8.11.6 For the CIA, the following assessment scenarios are both required:

Scenario 1

Effects should be considered quantitatively for the wind farm in isolation and in combination with the worst case scenario (for each species) from:

- Inch Cape (2014 as consented) or Inch Cape (2017 scoping report) and
- Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report) and
- Breeding season effects from other wind farms should be considered within the CIA qualitatively.

Scenario 2

Effects should be considered quantitatively for the wind farm in isolation and in combination with:

- Inch Cape (2017 scoping report) and
- Seagreen (2017 scoping report) and
- Breeding season effects from other wind farms should be considered within the CIA qualitatively.

8.11.7 The Scottish Ministers consider that by carrying out the assessment of these two scenarios the cumulative impact of the worst case scenarios of all the current consented and proposed projects are considered but also takes into account the scenario that the ongoing judicial review process may mean that the previously consented developments are no longer valid. If this was the case an assessment of the projects as described in the 2017 scoping reports alone will be required to allow the regulator to assess the cumulative impact of these.

8.11.8 ***Commentary on cumulative impact assessment:*** At the meeting on 19 July 2017 SNH and RSPB both indicated that the cumulative impact

assessment ("CIA") should include non-breeding season effects for razorbill, guillemot, kittiwake and gannet. SNH considered that for kittiwake and gannet this should be for all UK wind farms in the North Sea and RSPB additionally requested a qualitative assessment for non UK sites. For guillemot and razorbill SNH advice is that, as these species are not so wide ranging, the cumulative assessment should apportion non-breeding season effects in the same manner, and from the same wind farms, as in the breeding season.

8.11.9 For herring gull SNH recommend presenting the updated collision risk modelling ("CRM") outputs for the breeding and non-breeding seasons. SNH do not anticipate that these will be significant, however, if the herring gull CRM figures indicate an issue SNH would advise that any non-breeding season impacts are assessed as described in section 8.9.5.

8.11.10 MSS provided the following advice. For breeding season effects, the CIA should consider effects from projects within mean max foraging range of the colony SPA under consideration. If available, the Marine Scotland commissioned Apportioning Tool should be used. This tool provides an output that ranks colonies by likelihood of a bird at a wind farm originating from that colony. For the CIA, effects should be considered quantitatively for the wind farm in isolation and in combination with the other three Forth and Tay wind farms (as described above in 8.11.6). Effects from other wind farms should be considered within the CIA qualitatively.

8.11.11 MSS advise that the scope of the assessment for kittiwake and gannet during the non-breeding season relates to collision effects only. MSS agreed with the approach advised by SNH in relation to the inclusion in the CIA of non-breeding season effects on guillemot and razorbill.

8.11.12 MSS consider it will be challenging to identify gannet, kittiwake or herring gull collision estimates from the other offshore wind farms in the UK that have been estimated and/or reported in a consistent manner. Many will have been estimated using approaches that are no longer deemed to be the best available approach. The cumulative totals obtained should therefore be treated with extreme caution, as should the outputs from PVAs should these cumulative effect totals be modelled.

8.12 Marine Mammals

8.12.1 NnGOWL concluded that the potential effect of piling noise during installation of foundations should be scoped in for harbour porpoise, white-beaked dolphin, bottlenose dolphin, minke whale, harbour seal and grey seal. All other potential effects were scoped out.

Scoping Question	Question
10.8 (Page 130)	Are you satisfied that the baseline detailed in the Original ES is still valid and has not changed significantly since the submission of the Original Application?
The Scottish Ministers agree that the baseline detailed in the Original Development ES is still valid and note that the other data now available that can be used to ensure the information is the most up to date. Sources of data: The Sea Mammal Research Unit ("SMRU") photo identification project, which could be used for assessing the proportion of bottlenose dolphin from the Moray Firth SAC which can be expected to be utilising the Firth of Tay at any one time (Quick *et al.* 2014. The east coast of Scotland bottlenose dolphin population: Improving understanding of ecology outside the Moray Firth SAC. DECC SEA programme Report 14D/086) The CPoD data from the MSS funded survey the East Coast Marine Mammal Acoustic Survey (ECOMMAS) are available from: http://www.gov.scot/Resource/0050/00507404.pdf	

Scoping Question	Question
10.8 (Page 130)	Are you satisfied with the species to be considered within any future assessment. Are there any additional species that should be taken into account?
The Scottish Ministers agree that bottlenose dolphin, harbour seal, grey seal, harbour porpoise, minke whale and white beaked dolphin should be included in the EIA.	

Scoping Question	Question
10.8 (Page 130)	Are you satisfied with the use of management unit populations to assess potential impacts against?
Bottlenose dolphin (*Tursiops truncatus*) SNH advise that the reference population estimates in the statutory nature conservation bodies ("SNCB") guidance on management units for cetaceans should be used, this guidance is based on the Inter Agency Marine Mammal Working Group ("IAMMWG") 2015 figures (IAMMWG, 2015). For bottlenose dolphin this is the	

coastal east Scotland population and SNH advise referring to Cheney *et al.* (2013) for the most up to date population estimate. MSS agree with the management unit and population size recommended by SNH.

During a workshop with Inch Cape on 27 July 2017, which included SNH, MSS and WDC, a further discussion was had regarding distribution for bottlenose dolphin. An approach to update the distribution used in the Original Development ES was agreed. The Scottish Ministers consider that this approach is relevant to all three Forth and Tay developers and recommend that this is the approach followed. The outcome of the discussion is noted below and further information is available in the Inch Cape marine mammals scoping opinion:

Agreement reached to assume, as per the assessment for the Original Development, the reference bottlenose dolphin population (195 individuals) should be split 50:50 between the east coast and the Moray Firth, and that 98 dolphins would be present at the time of piling activities off the east coast.

Agreement reached that the 98 individuals assumed to be present off the east coast should be spread evenly across the area inside the 20 m depth contour as defined in the Original Development EIA, excluding areas in the Forth and Inner Tay where bottlenose dolphin are known not to be present (shaded red in Figure 1 in workshop). These 98 animals will be spread evenly across the remaining grid cells (thereby increasing the density per grid cell).

Cheney B, Thompson PM, Ingram SN, Hammond PS, Stevick PT, Durban JW, Culloch RM, Elwen SH, Mandleberg I, Janik VM, Quick NJ, Islas-Villanueva V, Robinson KP, Costa M, Eisfeld SM, Walters A, Phillips C, Weir CR, Evans PGH, Anderwald P, Reid RJ, Reid JB and Wilson B (2013) Integrating multiple data sources to assess the distribution and abundance of bottlenose dolphins *Tursiops truncatus* in Scottish waters. *Mammal Review*, **43**, 71-88.

IAMMWG (2015) Management Units for cetaceans in UK waters. JNCC Report number 547. http://jncc.defra.gov.uk/pdf/Report_547_webv2.pdf

The Scottish Ministers agree that the IAMMWG 2015 figures for the cetacean reference populations and the additional references suggested by SNH should be used. The Scottish Ministers confirm that the approach agreed at the Inch Cape workshop on 27 July 2017, and described above, with regard to bottlenose dolphin distribution should be used.

Harbour porpoise (*Phocoena phocoena*), Minke whale (*Balaenoptera acutorostrata*) and White beaked dolphin (*Lagenorhynchus albirostris*)

SNH and MSS agree that the management unit for these species should be based

on IAMMWG (2015) and the relevant management units are North Sea (harbour porpoise) and Celtic and Greater North Seas (minke whale and white beaked dolphin). For abundance estimates for these management unit MSS advise that the SCANS-III are the most up to date and should be used if available. If these are not available MSS agree with SNH that the IAMMWG (2015) guidance can be used. SNH and MSS agree that the estimate of abundance within the SCANS-III survey results for block R can be used to consider impacts at a regional scale. MSS note that if further information becomes available from SCANS-III in time to be used in the EIA Report then NnGOWL should make reference to this. MSS note distribution data for these species can be taken from the Original Development ES unless other more recently published data are available. If absolute (rather than relative) densities are required then the distributions can be re-scaled to the SCANS-III abundances.

The Scottish Ministers agree that:

- **The management units based on the IAMMWG (2015) guidance should be used**
- **If available, the SCANS-III surveys should be used for abundance estimates as these are the most up to date, if not available then the IAMMWG (2015) guidance should be used**
- **The most up to date SCANS-III survey results for block R should be used to provide a regional abundance estimate for use within the assessment**
- **Distribution data for these species can be taken from the Original Development ES, unless other more recently published data are available**

Harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*)

For these two species SNH advise that the population present in the east coast seal management unit should be used as the reference population for assessment and SNH take this as equivalent of the SAC population, these can be obtained from the Special Committee on Seals ("SCOS"). MSS agree and note that the 2016 population sizes will be available in the SCOS 2017 report, which will be available in draft in September 2017. MSS recommend that, until this report is published, the 2015 population sizes as published in the SCOS 2016 report should be used. MSS advise that the seal usage maps produced by SMRU should be used for distribution data on both species. These are currently available directly from SMRU but will be updated and made available on NMPi in the next few months.

SCOS (2016) Scientific Advice on Matters Related to the Management of Seal Populations: 2016. http://www.smru.st-andrews.ac.uk/files/2017/04/SCOS-2016.pdf

http://www.smru.st-andrews.ac.uk/research-policy/scos/

The Scottish Ministers agree that the SCOS seal management units and population estimates as described above are used and advise that the seal usage maps produced by SMRU are used for distribution data on both species.

Scoping Question	Question
10.8 (Page 131)	Are you satisfied with the use the PVA to assess potential population level impacts on bottlenose dolphins?

Advice on this issue has been provided in the stakeholder meeting 13 June 2017, consultee responses and ongoing discussion with SNH and MSS. As the new applications for the three Forth and Tay developments are likely to be submitted within a short time of one another the Scottish Ministers want to ensure that they are able to compare the outputs of the assessments. The Scottish Ministers therefore provide the following advice on the assessments to be undertaken. This advice will be the same for all three Forth and Tay developments. The Scottish Ministers also recommend NnGOWL arrange a stakeholder meeting once they have their initial outputs from the noise modelling to discuss these and to confirm what is required to carry out the cumulative impact assessment.

Underwater noise modelling and assessment

SNH and MSS agree that an update to the noise propagation modelling will be required and that both instantaneous and cumulative permanent threshold shift ("PTS") should be presented, modelled for each of the species noted above. SNH and MSS agree that NnGOWL should provide the total number of individuals from each species that may suffer PTS and the number that may be displaced through disturbance.

PTS thresholds from both Southall *et al.* (2007) and the NOAA (2016) should be used. This is to allow comparability with the Original Development ES (which used Southall *et al.* (2007)) but takes into account that the NOAA criteria are the most up to date scientific information. NnGOWL should note that the NOAA criteria are currently under review (refer to http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm for more information).

For flee speeds and startle responses for PTS modelling the mean swim speeds details in SNH guidance note (2016) *Assessing collision risk between underwater turbines and marine wildlife* should be used. This provides mean swim speeds for minke whale, harbour porpoise and grey and harbour seal. It does not contain a mean swim speed for bottlenose dolphin and it was agreed that further information

should be obtained from researchers at SMRU. MSS have subsequently obtained this advice and 1.52m/s is the recommended speed that should be used. This mean swim speed for bottlenose dolphin will be used as a proxy for white beaked dolphin. There was also discussion regarding how to take account of the use of Acoustic Deterrent Devices ("ADD") as a mitigation method. It was agreed that fleeing starts from the start of the ADD use i.e. 20 minutes before piling starts, and the PTS impacts from ADDs do not need to be considered as the ADDs will not be sufficiently loud to cause PTS for the period of time that they will be used for.

SNH and MSS agree that a dose responses curve should be used to determine the proportion of animals likely to be disturbed sufficiently to displace them by piling noise. The Scottish Ministers note that this could use a re-interpretation of the data from the harbour porpoise acoustic signal detection during piling operations at Horns Rev II. It was also noted that data from the Moray Firth seismic survey work should also be examined to establish whether reaction to air-gun noise can be considered informative in the generation of a dose response curve. MSS also noted that they had some concerns regarding using the data from the Horns Rev II development relating to the small sample size and the very shallow water depths at the study site which may have an effect on noise propagation. Both SNH and MSS note that there are other data and approaches that could be used to improve this assessment and recommend NnGOWL make use of these where possible (Dähne *et al.*, 2013, Brandt *et al.*, 2016, Russell *et al.*, 2016, Thompson *et al.*, 2013a and b). MSS consider that in the absence of similar data for species other than harbour porpoise, that it is acceptable to use the same dose-response function for all species. The Scottish Ministers advise that NnGOWL should request the data from the pile driving at the Beatrice Offshore Wind Farm directly from Professor Paul Thompson at the Lighthouse Field Station, Cromarty.

Brandt *et al.* (2016) Effects of offshore pile driving on harbour porpoise abundance in the German Bight. Assessment of Noise Effects. Final Report. Prepared for Offshore Forum Windenergie. http://bioconsult-sh.de/site/assets/files/1573/1573.pdf

Dähne *et al.* (2013) Effects of pile-driving on harbour porpoises (Phocoena phocoena) at the first offshore wind farm in Germany. Environ. Res. Lett. 8, doi:10.1088/1748-9326/8/2/025002

Russell *et al.* (2016) Avoidance of wind farms by harbour seals is limited to pile driving activities. Journal of Applied Ecology, 53(6), pp.1642-1652

SNH (2016) Assessing collision risk between underwater turbines and marine wildlife. Guidance note.

Southall *et al.* (2007) Marine mammal noise exposure criteria**.** Aquatic. Mammals., 33, pp. 411-521, 10.1578/AM.33.4.2007.411

Thompson *et al.* (2013a) Short-term disturbance by a commercial two-dimensional seismic survey does not lead to long-term displacement of harbour porpoises. Proc Roy Soc B 280: 20132001. http://dx.doi.org/10.1098/rspb.2013.2001

Thompson *et al. (*2013b*)* Framework for assessing impacts of pile-driving noise from offshore wind farm construction on a harbour seal population*.* Environmental Impact Assessment Review*,* 43*,* pp. 73–85*.*

The Scottish Ministers advise that NnGOWL take into account the summary above, consultation responses and the minutes of the scoping meeting on 26 May 2017, the meeting with WDC on 27 June 2017 and the outcome of the Inch Cape workshop on 27 July 2017 (see Inch Cape marine mammals scoping opinion). The Scottish Ministers consider that the following should be used for the underwater noise modelling and assessment:

- **both instantaneous and cumulative permanent threshold shift ("PTS") should be presented, modelled for each of the species noted above. NnGOWL should provide the total number of individuals from each species that may suffer PTS and the number that may be displaced through disturbance.**
- **Swim speeds as outlined by SNH in the guidance note referenced above should be used along with information provided by SMRU in relation to bottlenose dolphin swim speeds (which can be used as a proxy for white beaked dolphin)**
- **Fleeing should be considered to begin from the start of ADD use**
- **PTS thresholds from both Southall *et al.* (2007) and the NOAA (2016) should be presented**
- **A dose response curve should be used to determine the proportion of animals likely to be disturbed sufficiently to displace them by piling noise. NnGOWL should take into account the concerns noted above about the use of the Horns Rev II and make use of other relevant data as noted above, in particular the data from the Beatrice Offshore Wind Farm in relation to piling if available.**

Species impact assessment

For bottlenose dolphin, MSS consider it will be necessary to assess the impacts of NnGOWL alone on the East Scotland management unit population, as well as cumulatively with other developments. SNH and MSS each suggest a different approach for this assessment. SNH consider that if the impact of the project alone is the same or less that the impact of the Original Development then there would not be a requirement for a cumulative assessment. MSS have concerns that this could

compromise the Appropriate Assessment that will be conducted in relation to the Moray Firth SAC.

For harbour porpoise, minke whale, white beaked dolphin, harbour seal and grey seal NnGOWL should assess whether the new parameters of the Revised Development result in any greater impact to these species. If the Revised Development does not result in increased impact then no further assessment would be required. This approach aligns with the advice provided by SNH. MSS agree with this approach for these species but note that, although not part of the EIA process, NnGOWL should give consideration to the information requirements for EPS licensing and, where needed, for an HRA and Appropriate Assessment and how these can be readily transferred. This would ensure that any information required is readily available in a format that can be used in for the EPS process and contribute to a more efficient process.

The Scottish Ministers advise that, for bottlenose dolphin, an assessment of the impacts of the Revised Development alone on the East Scotland management unit population as well as cumulatively with other developments that may impact on the same population is required. NnGOWL should ensure that the information provided can be used for an Appropriate Assessment in relation to the Moray Firth SAC.

The Scottish Ministers advise for harbour porpoise, minke whale, white beaked dolphin, harbour seal and grey seal that further assessment is only carried out if the effects of the Revised Development are found to be greater than those assessed for the Original Development. The Scottish Ministers request that, where necessary, the information is provided in a form that means it can be used for the EPS process or, where needed, to inform the Appropriate Assessment as part of an HRA.

Population level effect assessment

For species where population level impact assessments are undertaken, MSS recommend using the Interim Population Consequences of Disturbance ("iPCOD") framework. The software for this model is available on the Marine Scotland website, along with a report which suggests appropriate parameters for each species. MSS note that a new version of the software will shortly be available (also on the Marine Scotland website), which will allow for the use of a dose-response function for the displacement of animals as a result of exposure to noise.

MSS note the interim nature of the iPCOD framework. This is because there are currently insufficient data on the consequences of disturbance to individual animals, and hence to populations. MSS flag this as an important knowledge gap. The

iPCOD framework utilises formal expert elicitation to produce statistical distributions of responses to disturbance, and to estimate the effects on vital rates of individuals (e.g. survival probability, reproductive rate), including the uncertainty in these predictions. An alternative framework, the DEPONS model, is available and uses measured responses of tagged harbour porpoise to impulsive noise sources to understand the effects of disturbance. However, this framework is currently only parameterised for harbour porpoise and so does not represent a viable assessment method for this development.

NnGOWL note in their Scoping Report that a Population Viability Analysis ("PVA") will be used for population level assessments. The PVA that NnGOWL propose uses expert opinion on the responses to disturbance and their effect to vital rates. However, this is not a formally elicited expert opinion and does not include uncertainty around the responses or impacts to individuals. The framework for developing this model is also unsophisticated and cannot accommodate scenarios with variable numbers of developments in subsequent years (see Aberdeen Harbour Expansion Project Appropriate Assessment for further details). MSS recommend iPCOD over this PVA because it uses a formal expert elicitation, is capable of incorporating uncertainty, and is more flexible in how impacts can be modelled. The Scottish Ministers are recommending that all three Forth and Tay developers use the same framework. This will mean all their results are comparable and will mean a cumulative assessment can be more readily undertaken.

In providing iPCOD outputs, MSS request that the EIA Report (or an appendix) provides a comprehensive list of the parameters input. This should be sufficiently detailed such that MSS staff would be able to replicate the analysis. As a minimum this will include the piling schedule, the demographic parameters, and starting population size. MSS request that NnGOWL provides a copy of the code used to run the model and any QA/QC outputs that the software produces.

MSS have provided guidance on the presentation of the assessed change using the results of PVA (see Appendix IV). They advise that the results of an assessment using iPCOD should also be presented using these metrics.

The Scottish Ministers advise that the iPCOD framework is used for species where population level impact assessments are undertaken. The Scottish Ministers request that a comprehensive list of the parameters input and other relevant information to allow MSS to be able to replicate the analysis is provided. As a minimum this must include:

- **The piling schedule**
- **The demographic parameters**
- **Starting population size**

- **Copy of the code used to run the model**
- **Any quality assurance/quality control outputs that the software produces**

The Scottish Ministers advise that the results of the assessment using iPCOD should be presented using the metrics provided in the MSS guidance note.

Scoping Question	Question
10.8 (Page 131)	Of the thresholds presented in Table 10-9, which do you consider the most suitable for assessment purposes?
As discussed above the Scottish Ministers recommend that PTS thresholds from both Southall *et al.* (2007) and the NOAA (2016) should be presented.	

Scoping Question	Question
10.8 (Page 131)	Are you satisfied with the proposed list of projects that will be considered as part of any cumulative assessment? Are there any other projects that should be considered?

SNH suggest any requirements for cumulative impact assessment can be discussed once the outputs from the updated noise modelling are available. A cumulative impact assessment will only be necessary if the piling (underwater noise) impacts are greater than previously assessed. As noted above MSS consider that this approach would not provide the information that will be required for the Appropriate Assessment in relation to the Moray Firth SAC.

SNH suggest that if NnGOWL wish to further develop their approach to cumulative impact assessment they recommend NnGOWL review the marine mammals Appropriate Assessment for the Aberdeen Harbour Expansion Project.

MSS agree with the list of projects to be included in a cumulative assessment that is provided in the Scoping Report and agree with SNH that the Aberdeen Harbour Expansion Project should also be included.

The Scottish Ministers consider the following projects should be considered for inclusion in the cumulative impact assessment (for consistency the names are presented as they are found on the Marine Scotland webpage (where relevant)):

- **Worst case scenario of Neart na Gaoithe (2014 as consented) or Neart na Gaoithe (2017 scoping report)**
- **Worst case scenario of Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report)**

- **Worst case scenario of Moray Offshore East Development or Moray East Offshore Wind Farm – Alternative Design**
- **Beatrice Offshore Wind Farm**
- **Moray West Offshore Wind Farm**
- **Aberdeen Harbour Expansion project**

The CIA is likely to benefit from discussion once the initial results of the noise modelling are available, therefore the list of projects to be included may be refined following this.

8.13 Benthic Ecology

8.13.1 Based on the conclusions of the Original Development ES and considering the reduced scale of the Revised Development NnGOWL concluded that all of the potential effects on benthic ecology should be scoped out. NnGOWL propose that there is no detailed assessment of benthic ecology receptors included within the EIA Report.

Scoping Question	Question
11.8 (Page 148)	Do you agree that the existing data available to describe the Benthic Ecology baseline remains sufficient to describe the physical environment in relation to the Project?
The Scottish Ministers agree that the existing data available to describe the Benthic Ecology baseline remains sufficient to describe the physical environment in relation to the Project.	

Scoping Question	Question
11.8 (Page 148)	Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenario when compared to the Project?
SNH note that the use of fewer, larger turbines will reduce the scale of habitat loss and/or habitat disturbance so that the impacts fall within the 'worst case' previously assessed for all proposed foundation types. SNH note that the previous 'worst case' assessment was based on the use of gravity bases and these have now been removed from the design envelope. **The Scottish Ministers agree that the assessment scenario previously applied in conducting the Original Development EIA represents the worst-case scenario when compared to the Revised Development.**	

Scoping Question	Question
11.8 (Page 148)	Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Benthic Ecology receptors?
SNH note that a number of conditions apply to the consented scheme and that these will be transferred to any new consent, these will minimise and mitigate any impacts on benthic ecology. **The Scottish Ministers agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Revised Development on benthic ecology.**	

Scoping Question	Question
11.8 (Page 148)	Do you agree that the assessment of Benthic Ecology receptors should be scoped out of the Project EIA?
SNH agree that the scoping report provides full consideration and justification for scoping out benthic interests from further assessment. At the stakeholder meeting of 13 June 2017 MSS agreed with the Scoping Report conclusions and noted that burrowing fauna would need to be addressed post-consent, either in the Environmental Management Plan or Cable Plan. **The Scottish Ministers agree that assessment of benthic ecology receptors can be scoped out of the Revised Development EIA.**	

Scoping Question	Question
11.8 (Page 148)	Do you agree that the cumulative effects on Benthic Ecology receptors should be scoped out of the Project EIA?
As no significant effect was identified in the Original Development ES assessment and the design changes are anticipated to have less of a cumulative impact the Scottish Ministers agree that the cumulative effect on benthic ecology receptors should be scoped out of the Revised Development EIA.	

8.14 Fish and Shellfish Ecology

8.14.1 NnGOWL conclude that, based on the evidence summarised from the Original Development ES consideration of the reduced scale of the Revised Development and in light of the embedded mitigation to be adopted, there will be no significant effects on fish and shellfish receptors or the effects will

be managed to minimise the risk to fish species in the vicinity of the Revised Development. NnGOWL propose that there is no detailed assessment of fish and shellfish included in the EIA Report.

Scoping Question	Question
12.8 (Page 168)	Do you agree that the existing data available to describe the Fish and Shellfish Ecology baseline remains sufficient to describe the physical environment in relation to the Project?

SFF generally agree that the benthic ecology baseline is adequately defined but note that in areas identified as scallop and nephrop grounds more attention needs to be given to any possible negative impacts on these species by operations that produce suspended sediment and the potential to smother the animals or interfere with their feeding or breeding. SFF note that NnGOWL need to clarify their information regarding the presence of scallop populations and catching grounds.

ELC note that fisheries baseline information should include what fish are actually being caught and where and should be examined by surveys of the industry as well as commercial fisheries data. This could include fish processors. These data should then be used to assess the impact of the proposal on the industry.

MSS had previously provided advice with regard to the effect of increased suspended solids and increased smothering impacts (see scoping opinion for Inch Cape July 2017) and notes that there is potential impact when there is use of gravity base structures. NnGOWL is not using gravity based structures.

The Scottish Ministers note the point raised by SFF in relation to the possible negative impacts of suspended sediment and smothering but as gravity base structures are not going to be used for NnGOWL consider this does not need further assessment. The Scottish Ministers agree with SFF that the information regarding the presence of scallop populations and associated catching grounds should be clarified.

MSS agreed, in the majority of cases, that the existing fish and shellfish baseline and proposed updates are appropriate to the potential level of impact from the proposed development. The exception is in relation to diadromous fish. The main points raised were:

MSS provided information on recently published work that provided more evidence on:

- Adult salmon routes to the coast during migration (Godfrey *et al.*, 2014 and 2015)
- Coastal migration of salmon smolts (Lothian *et al.*, 2017)
- The importance of geomagnetic navigation post-smolts in migrating to sea

feeding grounds and by returning adult salmon in homing to their natal rivers (Putman *et al.*, 2013 and Putman *et al.*, 2014)

- The timing of salmon smolt movement across Scotland (Malcolm *et al.*, 2015)

Godfrey, JD Stewart, DC Middlemas, SJ and Armstrong, JD (2015) Depth use and migratory behaviour of homing Atlantic salmon (*Salmo salar*) in Scottish coastal waters. ICES Journal of Marine Science, 72: 568–575. http://icesjms.oxfordjournals.org/content/early/2014/07/16/icesjms.fsu118.full.pdf?keytype=ref&ijkey=y9lmPDRLdC04n7B

Godfrey, JD, Stewart, DC, Middlemas SJ and Armstrong JD (2014) Depth use and movements of homing Atlantic salmon (*Salmo salar*) in Scottish coastal waters in relation to marine renewable energy development. Scottish Marine and Freshwater Science. Volume 5 Number 18 http://www.gov.scot/Resource/0046/00466487.pdf

Lothian AJ, Newton M, Barry, J, Walters M, Miller RC and Adams CE (2017) Migration pathways, speed and mortality of Atlantic salmon (Salmo salar) smolts in a Scottish river and the near-shore coastal marine environment. Ecology of Freshwater Fish. On line via http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1600-0633/earlyview as an early view paper

Malcolm, IA, Millar CP and Millidine KJ (2015) Spatio-temporal variability in Scottish smolt emigration times and sizes. Scottish Marine and Freshwater Science. Volume 6 Number 2 http://www.gov.scot/Resource/0047/00472202.pdf.

Putman,NF, Lohmann, KJ, Putman, EM, Quinn,TP, Klimley, AP and Noakes, DLG (2013) Evidence for Geomagnetic Imprinting as a Homing Mechanism in Pacific Salmon. Current Biology 23, 312–316 http://www.cell.com/current-biology/pdf/S0960-9822(13)00003-1.pdf

Putman,NF,Scanlan,MM, Billman,EJ, O'Neil, JP, Couture, RB, Quinn, TP, Lohmann,KJ and Noakes, DLG (2014) An Inherited Magnetic Map Guides Ocean Navigation in Juvenile Pacific Salmon. Current Biology 24, 446–450 http://www.cell.com/current-biology/pdf/S0960-9822(14)00018-9.pdf

SNH note that they are content that diadromous fish species (and other qualifying interests of SAC rivers) can be scoped out from further assessment. However, MSS note that the information sources noted above provide more detail regarding where the salmon are likely to be. NnGOWL should use the information above to confirm whether their assumption that migratory fish are more likely to be present around the Offshore Export Cable Corridor than the Wind Farm Area due to their coastal migratory routes is correct.

The 2017 EIA Regulations require that the Scottish Ministers come to a reasoned conclusion, based on up to date information, on the significant effects of the Revised Development. As the information noted above has been published since the previous assessment the Scottish Ministers advise NnGOWL to consider whether it changes the outcome of the Original Development ES and, if so, carry out a further assessment. If NnGOWL consider no further assessment is required they must provide justification of

their reasons.

The Forth District Salmon Fishery Board ("FDSFB") and the River Tweed Commission ("RTC") both highlight concerns regarding some of the literature used to inform the Scoping Report. Their concerns are in relation to the references regarding migratory routes of Atlantic salmon and the likelihood of being present in the development area. Both note the paucity of information regarding the migration routes of post-smolts. RTC noted that new information has become available that demonstrates that the bases of wind turbines act as artificial reefs that attract grey and harbour seals (Russell *et al*. 2014). RTC are concerned that no consideration of the effect of this on salmon populations has been carried out. Both organisations provide detailed comments regarding the scientific literature on salmon and outline their concerns with how some of this has been presented or omitted in the Scoping Report.

MSS advice on this point was it is known that both smolts and adult salmon can under some situations, such as in rivers, aggregate at hard structures, sometimes to seek shelter from currents. However, MSS is not aware of any evidence to date that migrating smolts or adult salmon gather at turbine bases. The view of MSS is that smolts or adult salmon while they were still offshore will be actively migrating and following cues taking them away from foundation bases. As such there is no reason to expect this to be a major issue. It is likely that better information will become available in the future from tracking of salmon in the vicinity of wind farms.

Estuaries, and particularly inner estuaries, are already known to be hotspots for seal predation on adult salmon as returning salmon may wait there for suitable conditions for them to enter rivers. As such it is possible that any factors that take seals away from estuaries could reduce predation pressure on adult salmon.

Sea trout could be present in the area when not actively migrating and as such might perhaps be more likely to seek shelter from turbine bases.
Russell, D.J.F. *et al.* 2014 Marine Mammals trace anthropogenic structures at sea. Current Biology, Vol 24 (14).

The Scottish Ministers have considered the concerns raised by RTC and taken into account the advice provided by MSS in relation to the behaviour of seals and advise that this issue can be scoped out. This is based on the advice from MSS that, if the salmon are present, they will be actively migrating through the site and less at risk of being predated.

The Scottish Ministers agree, with the exception of diadromous fish and clarification of information regarding scallop populations and catching grounds, that the existing fish and shellfish baseline and proposed updates

are appropriate to the potential level of impact from the Revised Development.

Scoping Question	Question
12.8 (Page 168)	Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenario when compared to the Project?
MSS agree that, for marine fish, the assessment scenario previously applied in conducting the Original Development EIA represents the worst-case scenario when compared to the Revised Development. RTC and FDSFB both note that they do not agree with this statement as new information has become available (see above). **The Scottish Ministers agree that the assessment scenario previously applied in conducting the Original Development EIA represents the worst-case scenario when compared to the Revised Development. The Scottish Ministers note the comments of RTC and FDSFB and advise NnGOWL to take account of the new information available and include it in the EIA as noted above.**	

Scoping Question	Question
12.8 (Page 168)	Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Fish and Shellfish Ecology receptors?
RTC and FDSFB both note that they do not agree with this statement as new information has become available (see above). FDSFB note that there is not enough detail on the proposed mitigation and the mitigation is potentially founded on a misunderstanding of the quoted references. **The Scottish Ministers are satisfied with the embedded mitigation but note that further mitigation may be required if any concerns are raised following the outcome of the assessment on diadromous fishand particle motion. The Scottish Ministers note the comments of RTC and FDSFB and advise NnGOWL to take account of the new information available and include it in the EIA as noted above.**	

Scoping Question	Question
12.8 (Page 168)	Do you agree that the assessment of Fish and Shellfish Ecology receptors should be scoped out of the Project EIA?
Since the Original Development ES for NnGOWL was produced there has been a considerable increase in the relevant literature which suggests that there is potential for impacts from acoustic particle motion on fish and invertebrates. An issue that has been raised by MSS is the need to consider potential impact of acoustic particle	

motion on sensitive receptors in addition to the effects of sound pressure on fish species that are sensitive to this.

There is acknowledgement that understanding of the effects from particle motion, and extent of these effects, is currently an area for further development, and there are various initiatives being progressed. MSS considers that the currently available evidence suggests that particle motion could be an important mechanism of effect on fishes and invertebrates. As the 2017 EIA Regulations require the Scottish Ministers to come to a reasoned conclusion on the significant effects on the environment of the development, based on up to date information, this information needs to be taken into account. MSS has provided a list of references.

MSS suggests that NnGOWL takes the following approach:

- Provide an overview of currently available information on particle motion within the vicinity of noise producing construction and operational activities, including, for example, pile driving, dredging and explosions – both within the water column and the sea bed. This should include consideration of the likely distances at which elevated levels of particle motion may be detected.
- Provide an overview of the published information on sensitive species and potential physiological and behavioural effects of particle motion.
- Give consideration to the potential effects of particle motion on species known to occur around the development site, making use of information on species distribution from the Original Development ES and information which has become available since then. Particular attention should be given to potential effects on species of commercial or conservation concern.
- Provide information on opportunities that the Revised Development may present to investigate effects of particle motion on fish and invertebrates.

RTC and FDSFB both note that they do not agree with NnGOWL's statement as new information has become available (see above).

The Scottish Ministers agree that the potential impact of particle motion should be assessed and suggests that NnGOWL follows the approach outlined by MSS.

The Scottish Ministers agree that, with the exception of diadromous fish and particle motion, the assessment of fish and shellfish ecology receptors should be scoped out of the Revised Development EIA. The Scottish Ministers note the comments of RTC and FDSFB and advise NnGOWL to take account of the new information available and include it in the EIA as noted above.

References which may be useful (not necessarily a comprehensive listing):

Ceraulo, M., Bruintjes, R., Benson, T., Rossington, K., Farina, A. and Buscaino, G. (2016) Relationships of underwater sound pressure and particle velocity in a shipbuilding dock. In: 4th International Conference on The Effects of Noise on Aquatic Life, 10-16 July 2016, Dublin, Ireland.

Farcas, A., Thompson, P. M., & Merchant, N. D. (2016). Underwater noise modelling for environmental impact assessment. Environmental Impact Assessment Review, 57, 114-122. https://tethys.pnnl.gov/sites/default/files/publications/Farcas-et-al-2016.pdf

Harding, H, Bruintjes, R, Radford AN Simpson SD (2016) Measurement of Hearing in the Atlantic salmon (Salmo salar) using Auditory Evoked Potentials, and effects of Pile Driving Playback on salmon Behaviour and Physiology Scottish Marine and Freshwater Science Report Vol 7 No 11
http://www.gov.scot/Resource/0049/00497598.pdf

Hawkins, A. and Popper, A. (2016). A Sound Approach to Assessing the Impact of Underwater Noise on Marine Fishes and Invertebrates. ICES Journal of Marine Science, 74(3), 635-651.

Mueller-Blenkle, C., McGregor, P.K., Gill, A.B., Andersson, M.H., Metcalfe, J., Bendall, V., Sigray, P., Wood, D.T. & Thomsen, F. (2010) Effects of Pile-driving Noise on the Behaviour of
Marine Fish. COWRIE Ref: Fish 06-08, Technical Report 31st March 2010
https://tethys.pnnl.gov/sites/default/files/publications/Mueller-Benkle_et_al_2010.pdf

Nedelec, S. L., Campbell, J., Radford, A. N., Simpson, S. D., and Merchant, N. D. 2016. Particle motion: the missing link in underwater acoustic ecology. Methods in Ecology and Evolution, 7, 836–842.
http://onlinelibrary.wiley.com/doi/10.1111/2041-210X.12544/pdf

Popper AN and Hastings MC (2009) The effects of anthropogenic sources of sound on fishes
Journal of Fish Biology (2009) 75, 455–489
http://onlinelibrary.wiley.com/doi/10.1111/j.1095-8649.2009.02319.x/epdf
(general review of sound and fish with useful insights on pile driving and particle motion)

Normandeau Associates, Inc. (2012). Principal authors Anthony D. Hawkins and Arthur N. Popper. Effects of Noise on Fish, Fisheries, and Invertebrates in the U.S. Atlantic and Arctic from Energy Industry Sound-Generating Activities. A Literature Synthesis for the U.S. Dept. of the Interior, Bureau of Ocean Energy Management. Contract # M11PC00031. 153 pp.
https://tethys.pnnl.gov/sites/default/files/publications/Hawkins-and-Popper-2012.pdf

Popper, A. N., and Hawkins, A. D. 2016. The effects of noise on aquatic life, II. Springer Science+Business Media, New York.

Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., *et al.* 2014. Sound Exposure Guidelines. In ASA S3/SC1. 4 TR-2014 Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI, pp. 33–51. Springer, New York.

Radford, CA, Montgomery, JC, Caiger P and Higgs DM (2012) Pressure and particle motion detection thresholds in fish: a re-examination of salient auditory cues in teleosts. The Journal of Experimental Biology 215, 3429-3435
http://jeb.biologists.org/content/jexbio/215/19/3429.full.pdf

Roberts L and Elliott M (2017) Good or bad vibrations? Impacts of anthropogenic vibration on the marine epibenthos. Science of the Total Environment 595:255-268.

Roberts, L. (2015). Behavioural responses by marine fishes and macroinvertebrates to underwater noise (Doctoral dissertation, University of Hull). https://hydra.hull.ac.uk/assets/hull:11515a/content

Robinson, S.P., Lepper, P. A. and Hazelwood, R.A. (2014) Good Practice Guide for Underwater Noise Measurement. NPL (National Physical Laboratory) Good Practice Guide No. 133. http://www.npl.co.uk/upload/pdf/gpg133-underwater-noise-measurement.pdf

Sigray, P. and Andersson, M. (2011). Particle Motion Measured at an Operational Wind Turbine in Relation to Hearing Sensitivity in Fish. Journal of the Acoustical Society of America, 130(1), 200-207

Spiga I, Caldwell GS and Bruintjes R. (2016) Influence of Pile Driving on the Clearance Rate of the Blue Mussel, Mytilus edulis (L.). In: Fourth International Conference on the Effects of Noise on Aquatic Life. 2016, Dublin, Ireland: Acoustical Society of America.
http://eprint.ncl.ac.uk/file_store/production/228332/0752C651-F06C-433D-B504-A5B28F3A73BA.pdf

Thomsen, F., Gill, A., Kosecka, M., Andersson, M. H., Andre, M., Degraer, S., ... & Norro, A. (2015). MaRVEN–Environmental Impacts of Noise, Vibrations and Electromagnetic Emissions from Marine Renewable Energy. Final study report., Brussels, Belgium.

Zhang, Y, Shi F, Song J, Zhang X and Yu S (2015) Hearing characteristics of cephalopods: Modeling and environmental impact study. Integrative Zoology 10 (1) 141–151
http://onlinelibrary.wiley.com/doi/10.1111/1749-4877.12104/full

Scoping Question	Question
12.8 (Page 168)	Do you agree that the cumulative effects on Fish and Shellfish Ecology receptors should be scoped out of the Project EIA?
The SFF note that the effects of habitat disturbance, suspended sediment concentrations and sediment settlement for the both the wind farm and the export cable need to be included in an assessment of cumulative impacts with other	

projects.

MSS note that the cumulative impact assessment does not include the revised development designs as described in the recently submitted scoping reports for Inch Cape and Seagreen.

RTC and FDSFB both note that they do not agree with this statement. The reasons given are that there is insufficient evidence to scope these receptors out of the EIA and there has been no consideration of the interactions of structures, predator behaviour and fishes and the data on the migratory pathways utilised by adult salmon on which the original conclusions were made was defective. No consideration was given to smolt migration.

The Scottish Ministers advise NnGOWL to review the cumulative impact assessment for the Original Development to take account of the points raised in relation to particle motion and diadromous fish. If, after this review, NnGOWL consider that there is no need to update the cumulative impact assessment they should provide justification for this decision.

The Scottish Ministers note the comments of RTC and FDSFB and advise NnGOWL to take account of the new information available and include it in the EIA as noted above.

8.15 Commercial Fisheries

8.15.1 NnGOWL note that a material change to the baseline may result in changes in the levels of significance of the potential effects. The baseline will be updated and will include information collected through direct consultation with fisheries stakeholders. The updated baseline will identify those fisheries that will require further detailed consideration in the Revised Development EIA Report due to a substantial change in baseline conditions.

8.15.2 Once the review of the updated commercial fisheries baseline has been carried out the potential effects considered in the Original Development ES will be scoped into the Revised Development EIA Report unless otherwise agreed with MS-LOT.

Scoping Question	Question
13.8 (Page 185)	Do you agree that there is a requirement to update and review the commercial fisheries baseline as specified?
The SFF welcome NnGOWL's decision that the commercial fisheries baseline will be updated. SFF highlighted that it is necessary to assess scallop activity over a ten	

year cycle to gain a true picture of the fishery.

ELC note that fisheries baseline information should include what fish are actually being caught and where and should be examined by surveys of the industry as well as commercial fisheries data. This could include fish processors. These data should then be used to assess the impact of the proposal on the industry.

MSS agreed that an update to the commercial fisheries baseline was required and at the stakeholder meeting on 27 June 2017 provided several sources of information that could be used to do this.

The Scottish Ministers agree that there is a requirement to update and review the commercial fisheries baseline as set out in the Scoping Report and advise NnGOWL to take into account the information provided by stakeholders.

Scoping Question	Question
13.8 (Page 185)	Do you agree that the data sources identified are sufficient to inform an update of the baseline for the Project EIA?

At the scoping meeting on 27 June 2017 MSS provided details of where further updated information could be found and NnGOWL are advised to take these sources of information into account.

The Under 10m Association notes that the impact on all inshore fishing vessels must be considered regardless of their size and that the impact on vessels less than 15m in length has been ignored.

The SFF recommend that NnGOWL use the Commercial Fisheries Working Group to verify the updated baselines.

The Scottish Ministers note that further information has been provided to update the baseline and advise NnGOWL to include this with the information already identified to inform the update of the baseline data in relation to commercial fisheries.

The Scottish Ministers advise NnGOWL to obtain validation of the data from the fishing industry and to discuss with the SFF how this could best be done.

Scoping Question	Question
13.8 (Page 185)	Do you agree with the embedded mitigation as summarised above?

The SFF note that they expect that the Commercial Fisheries Working Group would

be the recognised official method for developing and agreeing all the relevant mitigation needed.

Both the SFF and the Under 10m Association raised concerns about cable burial and the need to take into account the safety of fishing vessels in relation to state of the seabed post burial. The SFF noted some research carried out by Xodus in relation to the Caithness to Moray cable project and suggested this might provide useful information.

The Scottish Ministers agree with the embedded mitigation but advise NnGOWL to ensure that all the most up to date information is being used to inform this mitigation.

The Scottish Ministers advise NnGOWL to discuss with the SFF how best to ensure the proposed mitigation measures can be developed and agreed.

Scoping Question	Question
13.8 (Page 185)	Do you agree with the proposed scope of the cumulative impact assessment?

As several points were raised in consultee responses and during the stakeholder meeting of 27 June 2017 this section will include a summary of issues raised with regard to the proposed scope of the commercial fisheries receptor as well as the cumulative impact assessment.

Proposed scope
The main issues raised in relation to the proposed scope of the EIA were:

- The need to update the baseline and the information required to do so (discussed above), this was discussed at the meeting on 27 June and NnGOWL are advised to take into account the information provided to the meeting
- The importance of having a long enough data set for the scallop fishery
- The need to consider all vessels, including those under 15m in length in any assessment
- The need to consult the Commercial Fisheries Working Group to validate data and agree mitigation measures (discussed above)
- The need for adequate spacing between structures, MSS recommend 1km and requested NnGOWL provide information in their EIA Report to support using less than this. NnGOWL noted they could provide further clarification on this point.
- The need for cable burial to be carried out in a way that the seabed is left in a safe condition for fishing and the need to take the most up to date information

into account
- The need to consider anchorages and queuing of vessels. NnGOWL will include this in the Vessel Management Plan
- MSS requested the Fisheries Liaison with Offshore Wind and Wet Renewables ("FLOWW") guidance in reference to disruption payments should be referenced in the EIA Report.
- The potential effect of sediments and smothering for shellfish, scallops, nephrops, crabs and lobsters (discussed above)

The Scottish Ministers advise NnGOWL to take into account the consultation responses and the outcome of the stakeholder meeting on 27 June to ensure all relevant information is included in the EIA Report.

Cumulative impact assessment

The Under 10m Association noted that there have been additional consents granted to wind farms in the area and the cumulative effect of these and the potential impact for displacement of fishing vessels needs to be considered.

The SFF note the need for the potential impacts from both the wind farm and cable route to be included in a cumulative assessments with other projects. This includes taking into account the volume of scour protection to be used and all options for cable protection. The route of the cables also needs to be considered when taking into account the impact on commercial fishing. The SFF also note the need to consider Forth Ports projects.

The Scottish Ministers recommend the following projects are included in the cumulative impact assessment:

- **Worst case scenario of Inch Cape (2014 as consented) or Inch Cape (2017 scoping report)**
- **Worst case scenario of Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report)**
- **Kincardine Offshore Wind Farm**
- **Forthwind Offshore Wind Farm (2016 consent)**
- **Forthwind Offshore Wind Demonstration Project**
- **Offshore Renewable Energy Catapult Levenmouth**

The Scottish Ministers agree, with some additions, with the list of projects provided by NnGOWL for assessing the cumulative impact on the nomadic fishing fleets.

- **European Offshore Wind Deployment Centre**

• **Hywind Scotland Pilot Park** • **Blyth Offshore Wind Farm – 2 turbines** • **Blyth Offshore Wind Demonstration Project – 15 turbines** • **Beatrice Offshore Wind Farm** • **Moray Offshore East Development** • **Moray East Offshore Wind Farm – Alternative Design** • **Moray Firth Offshore Wind Western Development Area** • **Rampion Offshore Wind Farm**

8.16 Shipping and Navigation

8.16.1 NnGOWL conclude that based on the EIA for the Original Development and considering the design envelope for the Revised Development the impacts should not increase from those set out in the Original Development ES.

8.16.2 As there has been a change in regulator guidance i.e. MGN 371 to MGN 543 and the potential for variations in shipping patterns when compared to the baseline in the Original Navigational Risk Assessment ("NRA") NnGOWL propose that an updated shipping and navigation assessment (traffic validation) be undertaken as part of the Revised Development EIA Report for those elements that are scoped in.

8.16.3 If there are any significant changes in the traffic validation then NnGOWL will consider producing a new NRA in consultation with the MCA and following the approach set out in the Scoping Report.

8.16.4 If the traffic validation exercise confirms there has been no significant change in shipping activity then the NRA for the Original Development will be used to inform the Revised Development EIA.

Scoping Question	Question
14.8 (Page 201)	Do you agree that should a traffic validation exercise against recent AIS data confirm that there has been no significant change in the Shipping and Navigation baseline that the NRA for the Original EIA remains valid?
The MCA noted that there is a requirement to complete traffic studies within 24 months prior to the EIA Report submission and that they would expect a new traffic study to be undertaken. The MCA would welcome discussions with NnGOWL to agree the survey data requirements. The RYA also raised this issue but noted that for recreational vessels the new edition of the UK Coastal Atlas of Recreational Boating uses Automatic Identification System ("AIS") to produce heat maps of recreational vessel activity. The RYA consider that this data source should provide a	

better update of recreational traffic than a further 28 days of AIS data collection.

The MCA note that a NRA update will need to be submitted in accordance with MGN 543 and the MCA Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations. NnGOWL have identified that a Formal Safety Assessment ("FSA") will be carried out in line with the International Maritime Organization FSA process.

The MCA also note that particular attention should be paid to cabling routes and, where appropriate, burial depths for which a Burial Protection Index study should be completed and subject to the traffic volumes, an anchor penetration study may be necessary.

The Scottish Ministers agree that the shipping baseline assessment requires updating with marine traffic survey data (in line with MGN 543) but recommend that NnGOWL have on-going discussions with the MCA and the RYA to agree these requirements. The Scottish Ministers recommend that NnGOWL discuss and agree the specific requirements for an updated Navigational Risk Assessment with the MCA.

Scoping Question	Question
14.8 (Page 201)	Do you agree that if the NRA remains representative of the baseline then the conclusions of the Original EIA remain valid?

The RYA agree that if the NRA remains representative of the baseline then the conclusions of the Original Development EIA remain valid.

As noted above, the MCA note that a Navigational Risk Assessment ("NRA") update will need to be submitted in accordance with MGN 543 and the MCA Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations.

The Scottish Ministers note the MCA's requirement for an NRA update and advise NnGOWL to discuss and agree the specific requirements for an updated Navigational Risk Assessment with the MCA. The outcomes of these discussions should determine whether the previous NRA remains representative of the baseline. If so, the Scottish Minister agree that the conclusions of the Original Development EIA remain valid.

Scoping Question	Question
14.8 (Page 201)	Do you agree that the embedded mitigation from the Originally Consented Project and additional measures detailed in the S36

	consent and marine licences are appropriate to the potential level of the effect from the Project?
The RYA agree with that the embedded mitigation from the Original Development and additional measures detailed in the S36 consent and marine licences are appropriate to the potential level of the effect from the Revised Development. RYA provide details on an update to a Pilot book for these waters and suggest this can be an additional form of mitigation for the operational phase. NnGOWL are advised to consider the detail of RYA's response. ELC raise concerns regarding the potential risk from a ship carrying a potentially polluting load accidently discharging into the sea either as a result of collision with the project infrastructure or through increase in use of other areas of sea increasing collision risk. ELC note this risk should be included and assessed. **The Scottish Ministers agree that the embedded mitigation from the Original Development and additional measures detailed in the s36 consent and marine licences are appropriate to the potential level of the effect from the Revised Development. The Scottish Ministers note the concerns of ELC and note these will be dealt with as part of the NRA.**	

Scoping Question	Question
14.8 (Page 202)	Do you agree that the EIA should only focus on those receptors considered to be significantly affected by the Project?
The RYA agree that the EIA should only focus on those receptors considered to be significantly affected by the Revised Development. **The Scottish Ministers agree that the EIA should only focus on those receptors considered to be significantly affected by the Revised Development.**	

Scoping Question	Question
14.8 (Page 202)	Do you agree that the Shipping and Navigation receptors, as detailed in Table 14-7 and Table 14-8, be scoped out of the Project EIA where appropriate?
The RYA agrees with the shipping and navigation receptors to be scoped out of the Revised Development. The Northern Lighthouse Board are content with the topics to be included in the EIA Report and those sections requiring updated data. The MCA provide a range of services that will need to be taken into account given the implications of the site size and location. These include Search and Rescue	

resources and the Emergency Response Co-operation Plans. Attention should be paid to the level of radar surveillance, AIS and shore-based VHF radio coverage and given due consideration for appropriate mitigation such as radar, AIS received and in-field, Marine Band VHF radio communications aerial(s) (VHF voice with Digital Selective Calling (DSC)) that can cover entire wind farm sites and their surrounding areas.

The Scottish Ministers recommend that NnGOWL confirm with the MCA which receptors should be included in the Navigational Risk Assessment (if required, see above) to ensure the requirements the MCA outline in their consultation response are taken into account.

Scoping Question	Question
14.8 (Page 202)	Do you agree with the list of Projects to be scoped in to the Shipping and Navigation CIA for the Project EIA?

RYA agree with the list of projects to be scoped in and note that in terms of recreational sailing the most important are likely to be the other Forth and Tay schemes and the Kincardine Floating wind farm. Hywind is unlikely to have an in-combination effect.

The Scottish Ministers agree that the following should be included in the cumulative impact assessment and advise that NnGOWL confirm with the MCA that this is appropriate:

- **Worst case scenario of Inch Cape (2014 as consented) or Inch Cape (2017 scoping report)**
- **Worst case scenario of Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report)**

8.17 Military, Civil Aviation and Telecommunications

8.17.1 NnGOWL note that the increase in turbine blade tip height may bring the Revised Development into radar detectability by radar systems that had previously been scoped out of the Original Development EIA.

8.17.2 Where this is the case NnGOWL will carry out further desk based studies including radar line of sight analysis between any potentially affected radar systems and the blade tip height of the turbines and examine the operational effect that radar detectability may create.

8.17.3 NnGOWL will consult with the following agencies, the Civil Aviation Authority,

the Ministry of Defence's ("MOD") Defence Infrastructure Organisation ("DIO"), Maritime and Coastguard Agency ("MCA"), NATS En Route Limited and Aberdeen Airport.

Scoping Question	Question
15.8 (Page 221)	Do you agree that the existing data available to describe the Military and Aviation (including telecommunications) baseline remains sufficient to describe the current receptor groups in relation to the Project?
DIO object to the Revised Development owing to the unacceptable impact of the unacceptable impact of the turbines on the Air Traffic Control radar and the Precision Approach radar at RAF Leuchars and the Air Defence radar at Remote Radar Head Brizlee Wood. DIO note that the increased tip height mean that the rotors of some turbines now encroach on the protection zone of the Precision Approach radar at RAF Leuchars. **The Scottish Ministers agree that the existing data available to describe the military and aviation (including telecommunications) baselines remain sufficient to describe the current receptor groups in relation to the Revised Development but note that there will be a requirement to carry out further desk based studies in relation to increase in turbine blade tip height and radar detectability.**	

Scoping Question	Question
15.8 (Page 221)	Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Military and Aviation receptors?
DIO note that the MOD only agreed to the Transponder Mandatory Zone as a temporary measure pending an enduring technical solution e.g. infill radar system, for the Original Development. The MOD require an enduring technical solution whether for the Original Development or the Revised Development and note that it should not be assumed that any mitigation, temporary or enduring, agreed for the Original Development is applicable to the Revised Development. The MOD would welcome an approach by NnGOWL regarding any potential mitigation for the Revised Development. DIO make the same point in relation to consent conditions i.e. it should not be assumed that the Air Traffic Control (RAF Leuchars) mitigation scheme condition, can be applied to the Revised Development. DIO also note that there may be a requirement for mitigation to address the impacts of the Revised Development on the Precision Approach Radar at RAf Leuchars and the Air Defence radar at Remote	

Radar Head Brizlee wood, which could lead to suitable planning conditions.

The Scottish Ministers note the concerns of the DIO and recommend that NnGOWL liaise with the MOD regarding their objections to the Revised Development and provide precise turbine location, hub height and rotor diameter so a more detailed assessment can be completed and the impacts on the MOD radar defined. The Scottish Ministers recommend that NnGOWL and DIO/MOD have discussions, prior to submission of any application, to resolve any issues. Time could be saved during determination and post consent if agreements could be reached and agreed by both parties.

Scoping Question	Question
15.8 (Page 221)	Do you agree that the receptors identified in Table 15-4 should be scoped in or out of the Project EIA?

NATS and BT had no objections to the proposal.

DIO provided detailed comments and NnGOWL are advised to take account of the detail within the response. The main issues were that the MOD required confirmation as to whether the turbines will rotate or not during the construction phase. If the rotor blades do not rotate then the residual impact classification of 'not significant' would be acceptable but if the rotor blades were to rotate during the construction phase then the classification would need to be raised to significant. DIO note that the justification for classifying the residual impact as 'not significant' for the RAF Leuchars Primary Surveillance Radar, is based on mitigation agreed for the Original Development and that it should not be assumed that this is applicable to the Revised Development. The classification of the Precision Approach Radar ("PAR") is classed as 'not significant' as NnGOWL notes that no turbines will be built within the PAR safeguarded zone. However, DIO notes that some of the turbines will encroach on the protection zone of the PAR at RAF Leuchars.

DIO note that the MOD objection and comments are based on the information supplied to them by NnGOWL. The MOD would welcome definitive and precise turbine locations, hub heights and rotor diameter information so a more accurate assessment can be completed. The MOD will then be able to provide a more definitive position. The MOD are also willing to work with NnGOWL regarding the MOD issues.

The Scottish Ministers recommend that NnGOWL work with the MOD to resolve the issues raised above. The Scottish Ministers agree, with the exception of the receptors noted above, that the receptors should be scoped in or out as outlined as identified in Table 15.4.

Scoping Question	Question
15.8 (Page 221)	Do you agree that the potential increase in turbine height could affect the radar systems at RAF Brizlee Wood, RAF Buchan, NERL Allanshill and NERL Perwinnes?
The Scottish Ministers agree that the potential increase in turbine height could affect the radar systems as listed above and recommend NnGOWL take into account the consultation response from the DIO, which notes that RAF Leuchars would also be affected.	

Scoping Question	Question
15.8 (Page 221)	Do you agree that the cumulative effects identified in Section 15.6.2 should be scoped in to the Project EIA?
The Scottish Ministers note that NnGOWL propose to scope out radar systems that have previously been mitigated against from the cumulative impact assessment. The Scottish Ministers note the comments from the DIO with regard to temporary mitigation measures and not assuming that mitigation and consent conditions previously agreed will be applicable to the Revised Development. NnGOWL should take this into account when identifying cumulative effects to scope into the Revised Development EIA. The Scottish Ministers consider that the following projects should be included in the Revised Development cumulative assessment and advise that NnGOWL confirm with DIO that this is appropriate: • **Worst case scenario of Inch Cape (2014 as consented) or Inch Cape (2017 scoping report)** • **Worst case scenario of Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report)** • **Kincardine Offshore Wind Farm** • **European Offshore Wind Deployment Centre** • **Hywind Scotland Pilot Park** • **Forthwind Offshore Wind Farm (2016 consent)** • **Forthwind Offshore Wind Demonstration Project** • **Blyth Offshore Wind Farm – 2 turbines** • **Blyth Offshore Wind Demonstration Project – 15 turbines** • **Beatrice Offshore Wind Farm** • **Moray Offshore East Development** • **Moray East Offshore Wind Farm – Alternative Design** • **Moray West Offshore Wind Farm** • **Offshore Renewable Energy Catapult Levenmouth**	

8.18 Maritime Archaeology and Cultural Heritage

8.18.1 NnGOWL consider, based on the Original Development ES and the change in scale of the Revised Development, that a full re-assessment of the archaeological baseline is not required and should be scoped out.

8.18.2 NnGOWL note that all the remaining physical potential effects on archaeology and cultural heritage should be scoped out as seabed features identified by geophysical assessment and submerged prehistory are covered in the Original Development ES.

8.18.3 NnGOWL consider that as there are changes in the number and increase in blade tip height of the turbines a re-analysis of the setting of the previously identified archaeology and cultural heritage receptor within the Original Development ES would be necessary, both for the Revised Development alone and cumulatively.

8.18.4 The settings analysis will be undertaken in conjunction with any SLVIA updates and in agreement with Historic Environment Scotland and Local Authority Archaeology Services.

Scoping Question	Question
16.8 (Page 233)	Do you agree that the existing data available to describe the Archaeology and Cultural Heritage baseline remains sufficient to describe the archaeological environment in relation to the Project?
ELC agree that the baseline data is updated as described in 16.2.1 of the Scoping Report. **The Scottish Ministers agree that the existing data available, with the proposed updated data requests as noted in 16.2.1 of the Scoping Report, to describe the archaeology and cultural heritage baseline remains sufficient.**	

Scoping Question	Question
16.8 (Page 233)	Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original Project EIA represents the worst-case scenario when compared to the Project?
ELC note that the worst case scenario previously applied in conducting the assessment of the Original Development EIA should be reconsidered. ELC note that the impact of the turbine height and layout to the setting of onshore receptors needs to be reassessed because of the increase in turbine height.	

The Scottish Ministers agree that, with the exception of blade tip height, the assessment scenario previously applied in conducting the Original Development EIA represents the worst-case scenario when compared to the Revised Development. The Scottish Ministers note that impacts on the setting of cultural heritage assets from the potential increase in blade tip height is scoped in and recommend that NnGOWL provide justification for the worst-case scenario they choose to use.

Scoping Question	Question
16.8 (Page 233)	Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Archaeology and Cultural Heritage receptors?

HES welcome the identified mitigation measures for direct impacts.

ELC note that it is not clear that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects. ELC note that the impact of turbine height and layout on the setting of onshore receptors needs to be reassessed and any potential mitigation strategies for indirect impacts should be included in the EIA as appropriate.

The Scottish Ministers agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Revised Development on the archaeology and cultural heritage receptors. The Scottish Ministers note the concerns of ELC and recommend that NnGOWL provide further clarity on how the embedded or other potential mitigation strategies will be a suitable means of managing and mitigating the potential effects.

Scoping Question	Question
16.8 (Page 233)	Do you agree that the changes in turbine number and increase in blade tip height require an updated Settings analysis, in conjunction with any updated SLVIA analysis?

HES, ELC and Angus Council ("AC") agree that the changes in turbine number and increase in blade tip height require an updated Settings analysis, in conjunction with any updated SLVIA analysis as outlined in the Scoping Report. AC note they have highlighted in previous responses in relation to the Original Development that the significance of the effect of the proposed development on the setting of the Bell Rock lighthouse and Ladyloan Signal Tower had been underplayed and required further consideration. ELC note ongoing consultation with East Lothian Council Archaeology Service will be required to identify the onshore heritage receptors and that additional

heritage specific visualisations may be required in the updated setting assessment.

Scottish Borders Council note that although there is potentially an increased visibility from key receptors in the Borders they do not feel the settings of these will be significantly impacted by the presence of the wind farm.

The Scottish Ministers agree that an updated Settings analysis, in conjunction with any updated SLVIA analysis is required. The Scottish Ministers note the concerns of Angus Council with respect to Bell Rock Lighthouse and Ladyloan Signal tower and recommend that NnGOWL continue discussions with appropriate stakeholders with regard to setting changes.

Scoping Question	Question
16.8 (Page 233)	Do you agree that the cumulative effects on archaeology and cultural heritage receptors should be scoped in to the Project EIA only where it applies to impacts on the settings of cultural heritage assets, based on the increase in turbine size for the Project?
ELC and HES agree with the approach outlined in the Scoping Report in relation to assessing cumulative effects on archaeology and cultural heritage receptors. **The Scottish Ministers agree that the cumulative effects on archaeology and cultural heritage receptors should be scoped in to the Revised Development EIA only where it applies to impacts on the settings of cultural heritage assets, based on the increase in turbine size for the Revised Development.**	

8.19 Seascape, Landscape and Visual Impact

8.19.1 NnGOWL conclude the Revised Development has the potential for significant effects on seascape character and visual amenity and a Seascape, Landscape and Visual Impact Assessment ("SLVIA") will be included in the EIA Report.

8.19.2 The SLVIA will consider effects on:

- Coastal character and resources, including effects on the physical and aesthetic value of the coastal and marine seascape caused by changes in elements and qualities as a result of the offshore development
- Implications for the special qualities of coastal designated landscapes, caused by changes in the character of coastal landscapes as a result of the offshore development
- Visual amenity, including effects upon potential viewers and viewing groups (e.g. residents, visitors, tourists) during day time and night time,

caused by changes in the appearance of the landscape and/or seascape as a result of the Revised Development

Scoping Question	Question
17.8 (Page 245)	Do you agree with the evaluation of the sufficiency of baseline data set out in Section 17.2?

ELC agree with the baseline as set out in Section 17.2 of the Scoping Report. SNH advise that NnGOWL use the baseline coastal character assessment previously undertaken by the Forth and Tay offshore wind developer's group. NnGOWL note in their Scoping Report that they intend to use baseline sources from the Original Development.

AC agree with the evaluation of the baseline.

The Scottish Ministers agree with the evaluation of the sufficiency of baseline data set out in Section 17.2 of the Scoping Report. The Scottish Ministers agree that the baseline coastal character assessment previously undertaken by the Forth and Tay offshore wind developer's group can be used.

Scoping Question	Question
17.8 (Page 245)	Is there any other baseline information that should be considered in the SLVIA?

ELC has carried out a review to update the 1997 Landscape Character Areas and notes these should be included in any baseline (this will include the current Areas of Great Landscape Value). The review also identified Special Landscape Areas as part of the proposed ELC Local Development Plan ("LDP") 2016, which will supersede the current Areas of Great Landscape Value. ELC recommend that if LDP has been adopted before NnGOWL submit their application then Areas of Great Landscape Value should not be considered (as they will have been superseded by the proposed Special Landscape Areas). However, if the LDP has not been adopted then both the current Areas of Great Landscape Value and the proposed Special Landscape Areas within East Lothian should be included in any baseline information. The proposed LDP also includes coastal designations that should be included in any baseline information.

AC note that Capacity Studies of specific towns and villages were prepared for the Angus Local Development Plan and that those for Arbroath, Carnoustie and Monifieth could be relevant in the preparation of the SLVIA.

The Scottish Ministers agree that the baseline information as described above

by ELC and AC should be considered in the SLVIA.

Scoping Question	Question
17.8 (Page 245)	Do you agree with the approach to identifying the 'worst-case' scenario for assessment in the SLVIA?

ELC note they agree with the approach to identifying the 'worst-case' scenario but note that the assessment must include the maximum height not an approximate height. This is because the taller turbines will be more visible and the reduced density of turbines may result in more noticeable movement of the turbines. This could result in more significant impacts.

AC agree with the approach as the maximum tip height is included and note information pertaining to the worst case hub height and rotor diameter would be required.

The Scottish Ministers agree with the approach to identifying the 'worst-case' scenario for the assessment of the SLVIA and agree with ELC that the turbine height should be based on the maximum height and not an approximate height.

Scoping Question	Question
17.8 (Page 245)	Do you agree that effects can be scoped out of the SLVIA, and the cumulative assessment, as set out in Section 17.5?

ELC note Table 17-6 refers to 'Changes to character of landscape character types' and this is proposed to be scoped out. ELC agree with this where it relates to non-coastal landscape types but not when it relates to coastal landscape types. ELC do not agree that that 'Changes to the character of gardens and designed landscapes' should be scoped out as some of the gardens and designed landscapes may include views out to sea that are important to the design and appreciation of the garden and designed landscape.

AC note that the increased height of the the turbines would mean the proposed development would be more prominent from further afield and this would mean an increase in visual effect and also cumulative effects. AC agree the SLVIA would need to consider effects upon coastal character and resources given that the development would have potential effects on the Angus coast. AC note concerns regarding the potential for different sizes of turbines to have an unacceptable cumulative impact. AC note the existing consents would need to be included in the cumulative assessment and also recommend the developers seek to narrow the envelope size and create greater consistency between developments.

SNH advise that a full landscape and visual impact assessment is required and that no specific elements of this assessment should be scoped out at this stage in the process.

The Scottish Ministers agree with ELC and SNH that no potential effects (as described in Tables 17-6 and 17-5 of the Scoping Report) should be scoped out at this stage and recommend that 'Changes to character of landscape character type' and 'Changes to the character of gardens and designed landscapes' are scoped in. The Scottish Ministers advise NnGOWL to take into consideration the detailed comments provided by SNH, ELC and AC.

Scoping Question	Question
17.8 (Page 245)	Have all the necessary offshore projects been identified at Section 1.5.1?

Assume this refers to 17.6.1 Scoping of Cumulative Impact Assessment

ELC suggest the revised design for Inch Cape and the Forthwind Offshore Wind Demonstration Array (9 turbines) are included. For onshore ELC advise that the cumulative impact assessment should include Aikengall and Crystal Rig wind farm groups in East Lothian and Scottish Borders and Earls Seat in Fife.

AC agree with the offshore projects identified and would be happy to agree which onshore wind developments should be included. AC can provide an up-to-date list of wind turbine development in Angus and note these should be considered against revised ZTV's to identify where cumulative effects are likely.

SNH consider that the cumulative impacts with the existing offshore developments at Inch Cape and Seagreen would intensify and highlight that a rigorous design process is likely to reduce the potential for significant effects. SNH recommend consideration is given to the Kincardine floating wind demonstration project in relation to sequential cumulative impacts on coastal transport routes.

The Scottish Ministers advise that the following developments should be considered in the cumulative impact assessment for SLVIA:

- **Worst case scenario of Neart na Gaoithe (2014 as consented) or Neart na Gaoithe (2017 scoping report)**
- **Worst case scenario of Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report)**
- **Kincardine Offshore Wind Farm**
- **Forthwind Offshore Wind Farm (2016 consent)**

- **Forthwind Offshore Wind Demonstration Project**
- **Onshore wind farms as advised by Local Authorities**

Scoping Question	Question
17.8 (Page 246)	Is the approach to SLVIA appropriate, including the guidance listed at Section 1.6.1., and the outline methodology at 1.6.3?

Assume this refers to 17.7 Approach to EIA

AC and ELC agree with the SLVIA guidance and outline methodology as outlined in the Scoping Report.

SNH refer to their guidance on scoping for offshore renewables and on *Visual Representation of Wind Farms* (listed below) but note that the turbines being proposed are considerably larger than any SNH has considered to date. SNH make some general comments in relation to wind farm design and note it would have been useful if the Scoping Report had included explanation of the design objectives and the approach being taken to wind farm design. SNH note that the cumulative design issues are likely to intensify with the significant increase in turbine height and drop in turbine numbers. NnGOWL are advised to take into account the detailed points raised by SNH on this issue.

Offshore renewables – guidance on assessing the impact on coastal landscape and seascape. SNH (2012). Available from: www.snh.gov.uk/docs/A702206.pdf

Visual Representation of Wind Farms. SNH (2014). Available from: www.snh.gov.uk/planning-and-development/renewable-energy/visual-representation/

The Scottish Ministers:

- **Advise NnGOWL to provide a clear explanation of the approach being taken to the wind farm design and the choice of layout taking into account advice from SNH**
- **Agree with the suggestion by SNH that a comparison of the model outputs of the increase in turbine size in appropriate increments (either as individual or composite ZTVs) with the ZTV for the 2014 consented scheme is provided to give more detailed information on the amount and range of visibility of the larger turbines**

Scoping Question	Question
17.8 (Page 246)	Do you agree that the original baseline photography is fit for

	purpose and that it can be used again as the basis for photomontages?

ELC agree that the photograph from Dunbar is acceptable and suitable for reuse but state that new images from North Berwick Law and West Steel should be taken using SNH guidance *Visual Representation of Wind Farms* 2017. Photographs should be cropped and enlarged from a photograph taken with a 50mm fixed focal length.

AC note that there are likely some viewpoints where turbines have been erected in recent years which would now be visible in the photography. While noting that this is less likely to affect coastal viewpoints AC recommend where this is the case new photography will be required.

SNH broadly accept the continued use of the existing baseline photography but note that new photography may be necessary for any views that have changed substantially e.g. where changes such as afforestation/deforestation, new power lines or other new developments may alter the foreground significantly. SNH note that photographs for viewpoints along the Angus coast, including St Cyrus, Lunan and Arbroath signal tower (viewpoints 2, 6 and 7) have been taken with the sun to the southeast when turbines would be viewed partially looking into the sun. SNH recommend that at least one of these photographs is re-taken to represent clearer views during late afternoon when the turbines would be front-lit with the sun behind the viewer.

SNH note that any photomontages should address changes in circumference and height in order to consider whether they make a discernible difference to the appearance of the turbines, particularly in closer views.

The Scottish Ministers advise NnGOWL to retake photographs where stakeholders have recommended that this should be done to represent clearer views or to adhere to SNH's new guidelines.

Scoping Question	Question
17.8 (Page 246)	Can you confirm the locations of any night-time visualisations that should be considered within the Project EIA?

ELC provide detailed comments on night-time lighting, particularly in relation to the Tantallon to Tynignhame Coast as this is identified as a Special Landscape Area ("SLA") in the proposed ELC LDP and the Tantallon Coast Statement of Importance for the SLA specifically mentions the coastal aspects of the view from this area. ELC are concerned that additional development such as the wind farm would detract from the 'wildness' feel of the area both in day time views and on the night time darkness and dusk/dawn views. ELC request that the effects of night lighting on East Lothian

are assessed. An assessment should be made of the proportion of horizontal field occupied by the turbines assessed cumulatively with the existing development visible within the views, including settlement and other wind farms existing, granted and in planning. ELC suggest that the viewpoints for Dunbar and North Berwick Seabird Centre are used for this assessment and provide advice on this.

AC note it is difficult to recommend locations without more information on the brightness of the lighting but request that lighting scenarios be compared with the brightness of lighting which currently exists on telecommunications masts within the Sidlaws. AC suggest coastal locations where there would be a lack of ambient lighting i.e. outwith towns of Arbroath and Carnoustie and for an inland location recommended that the Carmyllie area may contain an appropriate location.

Both SNH and ELC note that the visual impacts of the wind farm lighting should be included as part of the EIA Report. ELC state this should not be left to the condition stage.

The Scottish Ministers agree that wind farm lighting (including night time lighting) should be considered as part of the EIA Report and advise NnGOWL to consider the advice provided by ELC on locations for night time visualisations.

Scoping Question	Question
17.8 (Page 246)	Should the SLVIA use the same set of viewpoint locations as the Originally Consented Project SLVIA, as listed in Table 17-8, or are there other viewpoint locations that need to be considered?

SNH are content that the same viewpoint locations are used but defer to the Local Authorities if there could be a need for additional viewpoints from use of the larger turbines.

Scottish Borders Council note that additional viewpoints at Ewieside Hill and Fast Castle have been suggested to NnGOWL during a meeting between the two organisations.

AC agree that the viewpoints are appropriate but given the increase in blade tip height and rotor diameter there may be a need for additional viewpoints from inland locations. AC note that to evaluate the need for additional viewpoints, revised ZTVs should be produced (and viewpoints) on a 50k OS base, at a resolution where place names are legible, this should differentiate between hub and tip visibility.

Of the viewpoints used in the Original Development ELC agree with the North Berwick Law and Dunbar Cliffs viewpoints but suggest that the West Steel viewpoint

could be replaced by a viewpoint from Innerwick, which should be representative of local residents as well as the raised land accessed for recreation to its south, giving a raised view of the coast and out to sea, including the landmark Barns Ness Lighthouse.

ELC provide detailed comments on the inclusion of the following viewpoints:

- A view providing a context for the setting of Belhaven Bay. ELC will confirm their preferred viewpoint following the submission of wirelines from Traprain Law and the A199 west of East Linton
- To take account of views of Bass Rock:
    - North Berwick Seabird centre
    - Broad Sands to the west of North Berwick
    - A198 to the east of North Berwick

NnGOWL are advised to read ELC's comments in relation to viewpoints in detail.

ELC are not certain whether there will be significant effects from NnGOWL within the 20km inland portion of the study area. To make a full assessment ELC have requested wirelines for the B6370 Gifford to Garvald Road, the Hopetoun monument on Byres Hill and the B6355 to the west of the junction with the B6368 in order to confirm whether viewpoints are required. ELC request any wirelines submitted are considered for inclusion in an Appendix to the EIA Report to support public participation in the decision.

SNH note that the main effect of an increase in turbine height will be a change in perspective, such that the larger 230m turbines are likely to appear closer in view than the 197m ones. SNH suggest using analysis based on the increased vertical field of view and comparing this with the previous assessment. SNH consider it is important to explore this issue and would welcome any other ideas on the approach.

The Scottish Ministers advise NnGOWL to consider the viewpoints as recommended by Scottish Borders Council, ELC and AC and to provide the additional wirelines as requested by ELC and AC.

8.20 Other Users

8.20.1 NnGOWL conclude that, based on the evidence from the Original Development ES and taking into consideration the reduced scale of the Revised Development, all of the potential effects on Other Users (including ordnance) should be scoped out of the Revised Development EIA.

Scoping Question	Question
18.8 (Page 258)	Are you satisfied that the review of baseline data confirms no significant change in the baseline associated with Other Users as detailed in the Original ES?
The Scottish Ministers agree that there is no significant change in the baseline associated with Other Users as detailed in the Original Development ES.	

Scoping Question	Question
18.8 (Page 258)	Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenario when compared to the Project?
The Scottish Ministers agree that the assessment scenario previously applied in conducting the Original Development EIA represents the worst-case scenario when compared to the Revised Development.	

Scoping Question	Question
18.8 (Page 258)	Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Other Users?
The Scottish Ministers agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Revised Development on the Other Users.	

Scoping Question	Question
18.8 (Page 258)	Do you agree that the assessment of impacts on Other Users can be scoped out of the Project EIA for the forthcoming Application?
ELC agree that the impacts on Other Users are scoped out of the Revised Development EIA. **The Scottish Ministers agree that the assessment of impacts on Other Users can be scoped out of the Revised Development EIA.**	

Scoping Question	Question
18.8 (Page 258)	Do you agree that the cumulative effects on Other Users should be scoped out of the Project EIA based on the assumptions detailed in this Scoping Report and the conclusions reached in the CIA for the Originally Consented Project?
The Scottish Ministers agree that the cumulative effects on Other Users should	

be scoped out of the Revised Development EIA based on the assumptions detailed in the Scoping Report and the conclusions reached in the CIA for the Original Development.

8.21 Socio-economics

Scoping Question	Question
19.7 (Page 270)	Do you agree that the effect on tourism should be scoped out of the ES on the basis that the baseline remains valid and the scale of this Project is reduced when compared to that assessed in the Original EIA?
ELC note that they consider that potential impacts on tourism should be included. ELC recommend liaison with national bodies such as the RYA and Visit Scotland. They note that watersports are growing in the Dunbar area and appraisal of current and planned activity including analysis of wider trends e.g. via Visit Scotland and discussion with individual businesses should be undertaken for baseline information. ELC also consider the impacts of the loss of sand on Thorntonloch beach should be taken into account. Scottish Borders Council note that there is an assumption that decreased numbers of turbines will counteract any impacts caused by increased turbine height and suggest further assessment may be required. **The Scottish Ministers note ELC's concerns and also note that the RYA were consulted and have not raised any concerns with regard to scoping out the potential impacts on tourism. The Scottish Ministers note that the Scoping Report refers to research studies from Visit Scotland as part of the baseline and consider that the baseline remains valid. The Scottish Ministers agree that the effect on tourism can be scoped out.**	

Scoping Question	Question
19.7 (Page 270)	Are you satisfied with the proposed approach to assessing the potential effects on GVA and employment in the Project EIA?
The Scottish Ministers are satisfied with the proposed approach to assessing the potential effects on GVA and employment in the Revised Development EIA.	

8.22 Other issues raised

8.22.1 Both Transport Scotland and Scottish Borders Council both note there is no reference to access, traffic and transport in the Scoping Report. Transport Scotland advise that an 'Access, Traffic and Transport' chapter is included in

the EIA Report and that this would be consistent with the approach adopted in the ES for the Original Development but updated as required. Transport Scotland note that they sent a response on 21 September 2015 and given the conclusions of this response note that there are unlikely to be significant traffic impacts or associated issues on the Trunk Road Network.

8.22.2 **The Scottish Ministers advise NnGOWL to consider the response from Transport Scotland and provide updated information on 'Access, Traffic and Transport' in the EIA Report.**

8.22.3 It may be necessary for each of the Forth and Tay developers i.e. NnGOWL, Inch Cape and Seagreen to define the baseline scenario for the 2014 consents. This is because an assessment of the worst case scenario was carried out for the Original Development ES for each of the developments but the final consents were for different scenarios. This means some of the receptors in the final consent have not been assessed as consented. The Scottish Ministers may request each developer to set out a baseline for their development and these can then be used by all the developers when carrying out their assessments for their revised developments. Futher discussion on this issue will be required.

9 Marine Planning

Offshore Renewable Energy development should be in accordance with the UK Marine Policy Statement and Scotland's National Marine Plan ("NMP").

The UK Marine Policy Statement 2011 – The UK Administrations share a common vision of having clean, healthy, safe, productive and biologically diverse oceans and seas. Joint adoption of a UK-wide Marine Policy Statement provides a consistent high-level policy context for the development of marine plans across the UK to achieve this vision. It also sets out the interrelationship between marine and terrestrial planning regimes. It requires that when the Scottish Ministers make decisions that affect, or might affect, the marine area they must do so in accordance with the Statement.

Scotland's NMP 2015 – Developed in accordance with the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 (as amended), the NMP provides a comprehensive statutory planning framework for all activities out to 200 nautical miles. This includes policies for the sustainable management of a wide range of marine industries. The Scottish Ministers must make authorization and enforcement decisions, or any other decision that affects the marine environment, in accordance with the NMP. The NMP sets out a presumption in favour of sustainable development and use of the marine environment when consistent with the policies and objectives of the Plan.

10 Land Use Planning

The Scottish Government's planning policies are set out in the National Planning Framework, Scottish Planning Policy, Designing Places and Circulars.

The National Planning Framework is the Scottish Government's Strategy for Scotland's long term spatial development.

Scottish Planning Policy ("SPP") is a statement of Scottish Government policy on land use planning and contains:

- The Scottish Government's view of the purpose of planning,
- the core principles for the operation of the system and the objectives for key parts of the system,
- statutory guidance on sustainable development and planning under Section 3E of the Planning etc. (Scotland) Act 2006,
- concise subject planning policies, including the implications for development planning and development management, and
- The Scottish Government's expectations of the intended outcomes of the planning system.

Other land use planning documents which may be relevant to this proposal include:

- Angus Council Renewable Energy Implementation Guide
- Angus Council Strategic Landscape Capacity Assessment for Wind Energy in Angus
- Angus Local Development Plan
- Angus wind farms – landscape capacity and cumulative impact study
- East Lothian Local Development Plan
- Fife Local Development Plan (FIFEplan)
- Fife Planning Guidance – Renewable Energy
- Fife Planning Guidance – Wind Energy
- Marine Guidance Note ("MGN") 543 (M+F) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – UK Navigational Practice, Safety and Emergency Response
- MCA Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations
- National Planning Framework 3
- PAN 1/2011: Planning and Noise
- PAN 1/2013: Environmental Impact Assessment
- PAN 51: Planning, Environmental Protection and Regulation (Revised 2006)
- PAN 60: Planning for Natural Heritage
- PAN 62: Radio Telecommunications
- PAN 68: Design Statements
- PAN 75: Planning for Transport
- PAN 79: Water and Drainage
- Planning Advice Note ("PAN") 2/2011: Archaeology – Planning Process and Scheduled Monument Procedures
- Scottish Borders Local Development Plan
- Scottish Borders Planning Guidance – Visibility Mapping for Wind Farm Development
- Scottish Borders Planning Guidance – Wind Energy
- Scottish Borders Renewable Energy Supplementary Guidance (Still in draft state)
- SNH Guidance – Visual Representation of wind farms 2017

11 General EIA Report Issues

11.1 Gaelic Language

Where developments are located in areas where Gaelic is spoken, Developers are encouraged to adopt best practice by publicising the project details in both English and Gaelic.

11.2 Application and EIA Report

A gap analysis template is attached at Appendix VI to record the environmental concerns identified during the scoping process. This template should be completed and used to inform the preparation of the EIA Report. Please note that the EIA Report must contain all of the information specified in the scoping opinion. On submission of the application and supporting EIA Report, the Scottish Ministers, via a gatecheck process, will review the completed template in conjunction with the EIA Report to ensure this is the case. The gatecheck will also include an EIA audit. If information requested at scoping stage has not been provided in the EIA Report then the applicant will be asked to provide that information before the application can be accepted.

Please note all aspects of this scoping opinion should be considered when preparing a formal application to reduce the need to submit further information in support of the application. The consultee comments presented in this opinion are designed to offer an opportunity to consider all material issues relating to the development proposals.

The exact nature of the work that is needed to inform the EIA may vary depending on the design choices. The EIA must address this uncertainty so that there is a clear explanation of the potential impact of each of the different scenarios. It should be noted that any changes produced after the EIA Report is submitted may require further environmental assessment and public consultation.

In assessing the quality and suitability of applications, the Scottish Ministers will use the gap analysis and this scoping opinion in assessment of the application. In addition to scoping, applications are required to go through a gate check process. See Appendix V for further information on this. Developers are advised not to publicise applications in the local or national press, until advised to do so by the Scottish Ministers.

12 Multi-Stage Regulatory Consent

The Marine Works 2017 (as amended) and The Electricity Works 2017 (as amended) both contain provisions regulating the assessment of environmental impacts. A multi-stage consent process arises where a consent procedure comprises more than one stage, one stage involving a principal decision and one or more other stages involving an implementing decision(s) within the parameters set by the principal decision. While the effects which a project may have on the environment must be identified and assessed at the time of the procedure relating to the principal decision if those affects are not identified or identifiable at the time of the principal decision, assessment must be undertaken at the subsequent stage.

The definition in The Electricity Works 2017 (as amended) is as follows (the definition in The Marine Works 2017 (as amended) provides for the same but in relation to "regulatory approvals"): "*application for multi-stage consent" means an application for approval, consent or agreement required by a condition included in an Electricity Act consent where (in terms of the condition) that approval, consent or agreement must be obtained from the Scottish Ministers before all or part of the development permitted by the Electricity Act consent may be begun."*

A section 36 consent or marine licence if granted by the Scottish Ministers for your Revised Development is likely to have several conditions attached requiring approvals etc. which fall under this definition, for example the approval of a CMS.

When making an application for multi-stage consent NnGOWL will require to satisfy the Scottish Ministers that no significant effects have been identified in addition to those already assessed in the EIA Report. In doing so, NnGOWL will require to account for current (meaning at the time of application for multi-stage consent) knowledge and methods of assessment which address the likely significant effects of the development on the environment so to enable the Scottish Ministers to reach a reasoned conclusion which is up to date.

If during the consideration of the information provided in support of an application for multi-stage consent the Scottish Ministers consider that the development may have significant environmental effects which have not previously been identified in the EIA Report (perhaps due to revised construction methods or updated survey information), then information on such effects will be required. This information will fall to be dealt with as additional information under the EIA Regulations and procedures for consultation, public participation, public notice and decision notice of additional information will apply.

13 Judicial review

All decisions may be subject to judicial review. A judicial review statement should be made available to the public.

Signed

Gayle Holland
08 September 2017
Authorised by the Scottish Ministers to sign in that behalf

Appendix I - Consultee Responses

Consultee Comments relating to Neart na Gaoithe Offshore Wind Farm – Revised Design Parameters

STATUTORY CONSULTEES

Angus Council

In response to your email of 29 May 2017 in connection with the above my Council would offer the following response.

The key considerations from the proposal in relation to impacts on Angus are:

1. Landscape impact;
2. Seascape impact;
3. Visual impact;
4. Cumulative landscape impact;
5. Cumulative seascape impact; and
6. Cumulative visual impact.

Therefore our response is related specifically to certain topics and questions within Section 17 of the Scoping Report.

17.8 Scoping Questions – SLVIA

Do you agree with the evaluation of the sufficiency of baseline data set out in Section 17.2?

Angus Council would agree with the evaluation of the baseline data set out in Section 17.2

Is there any other baseline information that should be considered in the SLVIA?

As part of the Angus Local Development Plan process Capacity Studies of specific towns and villages were prepared and it is considered that the studies for Arbroath, Carnoustie and Monifieth could be relevant in the preparation of the SLVIA.

Do you agree with the approach to identifying the 'worst case' scenario for assessment in the SLVIA?

The proposed approach appears to be reasonable as it identifies a maximum blade

tip height of 230m. Information pertaining to worst case hub height and rotor diameter would also be required.

Do you agree that effects can be scoped out of the SLVIA, and the cumulative assessment, as set out in Section 17.5?

With the potential increase in height, it would have to be anticipated that the proposed development would be more prominent from further afield thereby not only increasing visual effects but cumulative effects also and in this respect agrees that the SLVIA needs to consider effects upon coastal character and resources given that the development would have potential impacts on the Angus coast. These comments would also apply to the cumulative assessment as well.

In relation to the cumulative assessment of the offshore developments we have concerns regarding the potential for vastly different sizes of turbines in the different off-shore developments which could lead to unacceptable cumulative impacts. It is considered that the applicants make clear their intentions with regards to the existing consents as these design enveloped could have to form part of the cumulative assessment. It would be likely than an acceptable proposal would seek to narrow enveloped size and create greater consistency between developments.

Have all the necessary offshore projects been identified at Section 1.5.1?

It is assumed that the offshore projects have been identified at Section 17.6.1 and not 1.5.1 as suggested by the question. Notwithstanding this in terms of impacts on Angus the necessary offshore projects would appear to have been identified. In relation to onshore wind developments we would be happy to agree the developments which will be included within the cumulative SLVIA prior to it be carried out. Angus Council can provide an up-to-date list of wind turbine development in Agus. These should be considered against revised ZTV's to identify where cumulative effects are likely.

Is the approach to SLVIA appropriate, including the guidance listed at Section 1.6.1, and the outline methodology at 1.6.3?

In relation to this matter the numbering in the question does not appear to correspond with the Scoping Report. Notwithstanding Angus Council considers that the approach identified is not unreasonable.

Do you agree that the original baseline photography is fit for purpose and that it can be used again as the basis for photomontages?

The baseline photography is likely to be sufficiently fit for purpose however there is likely to be some viewpoints where turbines have been erected in recent years which

would now be visible in the photography. In these circumstances, the photography will have to be retaken. This is less likely to affect coastal viewpoints.

Can you confirm the locations of any night time visualisations that should be considered within the Project EIA?

It is assumed that this request relates to an assessment of lighting that would be attached to the turbines. It is unclear what the brightness of the lighting would be which make it difficult to identify locations at this time but we would request that lighting scenarios be compared with the brightness of lighting which currently exists on telecommunication masts within the Sidlaws. It is suggested that a coastal location should be identified preferably where there would be a lack of ambient lighting (i.e. out with the towns of Arbroath or Carnoustie). An inland location should also be identified where there is also a lack of ambient lighting therefore it is suggested that the Carmyllie area may contain an appropriate location.

Should SLVIA use the same set of viewpoint locations as the Original Consented Project SLVIA, as listed in Table 17-8, or are there other viewpoint locations that need to be considered?

The same viewpoints will continue to be relevant and it would be appropriate that they are used again. However, given the potential increase in blade tip height and rotor diameter, we would wish to consider the need for additional viewpoints from inland locations. To evaluate the need for additional viewpoints, revised ZTVs should be produced (and viewpoints) on a 50k OS base, at a resolution where place names are legible. These should differentiate between hub and tip visibility.

Additional comments

In relation to Maritime Archaeology and Cultural Heritage matters Angus Council considers that due to the change in turbine number and potential increase in blade tip height that an updated Setting analysis is required and impacts on setting should be assessed using Managing Change in Historic Environment: Setting (HES 2016). Angus Council highlighted in its previous responses that the ES underplayed the significance of the effect of the proposed development on the lighthouse and given that the proposed turbines would likely increase in height Angus Council would request our comments made in relation to impacts on setting of the Bell Rock lighthouse and Ladyloan Signal Tower to be addressed (paragraphs 6.25 – 6.30).

Dundee City Council

Thank you for your invitation to comment on the Scoping Report associated with development of Neart na Gaoithe Offshore Windfarm. The framework for the Environmental Assessment of the proposal laid out in the report appears satisfactory and at this time I have no other comments to make.

East Lothian Council

I refer to your request for our views on the contents of the Scoping Opinion for the above proposal. I have some comments on the detail of assessment of the offshore works, but would also comment on the approach to EIA with regard to the connection between assessment of offshore and onshore works.

<u>EIA issues: Consideration of Onshore Works</u>

It is East Lothian Council (ELC)'s view that both onshore and offshore works are an integral part of the project, which consists of Neart na Gaiothe Offshore windfarm and offshore transmission works (NNG) and the OnTW.

In section 3.2.6.5 of the Scoping Report, the applicant states

"The OnTW [Onshore Transmission Works] (described briefly in Section 4.6 below) associated with the Project are not considered in detail within this Scoping Report as planning permission has been separately sought by NnGOWL for the onshore transmission structure under the Town and Country Planning (Scotland) Act 1997. NnGOWL was granted planning permission for the OnTW by East Lothian Council in June 2013, the permission was subsequently amended by a Section 42 application in November 2015. The project EIA will consider the OnTW if there is a potential for the offshore and onshore elements of the Project to interact to result in an effect on an environmental receptor."

The Scoping Request was submitted on 15 May 2017. The EIA Regs 2017 specify transitional provisions for information that should be included in the Opinion if the request was made before 16 May 2017 (other than as provided for), which this request was. The Opinion should therefore include the information specified under the previous regulations. Schedule 4 of the Electricity Works (Environmental Impact Assessment) (Scotland0 Regulations 2000 Schedule 4 Part 1(1) specifies that the content of an Environmental Statement should include "Description of the development including in particular (a) a description of the physical characteristics of

the whole development and the land-use requirements during the construction and operational phases". Part 1(2) requires that a description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationships between the above factors."

The EU Interpretation line on associated works (2011) (Interpretation line suggested by the Commission as regards the application of Directive 85/337/EEC to associated/ancillary works) notes that "the environmental impact study for the main project should include a description of its likely significant effects, e.g. effects resulting from the use of natural resources or cumulative effects. Thus, an assessment of the environmental effects of the associated works (such as use of natural resources) should be included in the EIA for the main project…" A description of the whole project and its significant impacts should therefore be included, including the onshore works.

EIA has previously been carried out on the onshore works (and submitted to East Lothian Council) and on the previously applied for offshore works. ELC was consulted on the previous application for the previous offshore windfarm in this location and noted in its response that it was its view that information on the onshore works should be included in the Environment Statement for the offshore works applied for to Marine Scotland. However it was for Marine Scotland to determine the acceptability of the Environment Statement submitted along with the applications for those works.

Planning consent was granted for the onshore works in June 2013. The application was accompanied by an Environment Statement. The onshore works were approved subject to a suspensive condition that before commencement "There shall be no commencement of the Development until it can be demonstrated to the Planning Authority that consent under Section 36 of the Electricity Act 1989 has been granted by the Scottish Ministers for the Neart Na Gaoithe offshore wind farm." Works were commenced post consent and prior to the lodging of the request for judicial review by the RSPB.

It remains ELC's view that the ES for the project would require to consider the impacts of the offshore works together with the impacts of the onshore works as consented and in respect of an up-to-date baseline. In the case of Berkeley v SSETR (2000) [WLR21/7/2000 p420] Lord Hoffman said the Environment Statement should constitute a single and accessible compilation. East Lothian Council has previously accepted that this requirement is met provided there is a link between the documents for the onshore and offshore works, and both are current and available. The ES for the project as a whole would require to reflect this in the current baseline circumstances.

As the Scoping Report submitted does not cover the detailed assessment of the onshore works, the following comments refer only to the offshore part of the assessment. However, it is East Lothian Council's view that assessment of both parts of the project should be up to date at the point of decision and that further consideration of the scope of assessment of the onshore aspect of the works will be required.

Section 2 – Approach to Scoping/EIA

The approach to EIA of using the previous studies along with a review of baseline/methodology &c changes is generally accepted however noting that ELC did not previously agree with some of the judgements made in the previous Environment Statement in terms of landscape/seascape impacts.

It is acceptable to assume the imposition of normal conditions to scope out effects provided it is certain that the conditions will succeed in controlling for the impact and that mitigation does not cause an impact of its own (the latter is relevant with regard to lighting for navigation and aviation, which could cause impacts on seascape).

Section 3 – Policy and Legislative context

HRA

The previous assessment considered impacts on the Firth of Forth Special Protection Area and Forth Islands Special Protection Area, both of which are partly within East Lothian. The Special Protection Area at Outer Firth of Forth and St Andrews Bay complex should also be considered. This Council has an interest in the protection of these areas for their biodiversity value and also related tourism interest. However, ELC is content to leave comment on this and other ornithological aspects of the assessment to Scottish Natural Heritage, who have particular expertise and responsibilities in this area.

Town and Country Planning

Note that ELC has recently submitted its proposed Local Development Plan to the DPEA, and it is now at Examination. This contains proposed planning policy for the area to the Mean Low Water Springs. Schedule 4 forms set out a summary of representations received and ELCs response. The remit of the Reporter is to consider representations to the plan; where no representation has been received the plan will be adopted as it stands. The Schedule 4 forms are available here: http://www.eastlothian.gov.uk/downloads/download/2460/local_development_plans_schedule_4_forms

Section 4 Description of the development

ELC considers that the description of the development should include the onshore works, as stated above.

The use of a 'Rochdale Envelope' is accepted however the maximum height, hub height and blade length of the turbines should be specified.

Lighting is mentioned in Table 18-2 with reference to mitigation via condition providing that 'Details of the agreed lighting and marking of the scheme so as to safeguard the safety of air and surface navigation'. Provision for lighting is not considered appropriate to leave to the condition stage but should be examined through the ES as it has consequent landscape/seascape effects which are not standard. Gillespie v First Secretary of State [2003] EWCA Civ 400 JPL 1287 said the authority should not consider that EIA is not needed taking into account possible measures to mitigate environmental effects where those measures may themselves have significant environmental effects. ELC considers it preferable for proposals for lighting to be included in the project description, using the Rochdale Envelope if required, and not left for discharge of suspensive condition (which could potentially involve re-advertisement and consultation).

Section 5 – Proposed EIA methodology

ELC notes Tables 5-1 and 5-2, and welcomes the treatment of effects identified as 'Moderate' as significant in that they may require mitigation and should be considered potentially material to the decision making process.

Section 6 – Geology and water quality

ELC has an interest in maintaining water quality and defers to others expertise in this area.

ELC has recently submitted its proposed Local Development Plan (pLDP) to the DPEA, and the pLDP is now under Examination. This plan proposes the designation of a Local Geodiversity Site at Thorntonloch Coast, a little to the south of where the proposed cable makes landfall. No representations were received on the designation of this site so assuming the plan is ultimately adopted it will be designated in its current form. The ES should consider whether there is any scope for impact on this proposed site for example via changes to coastal processes.

See 'additional information' below for ELC's Geological Audit and also the earlier Shoreline Management Plan, which considers coastal processes in relation to East Lothian's shoreline.

Section 7 – Physical Processes

ELC has no comment on this section other than as section 6 above.

Section 8 – Air quality

ELC welcomes the consideration of potential localized changes to meteorology including fog. The production of fog/cloud is potentially a noticeable change from East Lothian in terms of seascape. What the fog would look like from the shore has not been considered – for example is it an increase in the density of an existing fog on a foggy day, or might it have the appearance of a cloud around the proposal? It is not clear from the previous ES what the evidence was for turbines not creating fog other than already foggy days; the ES says in Table 10.11 'It is considered unlikely that wind turbines would create additional fog' but not by whom it is considered unlikely or why.

ELC are content that impacts on fog be scoped out as far as impacts on air are concerned however consequent impacts on seascape in particular cumulatively should be considered for inclusion.

The Scoping Report appears to assume that fewer turbines would lead to a lower impact, and this intuitively seems right, however taller more powerful turbines might for example lift moist air higher than those previously envisaged affecting local meteorology differently. As offshore turbines on the scale envisaged are not currently common around the British coast so it would be difficult to be sure that there will not be meteorological effects and the precautionary principle therefore suggests that this area should be considered.

For these reasons ELC does not agree that local meteorological effects should be scoped out.

ELC have no other comments on air quality.

Section 9 - Ornithology

The main ornithogical impact on East Lothian would be via impacts on the Firth of Forth and Forth Islands Special Protection Areas. As noted above, SNH have expertise in this area and ELC would support their views on this matter. ELC have recently commissioned a survey into the use of sites proposed in or adjacent to such in the Local Development Plan by qualifying species of the Firth of Forth SPA. While this is unlikely to be relevant to consideration of this proposal, ELC are happy to make it available on request (it was undertaken to inform future planning policy and has not been published).

Section 10 – Marine Mammals

Marine mammals are occasionally viewed of the East Lothian coast, and seals also use some haul out sites here. These mammals are either protected or qualifying interest of nearby Special Areas of Conservation including the Isle of May. ELC supports the views of SNH who have particular expertise in this area.

Section 11 – Benthic ecology

We have no comment on this area.

Section 12 – Fish and Shellfish Ecology/Section 13 Commercial fisheries/

ELC's Team Manager, Economic Development requests that fisheries baseline information should include what fish are actually being caught and where, which should be examined by surveys of the industry as well as commercial fisheries data. This could usefully include those processing fish also. Assessment should then consider how this might be impacted by the proposal.

Section 14 – Shipping and Navigation

The Scoping sets out how risk to shipping has been addressed. ELC does not have expertise in this area and it may be that the following has been addressed within the methodology outlined. However, the Council would wish to be reassured that any potential for risk from a ship carrying a potentially polluting load accidentally discharging into the sea either as a result of collision with the project or through increase in use of other areas of sea increasing collision risk is considered. If any significant risk of pollution from this source would be created, an indication of its likelihood, and potential impacts should be included. This might be better addressed under 'water quality' though there are links to impacts on shipping clearly.

Section 15 – Military, Civil Aviation and Telecoms

ELC is content to leave comment on this section to others.

Section 16 – Maritime Archaeology and Cultural Heritage

In terms of the Historic Environment ELC notes that indirect setting impacts on East Lothian are Scoped in and supports this.

The indirect impacts should be identified by first producing a ZTV and identifying the heritage receptors which need to be further assessed. This should be done in consultation with ELC Archaeology service. Note that although complimentary a Heritage Assessment is not the same as a LVIA assessment.

As regards existing data, as stated in 16.2.1.2, the baseline data from UKHO, HES and the two council Historic Environment Records will need to be refreshed.

The assessment scenario previously applied in conducting the Original Project EIA represents the worst-case scenario when compared to the Project should be reconsidered. In Table 16-2, the impact of turbine height and layout to the setting of onshore receptors needs to be reassessed because of the increase in turbine height.

It is not clear that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Archaeology and Cultural Heritage receptors. The impact of turbine height and layout to the setting of onshore receptors needs to be reassessed because of the increase in turbine height, and any potential mitigation strategies for indirect impacts should be included within the EIA as appropriate.

ELC agrees that the changes in turbine number and increase in blade tip height require an updated Settings analysis, in conjunction with any updated SLVIA analysis. This should include producing a ZTV and identifying the onshore heritage receptors which need to be further assessed, in consultation with East Lothian Council Archaeology Service. It should be noted that additional heritage specific visualisations may be required in the updated setting assessment.

ELC agrees that the cumulative effects on archaeology and cultural heritage receptors should be scoped in to the Project EIA only where it applies to impacts on the settings of cultural heritage assets, based on the increase in turbine size for the Project.

<u>Section 17 – Seascape, Landscape and Visual Impacts</u>

The applicant has submitted a scoping report where they have asked several questions with regard to the SLVIA section which are answered below:

Q: Do you agree with the evaluation of the sufficiency of base line data set out in section 17.2?

A: Yes

Q: Is there any other baseline information that should be considered in the SLVIA?

A: East Lothian Council has carried out a Local Landscape Designation Review including a Landscape character Review that has been taken on board in the SNH Landscape Character Review to update the existing 1997 Landscape Character Areas. The revised LCAs should be included in any baseline information. East

Lothian Council's review has also identified Special Landscape Areas as part of the proposed East Lothian Local development Plan 2016. If the proposed East Lothian Local Development Plan has been adopted before application, Areas of Great Landscape Value should not be considered. If it has not been so adopted, both the current Areas of Great Landscape Value and the proposed Special Landscape Areas within East Lothian should be included in any baseline information. The proposed LDP also includes coastal designations that should be included in any baseline information.

Do you agree with the approach to identifying the 'worst case' scenario for assessment in the SLVIA?

Table 17-4 identifies the current project as having turbines up to 230m (although this is to be confirmed in the ES) and a maximum number of 56 turbines. We would agree with assessment based on these parameters. The height chosen must based on the maximum height envisaged however; an approximate height is not suitable. As noted in the table 17-4 taller turbines than those originally assessed are likely to be more widely visible and could result in impacts on more distant receptors. It could also result in more significant impacts on closer receptors. Although table 17-4 notes that a smaller number of turbines may reduce the apparent density of the development and it visual presence, it should also be noted that taller turbines at a lesser density may result in more noticeable movement of the turbines. This in turn could lead to a greater visual presence.

Q: Do you agree that effects can be scoped out of the SLVIA, and the cumulative assessment, as set out in Section 17.5?

A: Scoping of the EIA for the project is discussed in section 17.6.

Table 17-6 notes that the presence of the Offshore Wind Farm in the sea is unlikely to significantly affect the key characteristics of non-coastal landscapes and that changes to the design envelope are unlikely to alter this. It is therefore proposed to scope out changes to character of landscape character types. Table 17-6 refers to "Changes to character of landscape character types". This is accepted for non-coastal landscape character types, but not coastal landscape types.

Table 17-6 proposes to scope out changes to the character of gardens and designed landscapes as it notes that the presence of the off shore wind farm in the sea is unlikely to significantly affect the character of these areas and the changes to the design envelope are unlikely to alter this. Views out from some of the gardens and designed landscapes may include views out to sea important to the design and appreciation of the garden and designed landscape and therefore should be scoped in to the assessment.

Q: Have all the necessary offshore projects been identified at Section 1.5.1?

Cumulative impacts are discussed in section 17.6.1.
This has identified three offshore wind farms to be considered in the cumulative SLVIA:

Inch Cape Offshore Wind Farm (as consented)
Seagreen Alpha and Bravo (as consented)
Forthwind Offshore Wind Demonstration Project (consented 2 turbines).

Additional offshore wind farms for cumulative assessment should include:
Inch Cape Offshore Wind Farm as revised in scoping
Forthwind Offshore 9 turbines in scoping

Onshore wind farms where these impact on view points in East Lothian should be included in the cumulative assessment to include:
Aikengall and Crystal Rig windfarm groups in East Lothian and Scottish Borders
Earls Seat in Fife

Q: Is the approach to SLVIA appropriate, including the guidance listed at section 1.6.1, and the outline methodology at 1.6.3?

A: The approach to the EIA is discussed in section 17.7.
ELC agrees with the guidance noted in section 17.7.1 and outline methodology.

A: Should the SLVIA use the same set of viewpoint locations as the Originally Consented Project SLVIA, as listed in Table 17-8, or are there other viewpoint locations that need to be considered?

Three viewpoints have been provided from East Lothian:
North Berwick Law
Dunbar
West Steel

These viewpoints were agreed with FWTDWG for previous cumulative assessment of off shore wind farm schemes only. No viewpoints were previously agreed with ELC for this proposal alone for inclusion in the previous ES other than these.

ELC agrees with the North Berwick Law and Dunbar Cliffs viewpoints.

The West Steel viewpoint could be replaced by a viewpoint from Innerwick which would be representative of local residents as well as the raised land accessed for recreation to its south, giving a raised view to the coast and out to sea, including the

landmark Barns Ness Lighthouse.

A view providing a context for the setting of Belhaven Bay with the windfarm beyond and how this impacts on recreation users, residents and local road users should be provided. We would be able to confirm our preferred viewpoint following the submission of wirelines from Traprain Law and the A199 west of East Linton (approx grid ref. 357734, 676658).

The Bass Rock is set off the north east coast of East Lothian and a significant effect could be caused if the proposed turbines are viewed in views of the Bass Rock from important tourist viewpoints from the East Lothian coast, including the beaches, golf courses, castles and settlements. We would therefore request viewpoints at the North Berwick Seabird centre (approx grid ref. 355438, 685631) to assess the impact on both residents and tourists, Broad Sands to the west of North Berwick (approx grid ref. 351851, 686039) to assess the impact on recreational users of the beaches and the A198 to the east of North Berwick (approx grid ref. 357966, 685153) to assess the impact on the setting of the Bass Rock, Tantallon Castle, road users and recreation users.

Due to the proximity of the development to East Lothian the 50km study area extends over 20km inland. We are uncertain whether there will be significant effects from the proposed wind farm on views at this distance. However in order to make a full assessment of this we would request that wirelines are submitted for the B6370 Gifford to Garvald Road, the Hopetoun monument on Byres Hill and the B6355 to the west of the junction with the B6368, before confirming if viewpoints are required. We would ask that any wirelines submitted be considered for inclusion in an Appendix to the Environmental Statement to support public participation in the decision.

Q: Do you agree that the baseline photography is fit for purpose and that it can be used again as the basis for photomontages?

A: The quality of the photograph from Dunbar is acceptable and would be suitable for reuse in the new SLVIA . However both images from North Berwick Law and West Steel although taken on a sunny day are hazy at the horizon. SNH guidance ‘Visual Representation of wind farms’ revised February 2017 notes in section 206 that visualisations should be prepared that represent the specific time of day and season when there is optimal visibility and clarity. We suggest that a new images in line with SNH’s recommendations be provided for these viewpoints. Photographs should be cropped and enlarged from a photograph taken with a 50mm fixed focal length.

Q: Can you confirm the locations of any night time visualisations that should be considered within the Project EIA?

A: The SNH guidance ‘Visual Representation of wind farms’ revised February 2017

notes in section 5 paras 217 and 218 that lighting required for offshore turbines is often one of the major visual issues relating to this type of development and refers to paras 174-177 'Turbine Lighting' for guidance on how to provide visualisations showing the impact of night time lighting of turbines. The SNHguidance 'Siting and Designing Wind Farms in the Landscape' version 3 February 2017 also discusses in paragraphs 2.11-2.13 design considerations for turbine lighting and we would refer the applicant to this.

The 30km offset from the site overlaps East Lothian at one of our darkest and least developed areas along the Tantallon to Tyninghame coast. This is identified as a Special Landscape Area in the proposed East Lothian LDP. The Tantallon Coast Statement of Importance for this SLA describes this coastline as the wildest, most remote and least developed area of mainland East Lothian. The Statement of Importance specifically states that despite the busy shipping lanes and views of development in Fife much of this section of the coast still has an elemental feel deriving from the presence of the sea, rocky cliffs and expansiveness of sands at Ravensheugh combined with wide coastal skies. We would be concerned that additional development of a large horizontal field of wind turbines set within the sea could detract from the 'wildness' feel of the area both in day time views and on the night time darkness and dusk/dawn views. We would request therefore that the effects of night lighting on East Lothian are assessed. An assessment should be made of the proportion of horizontal field occupied by the turbines assessed cumulatively with the existing development visible within the views, including settlement and other windfarms existing, granted and in planning.

Rather than supply new viewpoints to assess the night time views we would suggest that the viewpoints for Dunbar and North Berwick Seabird Centre are used. The view from Dunbar should be rotated further west to include more of the coast of Fife to enable an understanding of the relationship between the lighting of settlements along the coast and the lighting of the wind farm.

Lighting is mentioned in Table 18-2 as the subject of a likely condition being the Lighting and Marking Plan 'Detailing the agreed lighting and marking of the scheme so as to safeguard the safety of air and surface navigation'. Details of lighting should not be left to the condition stage but should be examined through the ES as it has consequent landscape/seascape effects which are not standard. Gillespie v First Sectretary of State [2003] EWCA Civ 400 JPL 1287 said the EIA authority should not consider that EIA is not needed taking into account possible measures to mitigate environmental effects where those measures may themselves have significant environmental effects. Proposals for lighting should be included in the project description, and not left for discharge of suspensive condition.

<u>Section 18 – Other Users</u>

ELC does not consider there will be a significant effect on recreational users and is content that impacts on this group are scoped out (other than tourism, see Section 19 below).

Section 19 – Socio-economics

ELC's Team Manager, Economic Development considers that potential impacts on tourism should be included. This should include liaison with national bodies such as the Royal Yachting Association, as well as Visit Scotland. Watersports are growing in the Dunbar area and appraisal of current and planned activity including analysis of wider trends (for example via Visit Scotland) and discussion with individual businesses should be undertaken for baseline information.

In addition, Thorntonloch beach is an important tourist asset for the nearby Thorntonloch caravan park and impacts on the beach due to loss of sand should be considered.

See 'additional information' for details of further reports (including two reports commissioned by ELC) which may be relevant.

For the baseline data, ELS is aware of a research report by BiGGAR Economics, "Wind Farms and Tourism Trends in Scotland" published July 2016 which may also be relevant.

Section 20 – Summary

ELC agrees with the summary other than as noted above namely:

Local Biodiversity

The map on page 21 of the Scoping Report shows cable will cut across beach and sand dune between Thorntonloch caravan park and Torness power station. This area is designated as a Local Biodiversity Site. The site provides important continuity of habitat along the coast and also connects with inland sites such as the Thornton Burn and Dry Burn valleys. This designation is not acknowledged in the scoping report, but should be considered as it is likely to influence construction methodology in this area.

The scoping report describes two methods for connecting off shore cables with on shore infrastructure (section 4.4.3). From a biodiversity point of view, Horizontal Directional Drilling would seem to have the least environmental damage associated with it.

Of principal consideration in this location is the impact of pipe-laying on the structure

of the beach and sand dune. In particular, introducing trenches and hard surfaces in a habitat that is subject to erosion can lead to sediment being washed from the beach, or being blown from the sand dune. Every effort must be made to ensure that construction methodology minimises the risk to the structure of the beach and sand dune.

Additional information for the applicant

The development plan for East Lothian consists of the South East Scotland Plan (SESPlan) and the East Lothian Local Plan 2008, links to which can be found here:

http://www.eastlothian.gov.uk/info/204/local_development_plan/231/statutory_development_plans/3

.

Information and documentation relevant to SESPLAN 2 can be found here: http://www.sesplan.gov.uk/proposed-sdp-2016.php

The proposed East Lothian Local Development Plan has just been submitted to the DPEA for Examination. Links to submitted documents can be found here:

http://www.eastlothian.gov.uk/info/204/local_development_plan/1818/proposed_ldp_submitted_to_scottish_ministers_for_examination/2 .

Other supporting documentation including Technical Note 9: Landscape Review and Technical Note 11 plus Annex 2 (the Geodiversity Audit) can be found here:

http://www.eastlothian.gov.uk/info/204/local_development_plan/1777/proposed_local_development_plan - follow the link to 'All other supporting information'.

East Lothian commissioned a Shoreline Management Plan which reported in 2002, available to download from here:

http://www.eastlothian.gov.uk/downloads/download/2303/shoreline_management_plan

Some background research on weather impacts of windfarms is available in citations here: http://www.see.leeds.ac.uk/admissions-and-study/research-degrees/icas/rossbrooks/ and "Impacts of Wind farms on Land Surface Temperatures in Nature Climate Change at http://www.nature.com/nclimate/journal/v2/n7/full/nclimate1505.html

Tourism: BiGGAR Economics, "Wind Farms and Tourism Trends in Scotland" published July 2016: ELC also has a tourism trend report "Steam Draft Trend Report for 2009 – 2016" and the "East Lothian Visitor Survey Final Report" both

commissioned for East Lothian Council and available on request.

ELC has given its views on all the information which it considers to be significant for its areas of expertise in this response to consultation on the Scoping Report. However, if it emerges that there further significant information which we have not noted, ELC may contact the applicant to discuss this, or may request that Scottish Ministers ask for further information as provided for by Regulation.

Fife Council

Thank you for the opportunity to comment on the scoping request submitted by Neart Na Gaoithe's operators.

Having looked at this, and the scoping reports for the Inch Cape and Seagreen wind farms also, it appears that there are slightly different approaches being used and this is a concern especially as the in-combination assessment of these proposals is an important consideration. One example is as follows.

Seagreen Phase 1 scoping report states that:

'additional boat based data collected during the 2017 breeding season (April to September). This is in recognition of the increasing age of the current dataset and potential population changes in a regional environment where some seabird species appear to be declining whilst others, such as gannet, are increasing (JNCC 2016). It will allow the density and population of each species within the Site to be recalculated and the list of sensitive receptors to be reviewed. As before, this data will be supplemented by existing seabird tracking data and literature relevant to the Site plus any which has become available since 2013.'

Neart Na Gaoithe scoping report states that:

'It is considered unlikely that any significant alteration to the seabird populations and distribution in the survey area will have taken place between the time of surveying and the present, other than natural variations associated with, for example, small-scale variations in prey distribution. Therefore, it is concluded that the data remains adequate to provide a basis for the assessment of potential effects on birds and in respect of this Scoping process.'

It is essential that there is consistency in the assessment methodologies used across the different projects, however Marine Scotland and SNH specialists will need to advise on the detail/technicalities.

As far as other matters may be concerned, the relatively close presence of the A-Listed Bell Rock Lighthouse to both the Inch Cape and Neart Na Gaoithe proposals is a matter that would be worthy of analysis in terms of the potential effect of the proposals.

Maritime & Coastguard Agency

The MCA has received the Offshore Scoping Report 2017 provided for by the NNG Offshore Wind Farm as detailed in your dated 29th May 2017 and would comment as follows:

The Environmental Statement should supply detail on the possible the impact on navigational issues for both Commercial and Recreational craft, viz.

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.

A Navigational Risk Assessment update will need to be submitted in accordance with MGN 543 and the MCA Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations.

It is noted that traffic studies were carried out in 2010 and 2012, however in line with the requirement that traffic studies should be completed within 24 months prior to the Environmental Statement submission we would expect a new traffic study to be undertaken. We would welcome discussions with the developer to agree the survey data requirements.

Particular 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 traffic volumes, an anchor penetration study may be necessary. If cable protection are required e.g. rock bags, 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.

Any application for safety zones will need to carefully assessed and additionally supported by experience from the development and construction stages.

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-base VHF radio coverage and give due consideration for appropriate mitigation measures 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.

Northern Lighthouse Board

Thank you for your correspondence dated 29 May 2017 requesting a response to the submission by **Neart na Gaoithe Offshore Wind Farm Limited** in which they seek confirmation that Northern Lighthouse Board is satisfied with the topics covered in preparation of an Environmental Impact Assessment submission for the revised development layout consisting of an array of up to 56 turbines and associated infrastructure at the Neart na Gaoithe OWF.

We would advise that the Northern Lighthouse Board are content with the topics to be included in the EIA and those sections requiring updated data. NLB are likewise content with the extension of operational life to 50 years at this site.

Scottish Borders Council

I refer to the above consultation request which you forwarded to this Council on 29 May. We have considered the Scoping Report, the questions within it and have also met with the applicant. We have a few comments on the Report which were also raised with the applicant, as follows:

<u>Archaeology and Cultural Heritage</u>

No major comments. With the taller turbines there is potentially an increased visibility from key receptors in the Borders (e.g. the Scheduled Monuments on Cockburn Law, Ewieside Hill, Fast Castle, St Abbs Head), but we don’t feel the settings of these will be significantly impacted by the presence of the wind farm. There are no direct

impacts to heritage in our area.

Ecology

There are two designated sites in Scottish Borders that may be affected by the proposal:

- Berwickshire and North Northumberland Coast SAC
- St Abb's Head to Fast Castle SPA

The earlier application was subject to a Habitat Regulations Appraisal which considered that alone and in-combination there would be no significant adverse effect on the integrity of
i) the Berwickshire and North Northumberland Coast SAC (from noise related impacts on grey seals)
ii) St Abb's Head to Fast Castle SPA (qualifying interest screened in for collision mortality effects: herring gull, kittiwake, and for displacement effects: guillemot and razorbill)

An updated HRA will be required to be carried out.

It is unlikely that there will be any significant adverse effects on regionally important Local Wildlife Sites or provisional Local Biodiversity Sites or other local biodiversity interest in Scottish Borders.

We are content for Scottish Borders Council to follow the recommendations of SNH in relation to the requirements of the EIA and HRA.

It is noted that the numbers of kittiwake at St Abb's Head NNR was recorded at a record low of 2,779 (apparently occupied nests) in 2016 (NTS Seabird Summary Report 2016).

LVIA

Due to the distance from receptors in the Scottish Borders and, even allowing for the increased height of the turbines in the reduced scheme, there are no specific additional comments although additional LVIA viewpoints at Ewieside Hill and Fast Castle are suggested to the applicants. These were discussed in our meeting with them.

Transport

It was noted there was no relevant section in the Scoping Report and this was discussed with the Applicants who informed us that there was similarly no relevant sections in the previously deliberated schemes. This Council would wish to know whether there was likely to be any traffic impacts resulted from transport of the turbines and components through the Scottish Borders.

Tourism

The effects on tourism of the revised project have been suggested to be scoped out but there is a risk this assumes decreased numbers of turbines will counteract any impacts caused by increased turbine height. Perhaps this should still be analysed in the EIA.

These are the comments of Scottish Borders Council on the Scoping Report submission. Hope they are of assistance,

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Scottish Natural Heritage

Thank you for this scoping consultation, requesting advice from SNH on natural heritage interests to be addressed under Environmental Impact Assessment (EIA) for the Neart na Gaoithe offshore wind farm. As agreed at the scoping meeting (held 13 June 2017), SNH will provide our advice for Habitats Regulations Appraisal (HRA) in this response alongside that for EIA. We recommend that any scoping opinion issued by Marine Scotland addresses both HRA and EIA requirements.

We note that the applicant is scoping for a new application in respect of the wind farm (proposing use of larger turbines) and export cable (proposing longer cable lengths). This scoping relates to the marine elements and the onshore works will be scoped separately under planning.

SNH's previous advice (7 March 2014 and 4 July 2014) raised significant issues in relation to the cumulative impacts of the Forth & Tay wind farm proposals – Neart na Gaoithe alongside Inch Cape and Seagreen (alpha and bravo) – in relation to ornithology and seascape, landscape and visual interests. These responses are important context for any reapplications now being made for the Forth & Tay wind farms. For Neart na Gaoithe it is also relevant to consider the consent variation issued on 21 March 2016.

We advise that Neart na Gaoithe's new application should update assessment for the following receptors:

- **ornithology** – please see **Appendices A(i) – A(iii)**
- **marine mammals** – please see **Appendix B**
- **seascape, landscape and visual interests** – please see **Appendix C**

We also provide our advice on the receptors we consider can be scoped out of any reassessment – **please see Appendix D.**

This scoping response provides our recommendations on the approach to impact assessment for each receptor. We also recommend that pre-application dialogue continues after scoping in order to address any queries or points of clarification and to confirm final methodological details. We strongly recommend that this is co-ordinated, as far as possible given uncertain time-scales for resubmission, across all three Forth & Tay developers.

There are four key areas for reassessment where we highlight that further discussion may be helpful, to agree approaches and ensure consistency across the three applications:

- Displacement modelling for seabirds
- Addressing non-breeding season seabird impacts
- Population modelling for seabirds
- Underwater noise modelling for marine mammals

Please see the relevant appendices for further advice in this regard.

Neart na Gaoithe is applying for a consent duration of 50 years, whereas their existing consent is for a period of 25 years, with all supporting assessments undertaken on this basis. If there is to be a change to the period of consent it will need further discussion as it has particular implications for population modelling in respect of seabird interests and marine mammals – please see **Appendix A(i)** and **Appendix B.**

Further Information and Advice

We would be grateful if you could alert us to the formal scoping opinion once issued. As you are aware, there's likely to be advances in assessment methodologies over the next 12 months so that if the Neart na Gaoithe application is significantly delayed we may wish to update our advice on some aspects. Please don't hesitate to contact us if you need any further information or advice from SNH in respect of this response.

APPENDIX A(i) – ORNITHOLOGY
ADVICE FOR NEART NA GAOITHE OFFSHORE WIND FARM

Ornithological interests are addressed in chapter 9 of Neart na Gaoithe's scoping report. Changes to turbine numbers and parameters are the key considerations for reassessment of potential ornithological impacts for which we provide the following advice. We also consider possible impacts on supporting habitats / prey species and potential impacts from the transmission works, particularly in relation to the Firth of Forth and St Andrews Bay Complex proposed SPA.

On the basis of current timeframes we confirm that no further baseline survey is required (SNH advice note of 2 February 2017), however, this advice may change if there is any significant delay to the intended submission date for the new application.

BIRD RECEPTORS FOR REASSESSMENT

For the original assessments, the Forth & Tay developers – Neart na Gaoithe, Inch Cape and Seagreen (alpha, bravo) – collaborated on an extensive scoping exercise to consider the range of bird species potentially impacted by the developments. We have reviewed the final HRA short-list of SPA populations requiring assessment (as presented in Appendix A3 of our 7 March 2014 response) to give the following advice on requirements for the new application.

SPA seabird colonies

For seabird species of concern, we confirm that SNH does not require any assessment against regional populations – our focus remains on the individual breeding colonies, particularly SPAs. In this regard, the final HRA short-list comprised a range of breeding seabird interests from a range of SPA colonies within foraging range of the proposed Forth & Tay wind farms. SNH has reviewed this list in order to confirm key species and SPAs for reassessment.

Table 1. SPA seabird interests for reassessment

Species	Impact	Key SPAs for reassessment
Gannet	Collision	Forth Islands SPA (Bass Rock)
Kittiwake*	Collision	Forth Islands SPA, Fowlsheugh SPA
Herring gull*	Collision	Forth Islands SPA, Fowlsheugh SPA
Puffin	Displacement	Forth Islands SPA
Guillemot*	Displacement	Forth Islands SPA, Fowlsheugh SPA
Razorbill*	Displacement	Forth Islands SPA, Fowlsheugh SPA
* We will review the updated apportioning calculations for these three species in order to confirm whether or not any further reassessment is needed for either Buchan Ness – Collieston Coast SPA or St Abb's – Fast Castle SPA. On the basis		

of previous advice we consider this unlikely.

On the basis of previous advice, we don't consider that Neart na Gaoithe (on its own or in combination with the other Forth & Tay proposals) will give rise to significant population level impacts in relation to lesser black-backed gull, fulmar, common tern or Arctic tern at any of the identified SPAs.

Outer Firth of Forth & St Andrews Bay pSPA

Scottish Government is currently considering the designation of a new suite of marine SPAs. This process is significantly further ahead than it was at the time of the original assessments and the formal proposals were submitted to Government for consideration on 30 June 2015. The proposed site boundary and features of interest are now available[1] and in this regard we provide the following scoping advice.

Table 2 gives an overview of proposed pSPA seabird interests and whether or not these are also qualifying interests of SPA breeding colonies in the area. We have considered potential impacts on these pSPA features in order to confirm our scoping advice for the wind farm in **Table 3**.

We provide separate advice on the transmission works in the relevant section below.

Table 2. Firth of Forth and St Andrews Bay Complex pSPA – breeding colony and marine seabird interests

Species	SPA breeding colonies HRA shortlist	Marine pSPA	
		breeding	non-breeding
Gannet	✓	✓	✗
Kittiwake	✓	✓	✓
Herring gull	✓	✓	✓
Puffin	✓	✓	✗
Guillemot	✓	✓	✓
Razorbill	✓	✗	✓
Common tern	✓	✓	✗
Arctic tern	✓	✓	✗
Shag	✗	✓	✓
Manx shearwater	✗	✓	✗
Little gull	✗	✗	✓
Black-headed gull	✗	✗	✓
Common gull	✗	✗	✓

[1] http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/proposed-marine-spas/

- **Transmission Works**

Minor changes are proposed in relation to the export cable (Table 4-5, p. 32) slightly increasing the cable lengths to allow for greater flexibility in route selection and micro-siting. In this regard, we confirm that there are no outstanding matters to address in relation to the pSPA.

We note that the relevant conditions on the issued licence will be transferred to any new licence (see sections 2.3, 2.4 and Appendix A) and these address our requirements to ensure that good working practice is adopted for cable installation. We confirm that these measures will address all relevant bird interests, both seabirds and waterfowl, and including pSPA features of interest.

Table 3. Firth of Forth and St Andrews Bay Complex pSPA – SNH scoping advice

pSPA seabirds	SNH scoping advice: include for assessment (yes / no) and rationale	
Gannet, Kittiwake, Herring gull, Puffin, Razorbill, Guillemot	✓	These pSPA interests should be **scoped in** to reassessment for Neart na Gaoithe. Disturbance of birds within the pSPA may need consideration depending on the location of turbines. Impacts on these interests outwith the pSPA should be considered in relation to the relevant breeding colony SPAs as listed in Table 1 and further discussed below. .
Common tern, Arctic tern	×	Neither tern species was recorded on-site at Neart na Gaoithe in any significant numbers. We do not consider that the wind farm presents any significant risk to these species and they can be **scoped out** of assessment.
Shag	×	Shag was included on the original Forth & Tay 'long-list' but none of the developers recorded this species on-site in any significant numbers. We do not consider that Neart na Gaoithe presents any significant risk to shag and it can be **scoped out** of assessment.
Manx shearwater	×	Manx shearwater was included on the original Forth & Tay 'long-list'. Although this species is difficult to survey, we do not consider it will be present on-site at any of the wind farms in any great numbers. We do not consider that any of the wind farms present a significant risk to this species and confirm that it can be **scoped out** of assessment.
Little gull, Common gull, Black-headed gull	✓	Neart na Gaoithe's site boundary partially overlaps with the pSPA so that potential seabird disturbance or displacement may need consideration, depending on the proposed location of turbines within the wind farm footprint. We therefore recommend that these wintering gull species are **scoped in** to assessment for the time being.

- **Other birds**

All other bird interests were fully considered and addressed in pre-application dialogue and in final assessments for the previous application. This includes great black-backed gull – addressed in section 4.4.23 (p166-182) of Neart na Gaoithe's technical report, Appendix 12.1 – as well as wildfowl and wader species on migration. In respect of wildfowl and waders, Marine Scotland commissioned a strategic 'worst case' collision risk assessment[2] for all wind farms proposed in Scottish waters at the time. We used the outputs from this strategic CRM to inform our previous advice.

Since this work was published, a number of the wind farms included for assessment have been withdrawn, and the remaining schemes are in the process of refining their design envelopes. We note that the proposed design changes at Neart na Gaoithe lie well within the 'worst case' previously assessed, and that the outputs from Marine Scotland's strategic CRM can be relied upon. We confirm that current offshore wind proposals in Scottish waters do not present significant risk to any other bird interests and we do not require any individual developer to submit further information in this regard.

ASSESSMENT METHODOLOGIES

- **COLLISION RISK**

The key species at risk of collision from Forth & Tay wind farms are **gannet, kittiwake** and **herring gull**. Please refer to SNH guidance[3] for advice on seasonality:

Species	Breeding	Non-breeding
Gannet	mid-March - September	October - mid-March
Kittiwake	mid-April - August	September - mid-April
Herring gull	April - August	September - March

Work on ways to incorporate uncertainty into collision risk modelling is ongoing but there is not yet any agreement on a final approach so that we advise the Band offshore model continues to be used for the updated assessment[4]. If possible, we would find it helpful if Neart na Gaoithe could provide the information listed in

[2] Strategic Assessment of Collision Risk of Scottish Offshore Windfarms to Migrating Birds. Available from: http://www.gov.scot/Resource/0046/00461026.pdf
[3] Explanatory notes for table of 'Seasonal Periods for Birds in the Scottish Marine Environment'. http://www.snh.gov.uk/docs/A2200567.pdf
[4] Band collision risk model, guidance and model spreadsheets available from: https://www.bto.org/science/wetland-and-marine/soss/projects

Appendix A(iii), however please note this is not a formal statutory request to inform the EIA report.

We provide copies of our final collision risk workings for Neart na Gaoithe (modelling for 75 turbines, blade length of 77m and hub height of ~101.85m). Whilst we did not request nor update these calculations for the consent variation (approved 21 March 2016) we do now request that the developer updates and submits these spreadsheets with new CRM calculations for the current application.
We recommend that collision risk modelling is undertaken for the two scenarios at either 'end' of the updated design envelope. For these scenarios our advice on updating the CRM for each species is as follows:

- **Gannet, kittiwake**

CRM outputs should be presented for model options 1 and 2 using Johnston *et al* flight heights[5] and a 98.9% (+/- 2 standard deviations, SD) avoidance rate. Until better data becomes available, we do not require, nor do we recommend, that option 3 outputs are presented for kittiwake or gannet. This recommendation is based on advice agreed between SNH and the other statutory nature conservation bodies.[6]

- **Herring gull**

CRM outputs should be presented for model options 1, 2 and 3 using Johnston *et al* flight heights and a 99.5% (+/- 2 SD) avoidance rate.
In order to consider any population consequences arising from these estimated collisions, the overall impacts will need to be apportioned by season, between SPAs and across age classes. We advise on this as follows:

Apportioning collision mortality between seasons
Annual CRM totals will need to be apportioned between breeding and non-breeding seasons following SNH guidance as defined above[3]. For half months the collisions calculated for that month should be split equally between breeding and non-breeding period.

Apportioning collision mortality between age classes
Collision mortality will need to be apportioned between age classes. 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

[5] Flight height data available from https://www.bto.org/science/wetland-and-marine/soss/projects
[6] SNCB advice on use of the Band model and avoidance rates: http://www.snh.gov.uk/docs/A1464185.pdf

immatures on the basis of developers' site-specific survey work. For the non-breeding season, assessment may cover a wider geographic area so that we recommend using stable age structure modelling to determine these proportions.

Apportioning collision mortality in the breeding season to breeding colonies
Impacts which occur during the breeding season will need to be apportioned between the breeding colonies (SPA and other) within foraging range of the proposed wind farm. The current method for doing so is set out in SNH guidance[7]. We advise that this is a two-step process:

- The first step is to apportion impacts between SPA and non-SPA breeding colonies within foraging range of the wind farm. We recommend that this is done on the basis of Seabird 2000 data as this provides a common reference point and many of the non-SPA breeding colonies have not been counted since this time. Seabird 2000 data is available from JNCC who manage the seabird monitoring database[8].

- Impacts assigned to the SPA component then need to be further apportioned between the individual SPAs within foraging range. For this step, the most recent colony counts should be used and those for the key SPAs are presented in **Appendix A(ii)**.

Addressing collision mortality in the non-breeding season
We advise that assessment of collision mortality in the non-breeding season for **herring gull** can use the approach agreed during Moray Firth determinations. While many herring gull will remain locally in the Forth & Tay over-winter, there is also an influx of wintering birds from elsewhere. Any collisions which might occur at the wind farm will therefore need to be apportioned between the local SPA breeders and these other wintering birds.

Kittiwake and **gannet** range more widely in the winter and we are currently considering possible approaches to non-breeding season assessment for these species.

- **DISPLACEMENT**

We advise that reassessment of displacement impacts should be undertaken for **puffin**, **guillemot** and **razorbill**. Please refer to SNH guidance definitions of breeding and non-breeding seasons:

Species	Breeding	Non-breeding
Puffin	April - mid-August	mid-August – March
Guillemot	April - mid-August	mid-August – March
Razorbill	April - mid-August	mid-August – March

[7] SNH guidance on apportioning breeding season impacts: http://www.snh.gov.uk/docs/A1355703.pdf
[8] Seabird monitoring programme: http://jncc.defra.gov.uk/smp/

Previously both gannet and kittiwake had been species included for displacement assessment. However, the CEH modelling undertaken for Forth & Tay[9] indicated that gannet suffered no significant energetic costs or impacts on survival or productivity from displacement.

For kittiwake, collision risk and displacement are currently considered to be mutually exclusive impacts, so we advise that assessment focuses on collision risk as the impact of most concern (presenting a greater risk of population consequences). So far, post construction monitoring indicates no significant avoidance of wind farms by kittiwake (e.g. Welcker and Nehls 2016 Mar Ecol Prog Ser 554:173-82; Krijgsveld 2014 – report for Rijjkswarerstaat Sea and Delta; and Robin Rigg Year 5 monitoring report).

Our preferred approach to assessment would be to use the updated displacement model commissioned by MSS and produced by CEH[10], if available in time. If not, then developers should provide displacement estimates based on the approach given in joint SNCB guidance[11]. Such estimates should be discussed alongside the outputs from the original CEH models[9].

We require the assessment of breeding season impacts for all three species. If the SNCB approach is needed then we advise the estimates for the breeding season are based on a **60% rate of displacement** and a **2% rate of mortality**. Any such estimates of displacement during the breeding season will need to be apportioned and assigned back to the relevant SPA breeding colonies using a similar approach to that recommended above for collision risk:

- Apportion displacement mortality between seasons following SNH guidance[3].
- Apportion displacement mortality between age classes – it's not possible to differentiate between adult and immature auks during site survey so that these proportions should be based on stable age structure modelling. Note that all adults should be assumed to be breeding adults.
- Apportion displacement mortality between breeding colonies following the same approach as discussed above for collision risk.

We also require assessment of non-breeding season impacts for guillemot and

[9] CEH original displacement model for the Forth & Tay, further information available from: http://www.gov.scot/Topics/marine/marineenergy/Research/SB7
[10] CEH simplified displacement model: http://marine.gov.scot/data/simplified-displacement-model-foraging-birds
[11] SNCB joint guidance note on displacement assessment: http://jncc.defra.gov.uk/pdf/Joint_SNCB_Interim_Displacement_AdviceNote_2017.pdf

razorbill, but not puffin. Guillemot and razorbill remain in the Forth & Tay over-winter and are proposed features of the pSPA. Puffins disperse widely and will not be present in any significant numbers. The CEH models only address the breeding season, so that estimates of non-breeding season impacts will be needed for guillemot and razorbill based on SNCB guidance[10]. For this we recommend a **60% rate of displacement** and a **1% rate of mortality**.

We are still developing our advice on methods to apportion and assign non-breeding season impacts. For **guillemot** and **razorbill** we would hope to define an overall wintering population of these species in the Forth & Tay area, and then determine what proportion of this population comprises birds from the relevant SPA breeding colonies.

- **IMPACTS ON PREY**

If any turbines are proposed to be located within the Firth of Forth and St Andrews Bay Complex pSPA then this will require further consideration under HRA in relation to potential loss of habitat and / or prey species. Similarly the noise from piling work may require further consideration if it extends into the pSPA. In this regard, SNH will provide further advice on the approach to HRA if / when required.

POPULATION CONSEQUENCES

The impacts of collision and displacement will need to be considered in the context of relevant SPA breeding colonies. 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 population viability. We cannot provide our final advice in this regard until the outputs are available for the updated collision risk and displacement modelling. We will compare these outputs against the previous estimates (taken from the SNH collision risk spreadsheets and the CEH displacement models) in order to provide advice on the requirements for population modelling.

If population modelling is required for the revised Neart na Gaoithe proposal, we recommend:

a. reviewing the utility of the models commissioned by Marine Scotland and produced by CEH[12] for kittiwake, herring gull, guillemot and razorbill;

b. reviewing the Macarthur Green population modelling for gannet and puffin;

c. only producing further models for particular species if it's not possible to utilise

[12] The 2014 CEH population modelling report is available here: http://www.gov.scot/Topics/marine/marineenergy/Research/SeabirdsForthTay
Further information may also be available from the recent MS contract on 'Testing and Validating Metrics of change produced by Population Viability Analysis (PVA)'

either (a) or (b); in this case we would be requesting the production of deterministic, density independent Leslie Matrix Models.

As well as modelling their individual impacts Neart na Gaoithe should also model cumulative impacts with the other Forth & Tay proposals (see below). We request that the counterfactual of population size and population growth rate are presented as part of the model outputs[13].

Finally, we request that the modelling of impacts is undertaken over two time periods; 25 years (as used for the original consent) and 50 years (as proposed now). No recovery period should be applied to either model run. **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.

CUMULATIVE IMPACTS

We have reviewed the projects listed in the Neart na Gaoithe scoping report for cumulative impact assessment (Appendix B). In this regard, we advise that assessment focuses on Neart na Gaoithe in combination with the other Forth & Tay wind farms: Inch Cape and Seagreen. This assessment will require population models to consider the impacts of each wind farm individually and together.

[13] 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.

APPENDIX A(ii) – SEABIRD POPULATION COUNTS

Table 4. Most recent population counts for the key seabirds and SPAs of relevance to the Neart na Gaoithe reassessment.

Species	SPAs	SPA citation population	P/I	SNH/JNCC 2014 advice: SPA counts	P/I	SNH/JNCC 2014 advice: dates of counts	Most recent counts	P/I	Dates of most recent counts
Gannet	Forth Islands	21,600	P	55,482[§]	P	*2009*	75,259	P	*2014*
Kittiwake	Buchan Ness / Collieston Coast	30,452	P	12,542[§]	P	*2007*	*Counts undertaken 2016-2017~*		
	Forth Islands	8,400	P	3,776[§]	P	*2012*	4,333	P	*2015*
	Fowlsheugh	36,650	P	9,337[§]	P	*2012*	9,655	P	*2015*
	St. Abb's Head to Fast Castle	21,170	P	6,317[§]	P	*Trend applied*	2,779	P	*2016*
Herring Gull	Buchan Ness / Collieston Coast	4,292	P	3,079[§]	P	*2007*	*Counts undertaken 2016-2017~*		
	Forth Islands*	6,600	P	5,027[§]	P	*2002*	6,500	P	*2014-2016*
	Fowlsheugh	3,190	P	259[§]	P	*2012*	125	P	*2015*
	St. Abb's Head to Fast Castle	1,160	P	356[§]	P	*Trend applied*	325	P	*2016*
Puffin	Forth Islands	14,000	P	50,282	P	*2009*	51,956	P	*2013*
Guillemot**	Buchan Ness / Collieston Coast	17280[λ]	I	25,857	I	*2007*	*Counts undertaken 2016-2017~*		
	Forth Islands	8000[λ]	I	29,169	I	*2011*	30,910	I	*2015-16*
	Fowlsheugh	56,450	I	60,193	I	*2012*	55,507	I	*2015*
	St. Abb's Head to Fast Castle	31,750	I	58,617	I	*1998/2000****	33,627	I	*2016*
Razorbill**	Forth Islands	2800[λ]	I	4,950	I	*2011*	4,993	I	*2015*
	Fowlsheugh	5,800	I	7,048	I	*2012*	7,426	I	*2015*
	St. Abb's Head to Fast Castle	2,180	I	4,588	I	*Trend applied*	2,067	I	*2016*

***** Please be aware that herring gull at Forth Islands SPA and fulmar at Forth Islands SPA and Fowlsheugh SPA may not qualify as designated interests.

****** For guillemot and razorbill the counts were converted to 'individuals on land equivalent' then corrected using (x 1.34) to give

total breeding adults in population.

******* Best available estimate at the time of our 2014 advice.

~ Buchan Ness / Collieston Coast counted 2016-17, counts should be available shortly from the seabird monitoring database. If not, we will provide further advice.

§ Our 2014 advice used number of individuals – converted to pairs (0.5*individuals) for consistency.

ƛ The SPA citation uses number of pairs – so converted to number of individuals (2*pairs) for consistency.

APPENDIX A(iii) – ORNITHOLOGY
UNCERTAINTY IN COLLISION RISK MODELLING

The following request is additional to our statutory scoping advice, and the information does not need to be included in any application submission (provided this is not significantly delayed).

While there is current discussion around ways to incorporate uncertainty into collision risk modelling there is no agreement on a final approach. However, if possible, we would find it helpful if Neart na Gaoithe could provide the following information. This would help us in thinking about these issues for the future.

Table 5. Incorporating uncertainty in collision risk modelling

Data	Parameter	Unit	Figures to be presented and notes
Survey data	*Proportion of birds at collision risk height		Used for Basic Band model Option 1 only. Mean + standard deviation (SD) of proportion of birds in site survey data estimated to be flying in the rotor swept area.
	*Bird density estimates	birds/km^2	Mean + SD for survey data with multiple counts per month and/or per season and/or per year.
Development data	Total power output of proposed development	MW	Single value required.
	Turbine rating / capacity	MW	Single value required.
	Width of development	km	Single value required.
	Latitude of development	decimal degrees	Single value required: central point of wind farm footprint.
	Number of blades		Single value required.
	Rotor radius	m	Single value required.
	Maximum blade chord width	m	Single value required.
	Hub height	m	Single value required: measured from Highest Astronomical Tide.
	Tidal offset	m	Single value required.
	Blade pitch	degrees	Going forward we would welcome further discussion on whether this parameter can be calculated as a function of wind speed.
	Turbine rotation	rpm	Going forward we would welcome further

	speed		discussion on whether this parameter can be calculated as a function of wind speed.
	Turbine operation time	%	Going forward we would welcome further discussion on methods to calculate and refine this parameter.

APPENDIX B
MARINE MAMMALS

Marine mammals are addressed in chapter 10 of Neart na Gaoithe's scoping report. The developer proposes scoping in underwater noise impacts on the basis that noise thresholds have changed; Table 10-6 (p120-124). This matter was discussed at the scoping meeting on 13 June 2017, and we agreed that it would be helpful to update the underwater noise modelling for marine mammal interests.

SPECIES FOR REASSESSMENT

Based on previous advice and discussion at the Forth & Tay offshore wind developers' group (FTOWDG), we advise that reassessment focuses on the following marine mammal interests (as listed in Table 10-6 of the Neart na Gaoithe scoping report):

- **Bottlenose dolphin**

Bottlenose dolphin is a qualifying interest of the Moray Firth Special Area of Conservation (SAC) and we advise that there is connectivity between Neart na Gaoithe and this SAC. The reference population for assessment is that given in guidance from the statutory nature conservation bodies (SNCBs) on management units for cetaceans in UK waters (2015)[14]. For bottlenose dolphin this is the coastal east Scotland population and we advise referring to Cheney *et al* (2013) for the most up-to-date population estimate[15].

- **Harbour seal / Grey seal**

Harbour seal are a qualifying interest of the Firth of Tay and Eden Estuary SAC and we advise that there is connectivity between Neart na Gaoithe and this SAC. Grey seal are a qualifying interest of the Isle of May SAC and Berwickshire and North Northumberland Coast SAC and we advise that there is connectivity between Neart na Gaoithe and these two SACs. For each species, the population present in the east coast seal management unit[16] should be used as the reference population for assessment and we take this as equivalent to the SAC population. The most up-to-date population estimates can be obtained from the Special Committee on Seals (SCOS)[16].

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[14] Guidance on cetacean management units from: http://jncc.defra.gov.uk/pdf/Report_547_webv2.pdf

[15] Cheney, B., Thompson, P.M., Ingram, S.N., Hammond, P.S., Stevick, P.T., Durban, J.W., Culloch, R.M., Elwen, S.H., Mandleberg, l., Janik, V.M., Quick, N.J., Islas-Villanueva, V., Robinson, K.P., Costa, M., Eisfeld, S.M., Walters, A., Phillips, C., Weir, C.R., Evans, P.G.H., Anderwald, P., Reid, R.J., Reid, J.B. & Wilson, B. 2013. Integrating multiple data sources to assess the distribution and abundance of bottlenose dolphins *Tursiops truncatus* in Scottish waters. *Mammal Review*, **43**, 71-88.

[16] Seal management areas are determined by the Special Committee on Seals (SCOS): http://www.smru.st-andrews.ac.uk/documents/SCOS.pdf

- **Harbour porpoise**

For harbour porpoise, we advise that the reference population against which to judge impacts is that for the North Sea management unit. We advise using the population estimate in SNCB guidance[14] unless any more up-to-date information becomes available before assessment commences. Recent data from the Small Cetaceans in European Atlantic waters and the North Sea survey (SCANS III) can be used to consider impacts at a regional scale – refer to survey block R[17].

- **Minke whale**

For minke whale, we advise that the reference population against which to judge impacts is that for Celtic and Greater North Seas management unit. We advise using the population estimate in SNCB guidance[14] unless any more up-to-date information becomes available before assessment commences. In addition, the estimate of abundance within SCANS III block R can be used to consider impacts at a regional scale[17].

- **White beaked dolphin**

For white beaked dolphin, we advise that the reference population against which to judge is that for Celtic and Greater North Seas management unit. We advise using the population estimate in SNCB guidance[14] unless any more up-to-date information becomes available before assessment commences. In addition, the estimate of abundance within SCANS III block R can be used to consider impacts at a regional scale[17].

- **European protected species (EPS)**

All cetaceans (species of whale, dolphin and porpoise) are classed as European protected species (EPS) for which Government has published guidance on licensing requirements[18]. Table 8-20 (p158) of the scoping report lists the range of EPS that could occur in the Forth & Tay region. These will need consideration in relation to EPS licensing requirements and we advise referring to the joint SNCB guidance[14] to determine the reference populations against which to judge favourable conservation status.

APPROACH TO UNDERWATER NOISE MODELLING

Marine mammal densities

Knowledge of marine mammal densities in the study area (or zone of impact) is required in order to predict the numbers of individuals which might be impacted by underwater noise. In this regard information should be available from SCANS for cetaceans[17] and from SCOS / Marine Scotland for seals[16]. For bottlenose dolphin,

[17] Small Cetaceans in European Atlantic waters and the North Sea, SCANS III survey (2016): https://synergy.st-andrews.ac.uk/scans3/

[18] EPS licensing guidance available from: www.gov.scot/Resource/0044/00446679.pdf

Quick *et al* (2014)[19] provides an estimate for the Forth & Tay based on data up to 2013, but there may be even more recent information than this.
We note that Marine Scotland's passive acoustic monitoring network on the Scottish east coast may give some background context in relation to dolphin species and harbour porpoise[20].

Methodology
At the scoping meeting (13 June 2017), Neart na Gaoithe indicated that they will work to progress noise impact assessment methodologies, taking account of developments in the approach and recommended guidance since the time of previous assessment. For assessing risk of injury, we recommend that both the instantaneous and cumulative thresholds for permanent threshold shift (PTS) are addressed: the instantaneous PTS threshold will inform the mitigation methods, while the cumulative PTS threshold informs any required assessment of population consequences.

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. We recommend adapting the approach presented in Thompson et al (2013)[21] – based on harbour porpoise data from Brandt et al (2011)[22] – to allow for this more realistic assessment.

POPULATION CONSEQUENCES / CUMULATIVE IMPACTS

As discussed at the scoping meeting the outputs from the updated noise modelling should be considered and compared against the previous predictions. Despite differences in methodology, it should be possible to compare these outputs: the predicted number of animals suffering hearing loss (permanent threshold shift, PTS) and the predicted number of animals disturbed.

This will allow us to consider whether or not the revised predictions are any worse than those previously assessed. If not, then we don't require any further consideration of population consequences – these were already assessed as

[19] Quick, N.J., Arso, M., Cheney, B., Islas-Villanueva, V., Janik, V.M., Thompson, P.M. & Hammond, P.S. 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).
[20] Further details on the East Coast Marine Mammal Acoustic Survey (ECOMMAS) are available from: http://www.gov.scot/Resource/0050/00507404.pdf
[21] Thompson, P.M., Hastie, G.D., Nedwell, J., Barham, R., Brookes, K.L., Cordes, L.S., Bailey, H. & McLean, N. (2013) Framework for assessing impacts of pile-driving noise from offshore wind farm construction on a harbour seal population. Environmental Impact Assessment Review, 43, 73–85.
[22] Brandt, M., Diederichs, A., Betke, K. & Nehls, G. (2011) Responses of harbour porpoises to pile driving at the Horns Rev II offshore wind farm in the Danish North Sea. Marine Ecology Progress Series, 421, 205–216.

acceptable for the consented development. However, in the meantime, Neart na Gaoithe may wish to further develop their approach to population modelling, as a contingency in case piling noise impacts do prove to be greater than those previously assessed.

Any assessment of cumulative impacts will also only be necessary if the piling noise impacts are greater than previously assessed. Again, as a contingency, Neart na Gaoithe may wish to further develop their approach to address cumulative impacts. As a first step, we recommend they review the available marine mammal assessment for Aberdeen Harbour expansion works[23].

[23] Appropriate assessment for Aberdeen Harbour expansion works, see p40 onwards for the marine mammal assessment: http://www.gov.scot/Resource/0050/00509289.pdf

APPENDIX C
SEASCAPE, LANDSCAPE & VISUAL IMPACT ASSESSMENT

Summary of previous SNH advice

Taken on its own, we have advised that the Neart na Gaoithe wind farm will have significant adverse landscape, seascape and visual impacts. It will form a visually prominent feature and introduce significant change to the open sea views experienced from coastal settlements and key routes along the east Fife coastline.

Neart na Gaoithe, in combination with Inch Cape, will affect the landscape setting of St Andrews (including appreciation of its historic skyline) and alter the sense of remoteness and naturalness experienced at both Tentsmuir and the Isle of May national nature reserves (NNRs).

In views from East Lothian, Neart na Gaoithe will form a visually prominent feature across the sea horizon and intrude on the spectacular seascape panorama which includes the distinctive Bass Rock and North Berwick Law.
In our response of 7 March 2014, we advised that:

> The proposed Forth & Tay wind farms [will] cause widespread and significant adverse landscape and visual impacts along the Scottish east coast from St Cyrus in Aberdeenshire, through Angus and Fife south to Dunbar in East Lothian. The scale and extent of development, if consented, is unprecedented within Scotland (onshore or offshore) in recent times.

This forms the context to any resubmission.

Approach to wind farm design

Seascape, landscape and visual interests are addressed in chapter 17 of Neart na Gaoithe's scoping report. It would have been helpful if this had included explanation of the design objectives for Neart na Gaoithe and the approach being taken to wind farm design, taking account of the neighbouring wind farms. We have not yet received any preliminary wirelines for Neart na Gaoithe but it is evident from reviewing those for Inch Cape that the cumulative design issues are likely to intensify with the significant increase in turbine height and drop in turbines numbers.

In particular we note the following:

- The proposed changes will draw particular attention to wind farm design on its own and in combination with other resubmitted proposals in the area.

- Due to the increases in turbine height and spacing, individual turbines will be more easily seen and the rotational blade movement may become more

noticeable.

- The depth of field will also be more apparent; it might be possible to see into the wind farm and potentially pick out the more distant turbines.

- Overall, the visual complexity will increase: this will be of particular concern in relation to views from the closest coastal stretches and nearby coastal settlements.

Information required for reassessment

SNH has produced guidance on scoping for offshore renewables[24] and on *Visual Representation of Wind Farms* (including those offshore)[25]. While this remains relevant, we note that the turbines now being proposed in the Forth & Tay are considerably larger than any others which SNH has considered to date. In this regard, we advise that the following information is likely to be needed to inform and support the reassessment. In respect of Tables 17-6 and 17-7, we advise that a full landscape and visual impact assessment is required and no specific elements of this assessment should be scoped out at this stage in the process.

- **Study area and viewpoints**

SNH broadly accepts the use of a 50km study area, but defers to the local authorities to identify whether there are any sensitive visual receptors located on the border or just beyond, requiring consideration.

- **Coastal character – baseline information**

We advise that Neart na Gaoithe can utilise the baseline coastal character assessment previously undertaken by the Forth & Tay offshore wind developer's group (FTOWDG).

- **Visibility and zones of theoretical visibility**

We consider it would be helpful to explore the changes in visibility from use of larger turbines. In this regard, we suggest that the increase in turbine size could be modelled in appropriate increments (determined by the design process) with the outputs presented on a composite ZTV, or perhaps as individual ZTVs. These could then be compared against the ZTV for the consented scheme which may help us understand if there is any 'step change' to the amount or range of visibility.

- **Viewpoint Selection and Assessment**

[24] Offshore renewables – guidance on assessing the impact on coastal landscape and seascape. SNH (2012). Available from: www.snh.gov.uk/docs/A702206.pdf

[25] Visual Representation of Wind Farms. SNH (2014). Available from: www.snh.gov.uk/planning-and-development/renewable-energy/visual-representation/

We are content with the same viewpoint selection being used as for the previous assessment, but defer to the Local Authorities if there could be need for additional viewpoints from use of the larger turbines.

- **Baseline photography**

We broadly accept continued use of existing baseline photography (collectively produced by FTOWDG), but new photography may be necessary for any views have changed substantially (this would mainly be a risk in relation to inland viewpoints, where changes such as afforestation / deforestation, new power lines or other new development may alter the foreground significantly).

We note that the photographs for viewpoints along the Angus coast – including St Cyrus, Lunan and Arbroath signal tower (viewpoints 2, 6 and 7) – have been taken with the sun to the southeast (when turbines would be viewed partially looking into the sun). We recommend that at least one of these photographs is re-taken to represent the clearer views during late afternoon when the turbines would be front-lit with the sun behind the viewer.

- **Wirelines**

The main effect of an increase in turbine height will be a change in perspective, such that the larger 230m turbines are likely to appear closer in view than the 197m ones. We think it should be possible to explore this quite straightforwardly using analysis based on the increased vertical field of view, and comparing this with the previous assessment. We think it important to explore this issue and would welcome any other ideas on the approach.

- **Photomontages**

It is our understanding that the 230m turbines may have larger circumference (thicker) towers, and there may also be an increase in blade width. The photomontages should address these changes in order to consider whether they make a discernable difference to the appearance of the turbines, particularly in closer views.

- **Lighting**

The landscape and visual impacts of wind farm lighting are not specifically discussed in the scoping report, however, this matter should be included as part of the assessment at application stage.

- **Cumulative impact assessment**

The cumulative impacts of Neart na Gaoithe in combination with Inch Cape and Seagreen are likely to intensify with use of larger turbines. A rigorous design process is therefore imperative in order to address this.

We recommend that consideration is given to Methil and Kincardine wind

demonstration projects particularly in relation to sequential cumulative impacts on coastal transport routes.

We defer to the relevant local authorities to provide up-to-date information on current onshore wind farms to be considered.

APPENDIX D

NATURAL HERITAGE INTERESTS SCOPED OUT OF FURTHER ASSESSMENT

We confirm that we have reviewed our previous advice for all other natural heritage interests – benthic ecology, physical processes and fish of conservation concern. We consider that these receptors can all be scoped out of any assessment for the revised proposals at Neart na Gaoithe on the basis of the following advice:

Benthic interests

The proposed use of fewer, larger turbines at the Neart na Gaoithe wind farm will reduce the scale of habitat loss and / or habitat disturbance so that impacts fall within the 'worst case' previously assessed for all proposed foundation types. The previous 'worst case' assessment was based on use of gravity bases and these have now been removed from the design envelope for Neart na Gaoithe (see section 4.3.2, table 4-2, p25 and table 11-2, 136-137).

As discussed in sections 2.3 and 2.4 (p12-13), a number of conditions apply to the consented scheme and will be transferred to any new consent: these will minimise and mitigate any impacts on benthic ecology. The same is true for the marine licence relating to the transmission works and export cable.

We are satisfied that the scoping report provides full consideration and justification for scoping out benthic interests from further assessment.

Physical processes

For the wind farm, we are satisfied that the proposed use of fewer, larger turbines falls well within the 'worst case' previously assessed and that no updates are needed to metocean modelling or modelling of suspended sediment dispersal. In respect of the transmission works, we note that conditions apply to the relevant marine licence and will be transferred to any new licence. In this regard we do not identify any outstanding matters requiring reassessment.

We are satisfied that the scoping report provides full consideration and justification for scoping out physical processes from further assessment.

Fish of Conservation Concern

We have discussed marine fish with Marine Scotland Science (MSS) and they will provide advice on these interests, particularly in relation to cod, herring and sandeel.

Potential impacts on diadromous fish species (and other qualifying interests of SAC rivers) were fully considered in Appendix D of our 7 March 2014 advice where we set out good practice measures and mitigation options to address any impacts. These recommendations have been adopted via conditions on the Section 36 consent and

marine licences. The conditions will be transferred to any new consent (and licences) so that we require no reassessment in this regard.

We are satisfied that the scoping report provides full consideration and justification for scoping out diadromous fish species (and other qualifying interests of SAC rivers) from further assessment.

Scottish Environment Protection Agency

Advice for Marine Scotland

1.1 We note that this Scoping Opinion is for the offshore components only of the revised Neart na Gaoithe Offshore Windfarm and have reviewed a copy of the Scoping Report 'Neart na Gaoithe Offshore Windfarm Scoping Report' dated May 2017.

1.2 As we only now comment on proposals for works above MLWS which fall under the appropriate Town and Country Planning (Scotland) Act, we have no comments to make on the Scoping Report for the offshore element of this proposal.

1.3 Please refer to our standing advice on marine consultations within guidance document SEPA standing advice for The Department of Energy and Climate Change and Marine Scotland on marine consultations.

1.4 If, after consulting this guidance, you consider that a particular part of this proposal is novel or raises a particular environmental issue relevant to our interests which is not addressed by the standing advice, then we would welcome the opportunity to be re-consulted. Please note that the site specific issue on which you are seeking our advice must be clearly indicated in the body of your consultation request.

1.5 We do note however that the proposed offshore wind farm will require transmission cabling and other associated infrastructure works. We will welcome future engagement through the appropriate Town and Country Planning (Scotland) Acts in due course.

NON STATUTORY CONSULTEES

BT Radio Network Protection

We have studied this Windfarm proposal with respect to EMC and related problems to BT point-to-point microwave links.

The conclusion is that, the Project indicated should not cause interference to BT's current and presently planned radio networks.

Defence Infrastructure Organisation (Second response received 29 June 2017)

I am writing further to the MOD letter to you dated 29th June 2017 objecting to the Neart na Gaoithe Offshore wind farm proposal, as above, due to the unacceptable impact of the turbines on the Air Traffic Control radar and the Precision Approach radar at RAF Leuchars and the Air Defence radar at Remote Radar Head Brizlee Wood. The purpose of this letter is to provide comments on the Neart na Gaoithe Offshore wind farm Scoping Report.[26]

Paragraph 15.2.1.1 Data Spatial Coverage

This paragraph states that *"The location and extent of the Development Area will cover the same portion of airspace assessed within the Original ES……the spatial coverage of the original data describing the aviation environment remain valid for the Development Area in terms of spatial coverage."* I would like to point out that the turbine rotor diameter has increased from the Original ES and as such the rotors associated with any turbines located at positions 10, 11 and 13 (of the wind farm footprint, coordinates as provided by the developer) now encroach on the protection zone of the Precision Approach radar at RAF Leuchars.

Section 15.4 Embedded Mitigation

This paragraph states the "*…range of Embedded Mitigation measures to minimize effects on military and civil aviation within the design envelope for the Original Application and would apply to the Project……Transponder Mandatory Zone (TMZ)…or….infill radar system…"* To be clear, the MOD only agreed to a TMZ as a temporary mitigation measure pending an enduring technical solution e.g. infill radar system, for the original wind farm. The MOD requirement is for an enduring technical

[26] UK02-0504-0673-MRP-NNG SCOPING REPORT 2017-RPT-A1 dated 15th May 2017

solution whether it is for the Original Consented project or the new proposed project. This was made clear to the developer and the Scottish Government regarding the Original Consented project. The MOD would welcome an approach by the developer regarding any potential mitigation for the proposed project. It should not be assumed that any mitigation, temporary or enduring, agreed for the Original Consented project is applicable to the new proposed project.

Section 15.5 Consent Condition Commitments

This section states that *"A number of consent conditions were attached to the Consents….associated with the Originally Consented Project…..any future consents issued to the Project may incorporate similar conditions…"* The Originally Consented project had an Air Traffic Control (RAF Leuchars) mitigation scheme condition. It should not be assumed that this condition can be applied to the new Proposed project. In addition, there may be a requirement for mitigation to address the impacts of the new proposed wind farm project on the Precision Approach Radar at RAF Leuchars and the Air Defence radar at Remote Radar Head Brizlee Wood – which could lead to suitable planning conditions. The developer will need to liaise with the MOD regarding the MOD objections to the new proposed project and provide precise turbine location, hub height and rotor diameter so a more detailed assessment can be completed and the impacts on MOD radar defined.

Table 15-4 Summary of potential effects on Military and Civil Aviation

The table states – under *Construction - "Increase in risk due to clutter resulted from resulted turbine signals and reduced detectability of aircraft…"* as being applicable to RAF Leuchars Primary Surveillance Radar, Precision Approach Radar, and RAF Brizlee Wood Air Defence radar. The residual impact is classified as *"Not significant"*. For the avoidance of any doubt, rotating turbine blades can create clutter to the radars and this is the cause of the MOD objections. Therefore, for the residual impact classification to be *"Not significant"*, the rotor blades during the Construction phase of the turbines/wind farm should not rotate. If the blades were to rotate during the Construction phase of the turbines/wind farm should not rotate. If the blades were to rotate during the Construction phase then the classification would need to be raised to Significant. The MOD would welcome confirmation as to whether the turbines will rotate or not during the Construction Phase.

The table states – under *Operation and Maintenance – "Increase in risk due to clutter resulted turbine signals and reduced detectability of aircraft…"* as being applicable to RAF Leuchars Primary Surveillance Radar (PSR), Precision Approach Radar (PAR), and RAF Brizlee Wood Air Defence (AD) radar. The residual impact is classified as *"Not significant"*. The justification for the PSR being classified as *"Not significant*" is based on the mitigation agreed for the Original Consented project. It cannot be assumed that the mitigation agreed for the Original Consented Project is

applicable to the new proposed project. The justification for the PAR being classed as *"Not significant"* is because the developer "…*has committed to ensuring that no turbines will be built within the PAR safeguarded zone."* As previously mentioned, the rotors associated with any turbines located at positions 10, 11, and 13 encroach on the protection zone of the PAR at RAF Leuchars. The developer will need to consider these elements of the MOD objection. Therefore, the MOD would welcome engagement as to how the developer proposed to address any PSR and PAR issues.

Please be aware that the MOD objection and comments are based on the turbine and wind farm parameters as provided by the developer. The MOD would welcome definitive and precise turbine locations, hub heights and rotor diameter information so a more accurate assessment can be completed. The MOD will then be able to provide a more definitive position. The MOD will also work with the developer regarding the MOD issues should they be wish to engage.

Defence Infrastructure Organisation (First response received 29 June 2017)

Thank you for consulting the Ministry of Defence (MOD) about the above Section 36 application in your communication dated 29th May 2017.

I am writing to advise you that the MOD objects to the proposal. Our assessment has been carried out on the basis that there will be up to 56 turbines, 230 metres in height from ground level to blade tip and located within the boundary points detailed below:

Turbine	Easting	Northing
1	379543	711295
2	380498	707603
3	380996	705784
4	383306	702378
5	390415	702272
6	390225	703650
7	386957	709452
8	387727	710496
9	384875	715554
10	383305	714826
11	383059	713545
12	382443	712393

13	380858	713044
14	379931	710324
15	381639	704855
16	387266	702366
17	389298	705297
18	387891	707779
19	376289	713051

Air Traffic Control (ATC) Radar

The turbines will be 34.3 – 47.6km from, detectable by, and will cause unacceptable interference to the ATC radar used by RAF Leuchars.

Wind turbines have been shown to have detrimental effects on the performance of Primary Surveillance Radars. These effects include the desensitisation of radar in the vicinity of the turbines, and the creation of "unwanted" aircraft returns which air traffic controllers must treat as aircraft returns. The desensitisation of radar could result in aircraft not being detected by the radar and therefore not presented to air traffic controllers. Controllers use the radar to separate and sequence both military and civilian aircraft, and in busy uncontrolled airspace radar is the only sure way to do this safely. Maintaining situational awareness of all aircraft movements within the airspace is crucial to achieving a safe and efficient air traffic service, and the integrity of radar data is central to this process. The creation of "unwanted" returns displayed on the radar leads to increased workload for both controllers and aircrews, and may have a significant operational impact. Furthermore, real aircraft returns can be obscured by a turbine's radar return, making the tracking of both conflicting unknown aircraft and the controllers' own traffic much more difficult.

An operational assessment of this proposal has been conducted by an ATC subject Matter Expert (SME) who considered the position of the turbines weighed against a number of operational factors. Close examination of the proposal has indicated that the proposed turbines would have a significant and detrimental effect on operations and on the provision of air traffic services at RAF Leuchars. MOD therefore objects to the development at Neart Na Goithe. The reasons for this objection include, but are not limited to:

I. Restrictions the development would impose upon departure routes including Standard Instrument Departures (SIDS)
II. Restrictions the development would impose upon approach and arrival procedures
III. Restrictions the development would impose upon traffic patterns, in particular the Radar Training Circuit
IV. Restrictions the development would impose upon traffic patterns, in particular

the Radar to Visual profile

V. Restriction the development would impose upon LARS traffic patterns
VI. The frequency of the provision of Traffic Service and Deconfliction Service in the vicinity of the proposed windfarm
VII. Air traffic density in the vicinity of the proposed windfarm
VIII. The performance of the radar
IX. The complexity of the ATC task
X. The workload of controllers
XI. The position of the development in relation to handover points.

Precision Approach Radar

An assessment of the boundary positions in relation to the PAR at RAF Leuchars has determined that turbine positions 10, 11 and 13 would encroach on the protection zone for the PAR.

Turbine 10 - up to 33.29m of the blade will be inside the safeguarded zone.

Turbine 11 - up to 53.09m of the blade will be inside the safeguarded zone.

Turbine 13 - up to 59.47m of the blade will be inside the safeguarded zone.

The MOD's PAR is a very accurate radar used by air traffic controllers to guide aircraft down in inclement weather (although the procedure is practised in all weather conditions). The accuracy and integrity of this radar is critical as air traffic controllers must control the aircraft in descent and very close to the ground. Wind turbines constructed in line of sight of the PAR can cause localised “track seduction”, leading to aircraft disappearing from the radar. A further possible effect is the overload of the radar's processor, in that wind turbines generate "false plots" which use up processing ability. Once its threshold is reached the radar may be unable to detect smaller targets, which are likely to be aircraft in head-on profile. Hence the MOD will object to any wind turbine constructed within the PAR's coverage. Technical details of the PAR are covered by International Traffic in Arms Regulations, and therefore cannot be released by the MOD,

Air Defence (AD) radar

Several of the turbines will be 91.7 – 106.0km from, detectable by, and will cause unacceptable interference to the AD radar at RRH Brizlee Wood.

Wind turbines have been shown to have detrimental effects on the operation of radar. These include the desensitisation of radar in the vicinity of the turbines, and the creation of "false" aircraft returns. The probability of the radar detecting aircraft flying over or in the vicinity of the turbines would be reduced, hence turbine

proliferation within a specific locality can result in unacceptable degradation of the radar's operational integrity. This would reduce the RAF's ability to detect and deter aircraft in United Kingdom sovereign airspace, thereby preventing it from effectively performing its primary function of Air Defence of the United Kingdom.

Close examination of the proposal has indicated that the proposed turbine(s) would have a significant and detrimental affect on AD operations. The MOD therefore has concerns with the development. The reasons for this objection include, but are not limited to:

I. Several of the turbines within the proposed development are in radar line of sight of the radar.
II. The number of turbines visible to the radar a RRH at Brizlee Wood would exceed our 'cumulative threshold'.

The MOD will work with the developer to identify any potential suitable solutions which may allow its objections to be mitigated.

If the developer is able to overcome the issues stated above, the MOD will request that the turbines are fitted with aviation lighting in accordance with Article 219 of the Air Navigation Order.

MOD Safeguarding wishes to be consulted and notified about the progress of planning applications and submissions relating to this proposal to verify that it will not adversely affect defence interests.

I hope this adequately explains our position on the matter. Further information about the effects of wind turbines on MOD interests can be obtained from the following website:

MOD: https://www.gov.uk/government/publications/wind-farms-ministry-of-defence-safeguarding

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Defence Infrastructure Organisation (Response received 27 June 2017)

Thank you for consulting the Ministry of Defence (MOD) about the above planning application in your communication dated 29th May 2017.

I am writing to advise you that the MOD objects to the proposal. Our assessment has

been carried out on the basis that there will be up to 56 turbines, 215 metres[27] in height from ground level to blade tip and located within the boundary points detailed below:

Turbine	Easting	Northing
1	379543	711295
2	380498	707603
3	380996	705784
4	383306	702378
5	390415	702272
6	390225	703650
7	386957	709452
8	387727	710496
9	384875	715554
10	383305	714826
11	383059	713545
12	382443	712393
13	380858	713044
14	379931	710324
15	381639	704855
16	387266	702366
17	389298	705297
18	387891	707779
19	376289	713051

Air Traffic Control (ATC) Radar

The turbines will be 34.3 – 47.6km from, detectable by, and will cause unacceptable interference to the ATC radar used by RAF Leuchars.

Wind turbines have been shown to have detrimental effects on the performance of Primary Surveillance Radars. These effects include the desensitisation of radar in the vicinity of the turbines, and the creation of "unwanted" aircraft returns which air traffic controllers must treat as aircraft returns. The desensitisation of radar could result in aircraft not being detected by the radar and therefore not presented to air traffic controllers. Controllers use the radar to separate and sequence both military and civilian aircraft, and in busy uncontrolled airspace radar is the only sure way to do this safely. Maintaining situational awareness of all aircraft movements within the airspace is crucial to achieving a safe and efficient air traffic service, and the integrity of radar data is central to this process. The creation of "unwanted" returns displayed on the radar leads to increased workload for both controllers and aircrews, and may

[27] The Scoping Report states the maximum rotor tip height above LAT (m) will be approximately 230m

have a significant operational impact. Furthermore, real aircraft returns can be obscured by a turbine's radar return, making the tracking of both conflicting unknown aircraft and the controllers' own traffic much more difficult.

An operational assessment of this proposal has been conducted by an ATC subject Matter Expert (SME) who considered the position of the turbines weighed against a number of operational factors. Close examination of the proposal has indicated that the proposed turbines would have a significant and detrimental effect on operations and on the provision of air traffic services at RAF Leuchars. MOD therefore objects to the development at Neart Na Goithe. The reasons for this objection include, but are not limited to:

I. Restrictions the development would impose upon departure routes including standard Instrument Departures (SIDS)
II. Restrictions the development would impose upon approach and arrival procedures
III. Restrictions the development would impose upon traffic patterns, in particular the Radar Training Circuit
IV. Restrictions the development would impose upon traffic patterns, in particular the Radar to Visual profile
V. Restriction the development would impose upon LARS traffic patterns
VI. The frequency of the provision of Traffic Service and Deconfliction Service in the vicinity of the proposed windfarm
VII. Air traffic density in the vicinity of the proposed windfarm
VIII. The performance of the radar
IX. The complexity of the ATC task
X. The workload of controllers
XI. The position of the development in relation to handover points.

Air Defence (AD) radar

Several of the turbines will be 91.7 – 106.0km from, detectable by, and will cause unacceptable interference to the AD radar at RRH Brizlee Wood.

Wind turbines have been shown to have detrimental effects on the operation of radar. These include the desensitisation of radar in the vicinity of the turbines, and the creation of "false" aircraft returns. The probability of the radar detecting aircraft flying over or in the vicinity of the turbines would be reduced, hence turbine proliferation within a specific locality can result in unacceptable degradation of the radar's operational integrity. This would reduce the RAF's ability to detect and deter aircraft in United Kingdom sovereign airspace, thereby preventing it from effectively performing its primary function of Air Defence of the United Kingdom.

Close examination of the proposal has indicated that the proposed turbine(s) would

have a significant and detrimental affect on AD operations. The MOD therefore has concerns with the development. The reasons for this objection include, but are not limited to:

I. Several of the turbines within the proposed development are in radar line of sight of the radar.
II. The number of turbines visible to the radar a RRH at Brizlee Wood would exceed our 'cumulative threshold'.

Research into technical mitigation solutions is currently on going and the MOD will work with the developer to identify suitable solutions which may allow its objections to be mitigated.

If the developer is able to overcome the issues stated above, the MOD will request that the turbines are fitted with aviation lighting in accordance with Article 219 of the Air Navigation Order.

MOD Safeguarding wishes to be consulted and notified about the progress of planning applications and submissions relating to this proposal to verify that it will not adversely affect defence interests.

I hope this adequately explains our position on the matter. Further information about the effects of wind turbines on MOD interests can be obtained from the following website:

MOD: https://www.gov.uk/government/publications/wind-farms-ministry-of-defence-safeguarding

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Defence Infrastructure Organisation (Response received 22 June 2017)

Please accept this email as confirmation that the Defence Infrastructure Organisation (DIO), on behalf of the Ministry of Defence (MOD), wishes to be considered a consultee and be duly notified of the project updates.

DIO recognises that matters appertaining to the MOD are considered in the Scoping Report at Chapter 15. However, the increase in turbine height and blade length may cause issue not previously identified with the existing consented wind farm.

Please note that, at this time, the MOD has not conducted a new technical and

operational assessment of the revised development, and as such, is unable to comment on whether any previously agreed Condition(s) of the original consent would be applicable.

The MOD will conduct an assessment and when completed will respond to MS and the developer. Please note that the MOD position is based upon the information provided to it by the developer and that individual turbine locations have not been provided at this time (I understand they are unknown).

The MOD will continue to work with the developer to ensure that the MODs concerns are addressed.

Forth District Salmon Fishery Board

The Forth District Salmon Fishery Board (or the Board) was established under the 1862 and 1868 Salmon Fisheries Legislation, then subsequently amended in the Salmon Act 1986 and the Salmon Conservation (Scotland) Act 2001. This legislation has been recently amalgamated under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 (or Salmon Acts). The Board is empowered under legislation to take such act as it considers expedient for the protection, enhancement and conservation of stocks to salmon and sea trout. It also has a duty to ensure the general protection and enhancements of the Forth Fishery.

The Board is responsible for more than 3,600 km² of water within the district, the area includes mainstem of the River Forth, the estuary and coast, and all tributaries.

We would respond to your scoping opinion request as follows:

Scoping Questions – Fish and Shellfish Ecology

1. Do you agree that the existing data available to describe the Fish and Shellfish Ecology baseline remains sufficient to describe the physical environment in relation to the Project?

   No. There is insufficient data available on the potential impact of construction on salmonid (Atlantic salmon and seat trout) migrations.

2. Do you agree that, in all cases, the assessment scenarios previously applied in conducting the Original EIA represents the worst-case scenarios when compared to the Project?

3. Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Fish and Shellfish Ecology receptors?

   No. There is not enough detail on the proposed mitigation, and the mitigation is potentially founded on a misunderstanding of the quoted references.

4. Do you agree that the assessment of Fish and Shellfish Ecology receptors should be scoped out of the Project EIA?

   No. Currently, there is insufficient mitigation to scope these receptors out of the Project EIA. This applies with regard particularly to Atlantic salmon and sea trout. The Scoping Report has stated, without sufficient evidence, that these species are unlikely to be present in the development area. The following statement is given on page 154 of the Scoping Report:

   'It has been thought likely for some time that adult Atlantic salmon migration routes follow the coastline and recent research has confirmed this to be the case (Malcolm *et al.*, 2010; and Malcolm *et al.*, 2013). As such, it is concluded that it is unlikely Atlantic salmon will be found in the Development Area.'

   However, the cited reports state that the movements of Atlantic salmon on their seaward and landward migrations are not known. It is our view that there is a high likelihood of these species being present in the development area on at least one, if not both, of their migrations. The impact of the development on diadromous fish should therefore be assessed comprehensively, through undertaking tracking studies to determine conclusively their likely use of the affected area.

5. Do you agree that the cumulative effects on Fish and Shellfish Ecology receptors should be scoped out of the Project EIA?

   No. Currently, there is insufficient mitigation to scope these receptors out of the Project EIA. However, we recognise that the field of salmonid coastal and marine movement is not well understood.

General comments

1. With regarding to scoping out of salmonid avoidance behaviour during piling, Harding *et al.* (2016) present information that salmonid hearing is not sensitive, however, Knusden *et al.* (1997) do demonstrate avoidance reactions in pacific salmonids at infrasound levels (10hz). Scientific evidence is therefore not definitive in identifying the impact of piling on salmonid behaviour. A piling

strategy is proposed, but this would require further assessment with regard to the impact on salmonids.

2. The site is offshore, but the cable corridor is not. Both have the potential to impact on salmonids and the scoping document appears to assume salmonids will only be affected by the coastal operation.

3. Malcolm *et al.* 2010 highlights the paucity of usable post-smolt migration data for the Scottish context. However, it does proposed that post-smolts head straight for open water. This pattern of movement has been further supported by the Moray Firth tracking data. Page 154 of the scoping report represents, in the Board's opinion, a contrary understanding of the Malcolm reports quoted.

4. Figure in Malcolm 2010, and supporting text, suggests that the large fraction of returning adult east coast salmon move from south to north (Northumberland to Tayside), with only a small portion of that movement entering the Firth of Forth. This presents the possibility that a major migratory route may be impacted during construction.

5. In relation to points 3 and 4, these have not been appropriately assessed within the scoping document. There is some data available, but this is not sufficient to support a definitive conclusion of impacts of the proposed development on salmonid populations.

6. The research field of salmon movement in relation to transition from open water-coastal-river entry of both outward and inward migration is still poorly understood.

It is the Board's opinion that the available information cannot definitively conclude the impacts of the windfarm on juvenile and adult migratory routes. It is our view that it would be appropriate to use this development as an opportunity to further the understanding of salmonid movements, rather than use this lack of information as grounds for an objections.

Historic Environment Scotland

Thank you for your consultation which we received on 29 May 2017 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 authorities' 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

I understand that the proposed development comprises relevant proposals for the Neart na Gaoithe Off-shore Wind Farm and associated transmission works, located in the outer Firth of Forth, 15.5km east of Fife Ness. It is my understanding that the revised scheme will consist of an array of up to 56 turbines, with an anticipated approximate height to tip of 230m.

We welcome the clear description of the alterations to the scheme from the consented scheme as presented in the scoping report.

Scope of assessment

Direct impacts

I can confirm that there are no marine of terrestrial heritage assets within our remit located within the proposed development area.

We note that it is proposed to scope direct impacts on marine archaeology out of the EIA assessment. In light of the previous survey work undertaken, and the detailed baseline data available, we are content that this is acceptable for our interests.

We welcome the identified mitigation measures for direct impacts. These include archaeological exclusion zones, a written scheme of investigation, and a protocol for archaeological discoveries. We would be happy to provide comments on any of these elements of the scheme.

Impacts on setting

We can also confirm that there are a number of terrestrial heritage assets within a seascape setting in the vicinity of the proposed development area which may be affected by the proposals.

There is the potential for cumulative impacts on the setting of terrestrial heritage assets caused by the development of this wind farm in combination with other existing and proposed off-shore wind farms in the area. In this case, we would also recommend that cumulative impacts are carefully considered.

We welcome the fact that impacts on the setting of cultural heritage assets are to be

scope in to the assessment, and that reference has been made to our revised Managing Change guidance note on 'Setting' in the Scoping Report.

We also note that potential cumulative effects have also been identified for assessment. We support this approach and also welcome where it is proposed to ensure that appropriate mitigation is embedded into the revised scheme.

We hope this is helpful. Please contact us if you have any questions about this response.

National Air Traffic Services

The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.

However, please be aware that this response applies specifically to the above consultation and only reflects the positions of NATS (that is responsible for the management of en route air traffic) based on the information supplied at the time of this application. This letter does not provide any indication of the position of any other party, whether they be an airport, airspace user or otherwise. It remains your responsibility to ensure that all the appropriate consultees are properly consulted.

If any changes are proposed to the information supplied to NATS in regard to this application which become the basis of a revised, amended, or further application for approval, then as a statutory consultee NERL requires that is further consulted on any such changes prior to any planning permission or any consent being granted.

River Tweed Commission

I write in response to the Scottish Government's consultation on the Neart na Gaoithe Offshore Windfarm in respect of the Electricity Act 1989 [The Electricity Works {Environmental Impact Assessment}{Scotland} Regulations 2017 and The Electricity {Applications for Consent} Regulations 1990] and the Marine (Scotland) Act 2010 [The Marine Works {Environmental Impact Assessment}{Scotland} Regulations 2017.

Generally, the RTC notes that any mention of the Tweed SAC has been omitted from this revised Report, although it was covered in the original.

In answer to the Scoping Questions, Item 12.8, the RTC comments as follows:-

1. Do you agree that the existing data available to describe the Fish and Shellfish Ecology baseline remains sufficient to describe the physical environment in relation to the Project?

   No. New information has become available since then showing that the bases of wind turbines, as artificial reefs, attract both Gray and Harbour seals to hunt around them (Russell et al., 2014). No consideration of this issue was made in the original application where not significant effects were considered to be possible from the presence of underwater structures on the salmon populations in the area (# 203 & #204).

2. Do you agree that, in all cases, the assessment scenario previously applied in conducting the Original EIA represents the worst-case scenarios when compared to the Project?

   No. See above.
   Also relevant to this point is that the report on the migratory movements on salmon (Malcolm et al, 2010) utilised in this report omitted data that showed fish tagged on the coast of Norway returning to the east coast of Scotland, with recaptures at St. Abbs Head and in the River Tweed as well as further north. (Dahl 1936 & 1937). Salmon returning in this way would pass through the project area.
   In Malcolm et al (2010) it is stated that "As far as the authors are aware, no tagged Scottish Atlantic Salmon have been observed on the Norwegian coast." While this observation applies to Scottish salmon tagged in Scottish rivers and coastal waters, it is incorrect as to Scottish salmon tagged in Norwegian waters.
   This omission has been drawn to Dr. Malcolm's attention.

3. Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the Project on the Fish and Shellfish Ecology receptors.

   No, as the influence of underwater structures on predation was not considered in the original report and the data used on the migration routes of adult salmon was defective.

4. Do you agree that the assessment of Fish and Shellfish Ecology receptors

should be scoped out of the Project EIA?

No. New information is now available on how marine wind turbines alter the foraging pattern of seals and may attract them in to areas they would otherwise have passed by and this needs to be considered, see Russell et al (2014). The diagram taken from this paper, below, clearly shows wind turbines to attract seals.

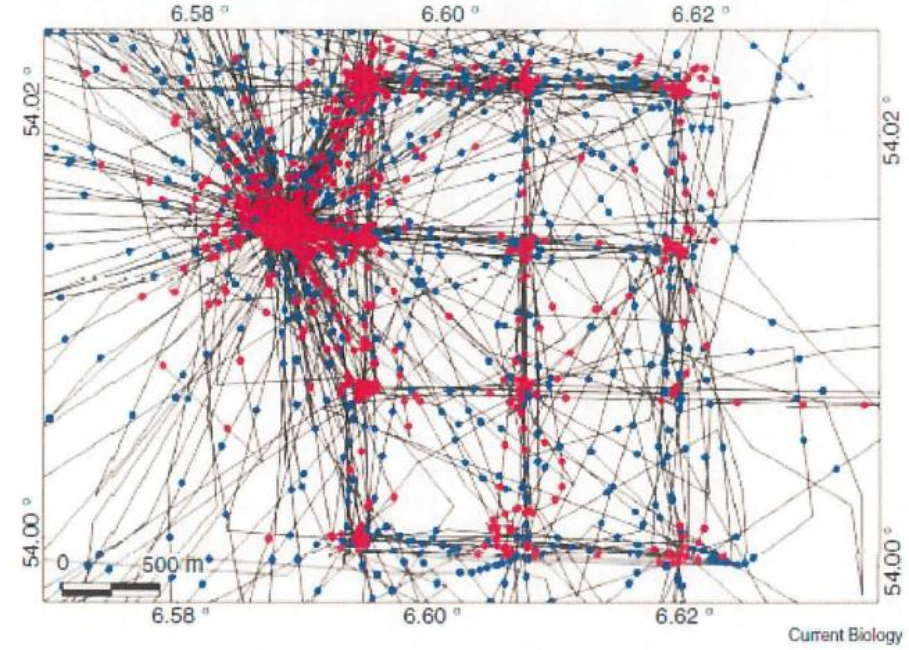

Figure 1. The tracks of a harbour seal around Alpha Ventus windfarm.
Points show locations at 30 minute intervals; red indicates higher chances of foraging (*p*(foraging) > 0.5) as predicted by our state-space model and blue higher chances of travelling. The individual appears to forage at all 12 turbines and the meteorological mast (constructed in 2003) to the west of the windfarm.

These authors also state: "The finding that a proportion of seals adjust their behaviour to make use of anthropogenic structures raises questions regarding the attributes of these individuals and the ecological consequences of such behaviour." And "The windfarms considered here are new, and prevalence of such behaviour may increase with time, especially if the artificial reefs are not yet fully established. Event at the levels of prevalence within our sample, this behaviour is likely to be displayed by a larger number of individuals given that the population of Harbour Seals in the North Sea is estimated as 55,000 and 65,000 Gray Seals are estimated to haul out on the British coast of the North Sea alone."

5. Do you agree that the cumulative effects on Fish and Shellfish Ecology

receptors should be scoped out of the Project EIA?

No. There has been no consideration of the interactions of structures, predator behaviour and fishes, and the data on the migratory pathways utilised by adult salmon on which the original conclusions were made was defective. No consideration either was given in the original report to smolt migration.

REFERENCES

Dahl, K., 1936: Salmon Marking in Norway. Salmon & Trout Magazine No. 85, Dec. 1936

Dahl, K., 1937: Salmon migrations off Norway. Salmon & Trout Magazine No. 88

Malcolm, I., Godfrey, J. and Youngson, A.F. 2010. Review of migratory routes and behaviour of Atlantic salmon, sea trout and European eel in Scotland's coastal environment: implications for the development of marine renewables. Scottish Marine and Freshwater Science Report, 1(14).

Russell, D.J.F. et al, 2014: Marine Mammals trace anthropogenic structures at sea. Current Biology, Vol 24(14).

The RTC would also note the following:

a. Why is there no mention of smolt migration? These routes are unknown, but the fish must pass from the East coast across the North sea at some time.

b. Malcolm 2010 (Page 6) noted that Salmon post-smolts originating from Scottish rivers inevitably use near-shore areas at the commencement of the marine migration. However, based on currently available information it is not possible to describe how migratory routes vary with river of origin or to define the duration or extent of their initial dependence on near and off-shore areas. In particular, there is a notable lack of knowledge on the use of routes in the North Sea by post-smolts leaving the dominant salmon rivers of eastern Scotland. Sampling of the likely relevant areas was not included in the SALSEMerge intiative. Accordingly, as matters stand, there is limited information available on the major migratory routes of salmon post-smolts leaving Scottish rivers and the subject area remains poorly understood.

   Page 7 states that none of the above studies provide information on swimming depths. Davidsen *et al.* (2008) manually tracked eight hatchery reared Atlantic salmon post-smolts, again in a fjord in Norway, this time using implanted acoustic depth-sensing transmitters. The fish were tracked for

between 5 and 12 hours. Recorded swimming depths ranged between 0 and 6.5m while the percentage of time spent between 1 and 3m ranged from 49-99% during daylight for all fish. There were large variations in the swimming depths of individuals; four of the smolts swam closer to the surface when light levels were lower, being found at <0.5m depth during night time whilst three of the smolts remained at 2-3m throughout tracking. In similar work by Plantalech Manel-La *et al.* (2009), eight hatchery-reared salmon smolts were tagged with depth sensitive acoustic tags. The study was conducted in the Hardangerfjord system in Norway using manual tracking procedures. The fish did not migrate directly out of the fjord. Mean migration efficiency, calculated as the direct distance divided by the travelled distance, was 39%. The mean swimming depth was 1.7m although fish made regular vertical movements. The greatest measured swimming depth was 5.6m, despite a mean fjord depth of 150m and a maximum depth of 800m. Swimming depth did not appear to relate to salinity, but may have been associated with water temperature since post-smolts appeared to use the warmer surface layers.

However, it is possible to identify some common findings across studies. Post-smolts were always observed to migrate rapidly and actively towards open marine areas after leaving their source rivers. They did not appear to closely follow nearby shores, although this may occur where coastal currents are substantial in this area. For the few studies where swimming depth was report, it appears that post-smolts generally utilise shallow depths (typically 1-3m, but up to 6m). This latter observation is consistent with the effectiveness of sea surface trawls in catching post-smolts.

2.3 Salmon Migration in Distant Waters. The use of the marine environment by sub-adult and adult salmon outside Scottish waters is of interest because it may provide some indication as to the direction and routes used on return. Again, however, it should be noted that available information is relatively scarce and based largely on tagging studies from only two major fisheries 8 – in Greenland (primarily West Greenland) and the Faroes. These fisheries provide only limited geographic coverage of a potentially much wider area of marine distribution in the North Atlantic area (Fig. 3).

On Page 10 it is noted that at a later stage, MSW fish caught at Faroe may have been returning to Scotland from Greenland. This is of significance because fish returning from or via Faroese waters are likely to approach the Scottish coast from a predominantly north-westerly direction.

It therefore remains possible that Scottish fish maturing at a sea-age of 1SW or MSW return towards the Scottish coast from a wide range of locations and across a broad range of headings. Current research work due to report under the EU funded.

In summary, tagged Scottish Atlantic salmon have been observed at locations extending from Labrador in the west to Faroe in the east. *As far as the authors are aware, no tagged Scottish Atlantic salmon have been observed on the Norwegian coast.** However, large proportions of Scottish MSW salmon are estimated to be present in West Greenland and Faroe. Adopting a conservative stance for the purposes of this report, it is necessary to consider that fish of both the 1SW and MSW sea-age classes may return towards Scottish coasts across a broad front. The available evidence indicates that the marine origins of the fish are likely to be highly biases towards a range of locations to the north and west of the British Isles.

**Not included in this review are adult salmon tagged on the Norwegian coast which subsequently returned to the Tweed and Forth, and which could have come through the area of the proposed development. (Dahl, K., 1936 & 1937). The presumption is also that smolts are not regarded as an issue as they travel near the surface, although a note on why they have not been considered would have been of help.*

Royal Society for the Protection of Birds

RSPB Scotland welcomes this opportunity to comment on the scoping report for the above noted proposed offshore windfarm.

We recongise the significant reduction in turbine numbers of this new application when compared with the original consented project. The scale of potential impacts to seabirds is also likely to be reduced in line with these changes. However, this project is located within an environmentally sensitive region, overlaps with 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 colony SPAs. We therefore continue to have significant concerns with the risks this project poses to these seabird populations. In addition we have concerns with the potential in-combination impacts with other offshore proposals, including the Inch Cape, Seagreen Alpha and Bravo projects.

To assess these risks adequately through the Environmental Impact Assessment and Habitats Regulations Appraisal and 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. In particular the relevant science and environmental information which has emerged since the original project consent was

granted in October 2014.

Following discussions with Marine Scotland, Scottish Natural Heritage, Mainstream Ltd and the other two Firth of Forth developers, we have tried to establish as prescriptive a response as possible at this scoping stage. Our recommendations are included in the detailed annex and are intended to be consistent with those we have and will provide to the other developers.

Further discussion may be required to address some outstanding issues. We are very keen to offer our support where clarification or further discussion is required.

ANNEX: RSPB Scotland Scoping Response – 29th June 2017

1.0 Operational Lifetime

In principle we support seeking to extend the operational lifetimes of offshore wind projects. This could increase renewable energy generation and increase the overall lifecycle efficiencies of large scale renewable infrastructure. However, a proposed operating lifetime of up to 50 years presents challenges to the environmental assessment, which need to be overcome to enable a determination.

Our primary concern is the degree of uncertainty in predicting population scale effects on protected seabird colonies. Confidence in projected population model outputs decreases as time increases. This increasing lack of confidence extending to 25 years and beyond has a direct effect on the decision-makers' ability to reach an ecologically robust conclusion on the potential adverse effects to the Natura network and its protected species. We would welcome further discussion on this topic as mechanisms for addressing the issue may exist.

2.0 Environmental Baseline

2.1 Survey data

The dedicated three-year ornithology site survey data is now between 4.5 – 7.5 years old. We do not request an updated survey, however we highlight the spatial and temporal variability of seabird distributions. As a consequence the survey data may not represent an accurate account of seabird usage within and around the site. This element of uncertainty could increase with time. As the project progresses, if consented, there could be a 7-10+ year gap between baseline and pre-construction surveys. This element of uncertainty must be a consideration within the assessment.

2.2 Impacts and Species Scoped In

Potential Impacts	Species to be included in assessment
Displacement	Puffin Razorbill Guillemot Kittiwake
Barrier	Puffin Razorbill Guillemot Kittiwake
Collision	Kittiwake Gannet Herring Gull Great Black Backed Gull Lesser Black Backed Gull

2.3 Cumulative/In-combination Assessment

To undertake this part of the assessment a worst case scenario must be established. All three Forth and Tay developers have indicated their intention to submit new alternative designs with fewer, larger turbines. However, all four project consents issued in 2014 could still be progressed.

Working on the above basis and with the assumption that the 2014 projects have the greatest potential impact to birds, we would suggest the worst-case scenario is the Neart na Gaoithe revised development plus the Inch Cape and Seagreen Alpha and Bravo consented projects issued in 2014.

Verification will be required to demonstrate the working assumption above; that the 2014 consents are in fact the worst case in terms of impact. Another aspect, which will require further discussion, is that since 2014 there have been changes to the methods of assessing ornithological impacts and these need to be accommodated.

3.0 Assessment Methodologies

3.1 Reference Populations

The RSPB holds the results of an extensive seabird tracking programme. The information could provide additional evidence of seabird foraging distances. Information that can be used to identify reference populations for assessment purposes.

We have previously raised the potential of providing analysed information on foraging ranges to support the assessment. We will seek to provide this in due course.

3.2 Displacement

We defer to the guidance provided by SNH on the various attributes for undertaking a displacement assessment.

3.3 Barrier

We defer to the guidance provided by SNH on the various attributes for undertaking a assessment of barrier impacts.

3.4 Collision risk modelling

At present Band (2012) is the preferred model for undertaking the collision risk assessment.

Model Options: We recommend use of the following model options and species specific avoidance rates. These recommendations align with SNH guidance, (as detailed in *Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review* 2014) except for our request to also present collisions for gannet applying a 98% avoidance rate during the breeding season. This is to account for the fact that the evidence presented in Cook *et al.* (2014)[28] for a change in avoidance rate for gannet was based almost entirely on non-breeding birds and such is considered to ensure suitable precaution is applied in the assessment. This is in contrast to other species where the BTO review's evidence base included breeding birds. We also recommend the use of confidence measures as described in the SNCB guidance.

Species	Basic model	Extended model
Gannet	98.9% non-breeding & 98.0% breeding	n/a
Kittiwake	98.9%	n/a
Lesser black backed gull	99.5%	98.9%

[28] Cook, A.S.C.P., Humphreys, E.M., Masden, E.A. and Burton, N.H.K. 2014. The avoidance rates of collision between birds and offshore turbines. BTO Research Report No. 656.

Herring gull	99.5%	99.0%
Great black-backed gull	99.5%	98.9%

Nocturnal activity: We recommend that values are used as per the previous 2013/14 guidance provided by SNH. While, in line with Hamer 2009[i29] we accept that gannets rarely forage at night, (although note that Warwick-Evans *et al.*(2015)[30] recorded some plunge dives outwith sunrise and sunset) we do not accept the suggested change for breeding gannet (rate of 1 which equates to 0%), unless a detailed breakdown of the timing of surveys is presented. This is because including a proportion of birds flying at night compensates for the likely under-recording of birds associated with peaks in foraging activity outwith the survey timings.

For example, Warwick-Evans *et al.*, (2015)[31] reported that activity associated with foraging by plunge diving, when collision risk is greatest[32], was highest between 0500 and 0600 and between 1900 and 2000 GMT. The purpose of differentiating between night-time and daytime flight activity, as detailed in the Bond Model Guidance, is simply to separate between times when surveys take place ("daytime") and where they do not ("night-time") and the flight activity factor applied is a correction for this. In the absence of presentation timings for when the original surveys were carried out, it is unlikely they carried out surveys so far from shore between 0500 and 0600, and to a lesser extent between 1900 and 2000. As such the results for gannet could omit a large part of flight activity and therefore produce a potentially serious underestimation of collision risk. Reducing the nocturnal activity rating to 0% is therefore not considered sufficiently precautionary.

[29] Hamer, K. C., et al. "Fine-scale foraging behaviour of a medium-ranging marine predator." *Journal of Animal Ecology* 78.4 (2009): 880-889.
[30] Warwick-Evans, V., Atkinson, P.W., Gauvain, R.D., Robinson, L.A., Arnould, J.P.Y. & Green, J.A. (2015) Time-in-area represents foraging activity in a wide-ranging pelagic forager. Marine Ecology Progress Series, 527, 233-246.
[31] Warwick-Evans, V., Atkinson, P.W., Gauvain, R.D., Robinson, L.A., Arnould, J.P.Y. & Green, J.A. (2015) Time-in-area represents foraging activity in a wide-ranging pelagic forager. Marine Ecology Progress Series, 527, 233-246.
[32] Cleasby, I.R., Wakefield, E.D., Bearhop, S., Bodey, T.W., Votier, S.C., & Hamer, K.C. (2015). Three dimensional tracking of a wide-ranging marine predator: flight heights and vulnerability to offshore wind farms. Journal of Applied Ecology, 52(6), 1474-1482.

Summer

Breeding season:	As per SNH guidance.
Boat based bias:	We support SNH's current position of not accounting for boat based biased as there is a lack of data to support any assumption.
Proportion from SPA:	As per SNH approach.
Age classes:	Recommend including all age classes as per SNH advice and justification provided below which is equally relevant in this instance.

Winter

It is vital for consideration to also be made to potential impacts during the non-breeding season.

Non-breeding season:	Non breeding season mortality should be detailed.
Boat based bias:	As per above.
Proportion from SPA:	Non-breeding season collision mortality impacts must be considered in the context of the relevant SPA populations. To account for potential in-combination impacts to seabird populations we would also welcome further discussion on how to consider these mortalities in the context of regional BDMPs (east coast region) as listed in Furness, 2015[33]. We state this requirement for non-breeding season impact assessment as the JNCC guidance "The UK SPA network: its scope and content" recognises in the following paragraphs, protection requirements must apply across the year in order for the special conservation measures to achieve their conservation objectives: "A5.5 Qualifying species… In all these and similar instances, the provisions of the Habitats Regulations apply throughout the year, with no implied seasonality. … A5.5.2 Special occurrence… The inclusion of a site within a species suite ensures consideration of the conservation needs and ecological requirements of

[33] Furness, R.W. 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, Number 164.

	the relevant species at all times of year."
Proportion immature birds:	Not to be excluded as per above justification.
Proportion adults:	As above.
Remove winter influx adults:	As per SNH advice
Remove winter influx Immature:	As per SNH advice

3.5 PVAs

Species to be addressed:	As per SNH advice.
Model population:	As per SNH advice.
Type:	Leslie Matrix Model, in either deterministic or stochastic form. If stochastic is used a full justification of how the measures of stochasticity have been incorporated must be provided, and whether the model includes demographic or environmental stochasticity, or both.
Run:	As per SNH advice.
Demographic rates:	As per Horswill & Robinson, 2015[34].
Output metrics:	Present either as formula or table to allow for testing a range of mortality input scenarios. To present counterfactuals as per Cook & Robinson, 2016[35].

3.6 pSPAs

Firth of Forth and St Andrew's Bay Complex proposed SPA (pSPA) requires inclusion in the assessment. The supporting habitats within this pSPA are especially relevant and sensitive to habitat loss from the project infrastructure.

Responses from RSPB and SNH with regard to cable installation works

Response from SNH to RSPB and MS-LOT – 09 August 2017

Thank you for raising your query about SNH advice on the cable installation works for the Forth & Tay wind farms in relation to the Outer Forth and St Andrew's Bay Complex pSPA.

[34] Horswill, C. & Robinson, R.A. 2015. Review of seabird demographic rates and density dependence. JNCC Report No. 552. Joint Nature Conservation Committee, Peterborough.
[35] 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.

In providing our scoping advice to MS-LOT, we considered all possible impacts from the cables on the pSPA. We considered whether designation of the new pSPA would make a material difference to previous assessment or raise any new or different ornithological issues which had not been previously assessed.

We did consider potential loss or damage to supporting habitat and prey species within the pSPA, arising from cable installation, as well as any disturbance to pSPA bird interests. We advise that any habitats or prey disturbed during the cable laying should not take long to recover and we'd note that developers are seeking to minimise the amount of cable protection, if it's used at all. We do not consider that cable installation will give rise to any significant amount of permanent habitat loss. We're satisfied that the previous assessments adequately address cable impacts for each of the Forth & Tay wind farms. The Section 36, marine licence and onshore planning consents, as issued, require submission of a cable installation plan (or cable lay strategy). This will set out good practice working measures and any required mitigation to minimise habitat / prey disturbance and to avoid any significant disturbance of seabirds and waterfowl, including pSPA features of interest.
We therefore do not require further assessment or information from developers in this regard. We do, however, recognise that MS-LOT will need to address cable installation in any new appropriate assessment(s) for the pSPA – hence we've copied them in.

We note that East Lothian Council have undertaken an appropriate assessment for the Inch Cape transmission works (as attached). This addresses the impacts of cable installation on wintering waterfowl as features of the Firth of Forth SPA, and seabirds as features of Forth Islands SPA. In respect of the Outer Forth and St Andrew's Bay Complex pSPA, any new appropriate assessments for Forth & Tay wind farms can be informed by this previous work and the conclusions reached.

Response from RSPB to SNH and MS-LOT – 31 August 2017

Thank you for your email clarifying SNH's position on the assessment of the pSPA. We accept that potential impacts on the pSPA from the export cabling and NNG turbine array could be small, however this doesn't necessarily mean they are insignificant. We consider it necessary that further information be provided to inform the requirements of the Birds & Habitats Directive.

Previous 2013/14 assessment was undertaken to fulfil the requirements of the EIA regulations/ Directive, however we don't consider this to be sufficient to inform the stricter requirements of the Habs Regs and assessing against the new pSPA and its conservation objectives.

The pSPA introduces very specific conservation objectives for maintaining the extent and distribution of supporting habitats and processes. We suggest information on the scale and longevity of effect on these supporting habitats needs to be presented. Some areas within the pSPA are clearly more important than others, as the bird distribution maps and pSPA documentation illustrates. The East Lothian Council HRAs do not provide this information as they relate to SPAs that do not extend beyond the low tide ranges/ or limited to coastal waters around the islands.
From a brief review of existing EIA documents from the old consents the proposals are summarised as follows. All four offshore projects have export cables that cross through the pSPA:

Installation includes:

- Trenching of cables to 2-3m depth wherever possible. Where not possible - use of scour protection/ rock armour/ concrete mattresses etc.
- Trenches up to 1-6m width direct impact per cable.
- Affected width up to 10-15m but could be more – up to 40m.
- Use of boulder clearance ploughs where required. For soft sediments use of trenching ploughs and cable burial ploughs/ jetting trenchers. For hard substrate rock wheel cutters/ HDD or open cut trenching.

Export Cable Lengths:

Inch Cape – 2 cables at 83.3km each.
NnG – 2 cables at 43km each. Total Impact footprint of array and export cable estimated at – 2.65Km2.

This scale of infrastructure deployment within an pSPA is not insignificant.

Furthermore:

Both ICOL and Seagreen have not quantified the scale of affected area that lies within the pSPA as it was not considered first time around. Also, Seagreen have a separate consent for their export cable, which would require inclusion in the HRA. We recommend that all possible impacts from the cables on the pSPA are quantified as far as is practically possible (given baseline data limitations) to inform the Appropriate Assessment.

Advice from SNH to MS-LOT (dated 07 September 2017)

Both MS and SNH have recently received an email from RSPB (31 August 2017)

regarding scoping advice on the cabling works associated with the Forth and Tay proposals and the proposed Special Protection Area (pSPA).

Whist SNH remains of the opinion that the effects arising from the cabling works can be managed to reduce impacts, we realise that there may be insufficient details to inform any appropriate assessments required. The conservation objectives are not yet finalised for the pSPA, however we would recommend that the developers should provide the following information:

- Extent and route of export cable corridors and number of cables.
- Duration and method of cable deployment including start and finish dates.
- Type and number of vessels involved in cable laying operations
- Habitat mapping within cable corridor and the likely prey species of pSPA interests where the cable route crosses the pSPA.
- Use of any cable protection materials – type, location and method of deployment.
- Schedule of operational maintenance checks, types of vessels, duration and timing.
- Any proposed mitigation and inclusion of draft cable laying plan and cable maintenance plan.

Provision of this information can then be used to help inform any appropriate assessment.

Royal Yachting Association (Scotland)

I have read the revised scoping document, particularly section 14 Shipping and Navigation, on behalf of RYA Scotland and make the following response:

1. Should a traffic validation exercise against recent AIS data confirm that there has been no significant change in the Shipping and Navigation baseline the NRA for the Original EIA will remain valid. Since the previous EIA was completed, a new edition of the UK Coastal Atlas of Recreational Boating listed in Table 14.1 has been released (http:www.rya.org.uk/knowledge-advice/planning-environment/Pages/uk-coastal-atlas-of-recreational-boating.aspx). Unlike the previous version, it is based on AIS transmissions as research has shown that about 20% of recreational boats on passage transmit an AIS signal. In locations such as the Neart na Gaoithe wind farm, the tracks of these vessels are considered representative of all recreational boats on passage. If this new dataset is used I see no need to collect additional AIS data for recreational craft. There are also relevant data in the Scottish Marine Recreation & Tourism Survey 2015 (http://www.gov.scot/Topics/marine/seamanagement/national/RecandTourism).

2. I agree that if the NRA remains representative of the baseline then the conclusions of the Original EIA remain valid.

3. The embedded mitigation from the Originally Consented Project and additional measures detailed in the s36 consent and marine licences are appropriate to the potential level of effect from the Project. Since the initial EIA was carried out, a Pilot book for these waters based on the existing Imray *Yachstman's Pilot North and East Scotland* and the Forth Yacht Clubs Association *Pilot Handbook East Coast of Scotland* is currently being prepared for publication by Imray, Laurie, Norie & Wilson Ltd. Incorporation of details of the windfarm in this pilot can be an additional form of mitigation for the operational phase.

4. I agree that the EIA should focus on those receptors considered to be significantly affected by the Project.

5. The relevant Shipping and Navigation receptors, as detailed in Table 14-7 and Table 14-8, can be scoped out of the Project EIA where appropriate.

6. I agree that the embedded mitigation from the Original Consented Project and additional measures detailed in the s36 consent and marine licences are appropriate to the potential level of effect from the Project.

7. I agree with the list of Projects to be scoped in to the Shipping and Navigation CIA for the Project EIA. From the point of view of recreational sailors on passage, the most important projects to be considered are the other Forth and Tay schemes and the Kincardine Floating wind scheme. Hywind is unlikely to have an in-combination effect.

Scottish Fishermen's Federation

The Scottish Fishermen's Federation is pleased to respond to this application on behalf of The 500 plus fishing vessels in membership of its nine constituent associations:- the Anglo Scottish Fishermen's Association, the Clyde Fishermen's Association, the Fife Fishermen's Association, the Fishing Vessel Agents and Owners Association (Scotland) Ltd, the Mallaig and North-West Fishermen's Association, the Orkney Fisheries Association, the Scottish Pelagic Fishermen's Association Ltd, the Scottish White Fish Producers Association Ltd and the Shetland Fishermen's Association.

As the delays in developing the Forth and Tay development proposals have been engineered by the bird NGO, RSPB, the fishing industry feel it appropriate at this time to point out the importance of the area to the timeless human activity of catching fish for food and therefore seek at least the same consideration in the EIA etc. as our feathered friends. This will include in the very near future assessing the economic impact on the fishing industry and developing mitigation measures up to and including financial compensation. This point is further stated as the need for the development in chapter 3.1 avoids the obvious reason, that the development is there to make a profit, and this should not be at the expense of a current sustainable user of the sea.

The SFF therefore contends that the most up to date accurate definition of the commercial fisheries baseline is essential in order to properly assess any impact the development may have, especially as there is not enough of such date available so far in order to show clear relationships between cause and effect regarding offshore Windfarm developments.

Whilst generally agreeing that the Benthic Ecology baseline is adequately defined, the SFF believes that in areas identified as scallop and nephrop grounds, more attention needs to be given to any possible negative impacts on these species by operations that produce suspended sediment and the potential to smother the animals or interfere with their feeding or breeding.

The SFF is concerned that on the fish and shellfish ecology chapter, the development area is said, quoting Marine Scotland data, not to support scallop populations. This is clearly not the case as in the original ES it is noted that there is scallop catching activity, principally at the northern end of the site. Any work which leads to suspension of solids in the water column is likely to affect that areas, so must be clearly assessed.

The table 12 – 4, which shows all effects scoped out, is obviously imperfect. The SFF would contend that habitat disturbance, SSC and sediment settlement in the windfarm area must be properly defined as there is little scientific evidence to back up the claim of minor significance similarly, these effects also need to be assessed for the export cable, and both the windfarm and cable route need to be included in a proper assessment of the cumulative impacts with other projects.

Moving to the commercial fisheries chapter, the SFF welcomes the developments' understanding that the baseline data on commercial fisheries needs to be updated. The SFF would particularly highlight the need to assess scallop activity over a 7 – 10 year cycle to gain a true picture of the fishery; the growth in the squid fishery over the last few years should be considered; the static gear fishery has also grown and in particular the growing modern offshore sector must be defined.

The SFF would recommend that the developers use the construct of the Commercial Fisheries Working Group (CFWG), to verify the updated baselines with a recognised cross section of industry. The SFF would also expect that the CFWG would be the recognised official method for developing and agreeing all the relevant mitigation needed for the commercial fishing industry as a result of the development.

Notwithstanding the fact that there may be less turbines than in the original plans, there will be more cables and the SFF would expect an assessment of both to be given. This assessment should also cover any volume of scour protection to be used and all options for cable protection, taking into account recent work done on the equivalence of sand and rock protections.

The cable routes are also important for defining the impact on fishery in that certain directions of tracks may be more intrusive to fishing activity than others. Finally it should never be underestimated that as fishing does not use 100% of the seabed, the loss of habitat to the development could have a disproportionate effect on one of more fisheries so that should be assessed in tandem with the revised baselines.

Transport Scotland

In regard to your email correspondence dated 29 May 2017, referring to the above application, we acknowledge receipt of the scoping opinion request by Neart na Gaoithe Offshore Wind Limited (NnGOWL).

This information has been passed to CH2M for review in their capacity as Term Consultant to the Transport Scotland Trunk Road and Bus Operations (TRBO). Based on the review undertaken, we would provide the following comments.

We acknowledge that the provided Scoping Report specifies the intention to use existing data and the conclusions of the ES for the Originally Consented Project in the EIA report for the revised Project. As stated in your email, the approach is "intended to focus the revised Project EIA on those potential impacts that are most likely to give rise to significant effects (or where uncertainty exists in relation to the validity of the previous assessments) and thereby avoid revisiting assessments where the conclusions reached previously in the ES for the Originally Consented Project can be shown to be applicable to the Revised Development through the scoping process."

We note that no reference to 'Access, Traffic and Transport' is provided in the Scoping Report and we would advise that an 'Access, Traffic and Transport' chapter is included in the EIA Report. This should be consistent with the approach adopted in the ES prepared for the Originally Consented Project, but updated as required.

We note that Transport Scotland issued a response, dated 21st September 2015, referring to the environmental information submitted in support of the application by Mainstream Renewable Power Ltd. for variation of Section 36 consent granted to construct and operate Neart na Gaoithe Offshore Wind Farm. Given the conclusions of this response, which considered the proposed reduction of the number of turbines to 64, it is anticipated that the construction and operational stages of the currently proposed array of up to 56 turbines, are unlikely to result in any significant traffic impacts or associated issued on the Trunk Road Network.

Transport Scotland note that the conditions advised in the previous response should be considered as part of the current application and referenced appropriately within the EIA Report. These have been included below for reference.

<u>Conditions</u>

1. *Development shall not commence until a Construction Traffic Management Plan has been approved in writing by the Consenting Authority in consultation with Transport Scotland. Thereafter, all construction traffic associated with the*

development shall conform to the requirements of the agreed plan.

2. *The proposed route for any abnormal loads on the trunk road network must be approved by the trunk roads authority prior to the movement of any abnormal load. Any accommodation measures required including the removal of street furniture, junction widening, traffic management must similarly be approved.*

3. *Any additional signing or temporary traffic control measures deemed necessary due to the size or length of loads being delivered must be undertaken by a recognised Quality Assured traffic management consultant, to be approved by the trunk road authority before delivery commences.*

Reasons for Conditions

1. *To maintain safety for both the trunk road traffic and the traffic moving to and from the development.*

2. *To ensure that the transportation of abnormal loads will not have any detrimental effect on the trunk road network.*

3. *To minimise interference with the safety and free flow of traffic on the trunk road.*

Furthermore, Transport Scotland would highlight that Appendix A of the Scoping Report refers to The Section 36 and Marine Licence Consents for the Originally Consented Project, which includes Conditions of the Section 36 Consent. Within this section Transport Scotland would advise that Condition 22, as noted below, is also considered as part of the current application and referenced within the EIA Report.

Condition 22

The Company must, no later than 6 months prior to the Commencement of the Development submit a Traffic and Transportation Plan ("TTP") in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with Transport Scotland and any such other advisors as may be required at the discretion of the Scottish Ministers. The TTP must set out a mitigation strategy for the impact of road based traffic and transportation associated with the construction of the Development. The Development must, at all times, be constructed and operated in accordance with the approved TTP (as updated and amended from time to time, following written approval by the Scottish Ministers).

Reason for Condition

To maintain the free flow and safety of the trunk road network.

Under 10m Association

I have been unable to finish reading the scoping document in the time allowed and have comments I wish to make.

The main points are as follows

1. Since the original scoping consultation there have been additional consents granted to other companies for windfarms in the area and the cumulative effect of these and the impact for displacement of the fishing vessels has to be considered.

2. In assessing the number of vessels fishing in the area of the windfarm and the length of the route of the pipeline the impact on vessels less that 15m in length was ignored. The impact on all inshore fishing vessels must be considered regardless of their size.

3. It is imperative that the cables are buried to a minimum depth of 1-1.5m and that no cost cutting is allowed to impact on that requirement. When laying the cables the grounds are churned up and often large clumps of material are brought to the surface and become a snagging hazard for the trawlers. This potential for such a situation must be considered and mitigation measures put in place.

The comments I made in regard to the original application are still relevant today.

However I am concerned that Marine Scotland has an agenda to facilitate green energy at any cost and fishermen are seen as dispensable in driving forward that agenda. [redacted]

Whale and Dolphin Conservation

Thank you very much for including WDC in the Neart na Gaoithe Scoping Opinion Consultation. In answer to the questions at the end of the marine mammal chapter:

We are content with the baseline data from the original ES to be used for the new application. We are satisfied with the species that will be considered in the assessments and the management units to be used for potential population level impacts.

We would prefer the new thresholds from NMFS to be used for noise impacts.

We are happy with the use of PVA to assess the potential population level impacts on bottlenose dolphins as long as the analysis/results are comparable to the other proposed developments in the Firth of Forth area. It doesn't make sense for the different developments to use different methodology for assessments on populations.

Appendix II - Advice received from Marine Scotland Science

SUMMARY OF MSS ADVICE RECEIVED

NEART NA GAOITHE OFFSHORE LIMITED: NEART NA GAOITHE SCOPING - MAY 2017 - PRO FORMA

Marine Scotland Science has reviewed the submitted scoping report and has provided the following comments.

marine fish ecology

In relation to marine fish and shellfish, the scoping report largely provides reasoning for scoping out – based on the Project now being reduced in scale from that of the Original Application and Addendum, and therefore the worst case scenario has already been assessed. This seems a reasonable approach. Please find MSS comments relating to the Scoping questions below.

The topic of particle motion was raised at the meeting on the 13th June 2017. Please note that a separate request for advice in this area has been made by MS-LOT and this should be referred to by MS-LOT once provided.

<u>Scoping questions and answers</u>

Question 1

Do you agree that the existing data available to describe the fish and shellfish ecology baseline remains sufficient to describe the physical environment in relation to the project?

MSS is broadly content and welcomes the use of commercial fisheries data to confirm the baseline. MSS also welcomes the use of ICES (2015) International Herring Larval Survey (IHLS) data conducted in 2014.

Question 2

Do you agree that, in all cases, the assessment scenario previously applied in conducting the original EIA represents the worst case scenario when compared to the project?

Yes, MSS is content with regards marine fish. Note only here that the CIA does not incorporate changes to the ICOL or Seagreen design envelopes however these are not yet not modelled or available and therefore unavailable for consideration. Should they have been, MSS would have recommended that this be considered in an updated CIA.

Question 3

Do you agree that the embedded mitigation described provides a suitable means for managing and mitigating the potential effects of the project on the fish and shellfish ecology receptors.

MSS is content that for those assessed in the original EIA this is suitable.

Question 4
Do you agree that the assessment of fish and shellfish ecology receptors should be scoped out of the project EIA?

For those impacts assessed in the Original ES, MSS is content that they are scoped out of the Project EIA.

Question 5
Do you agree that the cumulative effects on fish and shellfish ecology receptors should be scoped out of the project EIA?

See above comment relating to CIA. Provided MS-LOT are content that there is not enough information to update the CIA relating to ICOL or Seagreens changes in design envelope then yes, MSS is content that CIA is scoped out.

commercial fisheries
MSS joined a MS-LOT meeting with the developers and commercial fisheries representatives on the 27th of July 2017. All comments have been provided verbaly to the developers. It is expected that all comments will be reflected in written in the meeting minutes due in 2 weeks.

COMMENTS ON DIADROMOUS FISH

Diadromous fish advice received 10 July 2017. The advice refers to Inch Cape but the MSS adviser has confirmed this advice is the same for all three Forth and Tay developments.

Thank you for seeking advice from MSS on specific matters in relation to diadromous fish. We have noted that MS-LOT accepts the advice provided by SNH in relation to HRA not applying to this development and that only comments from MSS in relation to EIA have been requested.

Q1. *Do you agree with the conclusions in the 2013 ES that there was no significant effect on any diadromous species in relation to EIA based on the information available at the time the assessment was carried out? (If no please provide reasons)*

Yes

Q2. *If the answer to Q1. is "yes" what information is available* ***now****, which was not available in 2013, that could change the outcome of the assessment to show significant effects in relation to EIA? (The Inch Cape scoping report mentions some*

recent research e.g. Harding et al 2016 and Armstrong et al 2015)

The Research Updates section in the scoping report is useful. However, there is other new information now available which should also be considered.

- Re the likelihood that diadromous fish may be in the development area, there is now some published information based on satellite tagging returning adult salmon caught on the north coast (Godfrey et al, 2014 a,b) which indicates that returning adult salmon which have reached the coast, do not necessarily then follow the coast, but may move offshore before coming back in again. There is also older published information, which indicates that under some conditions acoustically tagged salmon may indeed follow the coast. The developing picture is quite complicated and the statement in the scoping report that it is unlikely that salmon would enter the Development Area on route to the coast during migration may not be correct.

- Various studies have also been carried out recently on coastal migration of salmon smolts at various Scottish locations mainly. These generally used acoustically tagged salmon smolts and acoustic receiver arrays and one study used a specially designed surface trawl with video capability. Although mainly not formally published yet, there is some information available from these studies which would in general support the tentative smolt migration picture given in the 2013 ES.

- There is now published information for Pacific salmon (various Putman et al papers), which is also likely to be relevant to Atlantic salmon, of the importance of geomagnetic navigation both by post-smolts in migrating to sea feeding grounds and by returning adult salmon in homing to their natal rivers. Such navigation must make use of small differences in the ambient magnetic fields which should be considered in relation to the magnetic fields associated with cables.

- Information on the timing of salmon smolt movement across Scotland has also now been published which may be useful in considering possible mitigation.

- There has been recently been focus in some published papers on the potential importance of particle motion, in relation to sound, to some fish species such as salmon. Although particle motion is mentioned in the 2013 ES, there may be a need to consider it in more detail and this is the subject of a separate advice request to MSS.

- Although there is now more up to date information on the state of salmon and sea trout populations, MSS has now given this consideration and is not suggesting that this needs to be reviewed at this stage.

Q3. *Does any of the new information change the baseline, considering that Inch Cape assumed the species passed through the site?*

There is an increased probability that wording in the 2013 ES may understate the

likelihood that salmon will be present in the development area. In that connection, MSS would also note that the absence of salmon and sea trout in the conventional trawl surveys which had been carried out in survey work commissioned by ICOL for the 2013 ES should not be taken as evidence for absence of these species as they are now known to spend most of their time very close to the surface where they would not be caught in conventional trawls.

Q4*. If an updated assessment is advised how should any new information be used by Inch Cape to inform an assessment under EIA?*

Relevant new information now available needs to be reviewed somewhere. It is more that there is a need to review the new information than that the outcome will necessarily change.

Q5. *If an updated assessment is advised which species should be included?*

Only salmon, there is insufficient new information for the other species.

FURTHER REFERENCES FOR DIADROMOUS FISH –received 17 July 2017

In relation to Q2 please provide clarity as follows:

1st bullet – please give full references for Godfrey et al papers.

Godfrey, J. D., Stewart, D. C., Middlemas, S. J., and Armstrong, J. D. Depth use and migratory behaviour of homing Atlantic salmon (*Salmo salar*) in Scottish coastal waters. ICES Journal of Marine Science, 72: 568–575.
http://icesjms.oxfordjournals.org/content/early/2014/07/16/icesjms.fsu118.full.pdf?keytype=ref&ijkey=y9lmPDRLdC04n7B

Godfrey, JD, Stewart, DC, Middlemas SJ and Armstrong JD (2014) Depth use and movements of homing Atlantic salmon (*Salmo salar*) in Scottish coastal waters in relation to
marine renewable energy development. Scottish Marine and Freshwater Science. Volume 5 Number 18
http://www.gov.scot/Resource/0046/00466487.pdf

2nd bullet – please provide references for the information which is publically available from the studies which you refer to.

Acoustic curtain tracking studies of salmon smolts took place in 2016 at two sites on the Scottish west coast, one site in the Cromarty and inner Moray Firth and at the mouth of the River Deveron and are taking place this year at two sites on the Scottish west coast, a site in the inner Moray Firth, and at the mouth of the Aberdeenshire Dee. Surface trawling with a specially designed net which also had

video and PIT tag detection capability was carried out this year in the Moray Firth area. Although there have been various presentations on various aspects of these studies at meetings open to the public, the only formally published paper to date is Lothian *et al* (2017) which includes information for smolts emigrating from the River Deveron

Lothian AJ, Newton M, Barry, J, Walters M, Miller RC and Adams CE (2017) Migration pathways, speed and mortality of Atlantic salmon (Salmo salar) smolts in a Scottish river and the near-shore coastal marine environment. Ecology of Freshwater Fish.
On line via http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1600-0633/earlyview as an early view paper

3rd bullet – please provide references for Putman et al papers

Putman,NF, Lohmann, KJ, Putman, EM, Quinn,TP, Klimley, AP and Noakes, DLG (2013) Evidence for Geomagnetic Imprinting as a Homing Mechanism in Pacific Salmon. Current Biology 23, 312–316
http://www.cell.com/current-biology/pdf/S0960-9822(13)00003-1.pdf

Putman,NF,Scanlan,MM, Billman,EJ, O'Neil, JP, Couture, RB, Quinn, TP, Lohmann,KJ and Noakes, DLG (2014) An Inherited Magnetic Map Guides Ocean Navigation in Juvenile Pacific Salmon. Current Biology 24, 446–450
http://www.cell.com/current-biology/pdf/S0960-9822(14)00018-9.pdf

MSS would note that the 2013 ES did examine and use useful material which was available at the time – including Lohmann *et al*. (2008) and Yano *et al*. (1997), and information on swimming depth of salmon.

4th bullet – please provide publication details for the information relating to movement of salmon smolts in Scotland

This bullet was in connection with the timing of salmon smolt movement across Scotland and particularly referred to

Malcolm, IA, Millar CP and Millidine KJ (2015). Spatio-temporal variability in Scottish smolt emigration times and sizes. Scottish Marine and Freshwater Science. Volume 6 Number 2
http://www.gov.scot/Resource/0047/00472202.pdf. However more detailed information for some rivers is coming out of the various studies referred to in the 2nd bullet response above.

5th bullet – please provide full references for information on particle motion when responding to the particle motion request for info

Has been attended to in the particle motion request

With regards Q3, please could you clarify where in the 2013 ES that the likelihood of salmon being present in the development area is understated, considering that the assessment assumed salmon were present.

Statements in the 2013 ES Chapter 13 of the type

"conservative assumption that these species will be present in the Development Area and/or Offshore Export Cable Corridor."
"As no definitive migratory routes exist for Scottish east coast Atlantic salmon it must be assumed that some individuals migrate through the Project area enroute from or to their natal rivers."
"As the migration routes of these three species are not fully established, the precautionary assumption must therefore be that they may pass through the Offshore Export Cable Corridor during migrations to and from natal rivers"

understate the likelihood that salmon will be present. It is not that they <u>may</u> be present, it is that they are very likely to be present.

However, the 2013 ES did correctly note that

"No Atlantic salmon or sea lamprey were recorded during site specific surveys, however as these species are rarely captured at sea through trawling, this is not an indication that they do not migrate through the Development Area."

and usefully refer to Malcolm *et al* (2010) with reference to likely behaviour of emigrating smolts and returning adults (see below).

There was an attempt in the 2017 Scoping Report to update on the likely presence of salmon.
"281. The research on the migratory routes of Atlantic salmon (Malcolm et al., 2010), also presented in the original ES, concluded that during migration of Atlantic salmon, fish followed the coastline to reach their migratory point. The Development Area is located at a minimum of 15 km from the coastline, and the location relative to the SACs designated for salmon makes it unlikely therefore that salmon would enter the Development Area on route to the coast during migration. Although it is difficult to conclude where smolt migrate, ongoing research and the general consensus within the scientific community is that they also migrate along coastal waters."

This has shortcomings. It is likely in this part of Scotland that there is an offshore movement south of adult salmon returning to rivers, prior to fish following the coastline north to reach their natal rivers. Contrary to what is said, it is not unlikely that salmon will enter the Development Area on route to the coast during migration. And regarding smolt movement, it is not the case that there is a general consensus within the scientific community is that the smolts also migrate along coastal waters. The 2013 ES usefully referred to Malcolm et al (2010) which noted smolts had been recorded moving quickly to deeper more offshore waters with no evidence for coastal migration. The not yet published information from the various studies referred to in the 2nd bullet response would generally support this too.

COMMENTS ON FISH AND SHELLFISH

MS-LOT used advice provided previously for the Moray East development on the effect of sediment on scallops and requested further advice regarding nephrops (see below). Confirmation was received from MSS that the Moray East advice was relevant to the nephrops as well as scallops.

Advice received previously (09 May 2017) in relation to Moray East

Thank you for your question. MSS would suggest that, should an assessment be required of the impact of sediment suspension and smothering of the different life stages of scallops, the following two pieces of work be undertaken:

- A review of literature on effects of suspended sediments to scallops (including different life stages); and
- Physical process modelling of likely spatial extent of suspended sediments from activities of concern.

These could be used to provide a comparison with the spatial extent of the scallop fishery, identified from commercial fisheries data (e.g. VMS data as described by Kafas *et al* (2012) and found online at Kafas *et al* (2013) . This would allow an understanding of the spatial extent of effects, if any, to scallops and provide a context within which to consider them.

<u>References</u>

Kafas, A., Jones, G., Watret, R., Davies, I., Scott, B., 2012. Representation of the use of marine space by commercial fisheries in marine spatial planning. ICES CM I:23.

Kafas, A., Jones, G., Watret, R., Davies, I., Scott, B., 2013.2009 - 2013 amalgamated VMS intensity layers, GIS Data. Marine Scotland, Scottish Government. doi: 10.7489/1706-1

COMMENTS ON PARTICLE MOTION – received 28 July 2017

The advice refers to Inch Cape but the MSS adviser has confirmed this advice is the same for all three Forth and Tay developments.

Particle motion
Since the original Environmental Statement for the Inch Cape development was produced there has been a considerable increase in the relevant literature which suggests that there is potential for impacts from acoustic particle motion on fish and invertebrates. An issue that has been raised by MSS at the scoping meetings is the need to consider potential impact of acoustic particle motion on sensitive receptors in addition to the effects of sound pressure on fish species that are sensitive to this.

There is acknowledgement that understanding of the effects from particle motion, and extent of these effects, is currently an area for further development, and there are various initiatives being progressed. MSS considers that the currently available evidence suggests that particle motion could be an important mechanism of effect on fishes and invertebrates. As 2017 EIA Regulations require the Scottish Ministers to come to a reasoned conclusion on the significant effects on the environment of the development, based on up to date information, this information needs to be taken into account. MSS has provided a list of references, which may be useful, which is appended.

MSS suggests that ICOL takes the following approach:

- Provide an overview of currently available information on particle motion within the vicinity of noise producing construction and operational activities, including, for example, pile driving, dredging and explosions – both within the water column and the sea bed. This should include consideration of the likely distances at which elevated levels of particle motion may be detected.
- Provide an overview of the published information on sensitive species and potential physiological and behavioural effects of particle motion.
- Give consideration to the potential effects of particle motion on species known to occur around the development site, making use of information on species distribution from the original ES and information which has become available since then. Particular attention should be given to potential effects on species of commercial or conservation concern.
- Provide information on opportunities that the development may present to investigate effects of particle motion on fish and invertebrates.

COMMENTS ON ORNITHOLOGY AND OUTPUT FROM THE MEETING ON 19 JULY 2017

Table of questions provided in advance of the meeting on 19 July 2017 to focus discussion on key points. The table was prepared by MS-LOT and MSS and provided to SNH and RSPB.

Advice Required	Response- with justification/s
SPAs	
1. Which SPAs/ pSPA need to be included in the assessment?	
2. Which qualifying features of the SPAs/ pSPAs should be included in the assessment?	
3. What reference populations should be used for each SPA/ pSPA qualifying feature?	
4. Which conservation objectives are most relevant for the SPAs/pSPAs/ species to be considered in the assessment?	
Displacement	
5. Which species should be included in the assessment of displacement effects?	
6. What are the breeding season months?	
7. Which density estimate should be used for assessments (e.g. mean seasonal max)?	
8. Should the density estimates be based on all birds or birds on the water?	
9. Should sabbatical birds within the population be accounted for, and if so what rate should be used for each species, and how should it be accounted for in the assessment?	
10. How should displacement effects be estimated for the assessment?	

11.	What displacement rate should be assumed for each species?	
12.	How are displacement rates effected by WTG density/ spacing?	
13.	Should barrier effects be estimated and if so, for whish species/ SPAs and how?	
14.	Should displacement effects be expressed as reductions to adult survival and/or productivity?	
15.	Should displacement effects in the non-breeding season be considered qualitatively, qualitatively or not at all?	
16.	If quantitatively, how?	
17.	If qualitatively, how?	
18.	If yes, do new runs of the model need to be carried out?	
19.	If available, should the MSS commissioned displacement modelling tool being produced by CEH be used?	
20.	If the SNCB 'matrix' method should be used, what mortality rate and/or reduced productivity rate should be assumed for the PVA wind farm effect scenarios?	
Apportioning		
21.	Which method should be used to apportion effects to SPA/ non SPA colonies?	
22.	Which colony population counts should be used for apportioning?	
23.	Should estimated effects from the non-breeding season be apportioned to SPAs, and if so how?	
24.	Should estimated effects to non-adult age classes be apportioned to SPAs, and if so how?	
25.	If available, should the CEH apportioning tool be used?	

Cumulative Impacts		
26.	Which other projects should be included in the cumulative assessment?	
27.	Should non-breeding season effects be included in the cumulative assessment, if so how?	
28.	If non-breeding season effects are included in the assessment, how does this influence the other projects to be included in the cumulative assessment?	
29.	How should effects from the different projects be combined?	
Collision Assessment		
30.	Which species should have Collision Risk Models produced?	
31.	What nocturnal activity score should be used for each species?	
32.	What bird parameters should be used for each species?	
33.	Which density estimate to be used?	
34.	Which flight height distribution should be used, or what should be considered when deciding which to use?	
35.	Which Band CRM option/s should be used?	
36.	Which avoidance rates should be used for each species/ Band version?	
37.	Should a range of avoidance rates be presented, and if so which ones?	
38.	Which Band CRM option and avoidance rate should be assumed for the PVA wind farm effect scenarios?	
39.	Should uncertainty in collision estimates be considered or presented, and if so how	
40.	Should boat based bias i.e. from large scale attraction to survey vessels, be accounted for in density	

	estimates and if so how	
41.	What are the breeding season months	
42.	Should non breeding season effects be included	
43.	If yes, how would collisions be attributed to the SPA (as opposed to 'regional' population	
44.	If yes, what non-breeding season reference population/s should be used for each species	
45.	Should sabbatical birds within the population be accounted for, and if so how.	
46.	How should the proportion of adult birds be estimated?	
47.	Should collision of non-adult aged birds be included in the assessment?	
48.	If yes, how would the proportion of non-adults be determined	
49.	If yes, how would collisions be attributed to the SPA (as opposed to birds from the 'regional' breeding season population)?	
50.	If yes, how would collisions be attributed to the SPA (as opposed to birds from the 'regional' non-breeding season population)?	
51.	Which (if any) species and SPAs are PVAs required for?	
52.	What type of PVA is required (stochastic, deterministic, or doesn't matter)?	
53.	Do the PVAs need to include effects on non-adult age classes, and if so which species and SPAs?	
54.	Do the PVAs need to include effects from during the non-breeding season, and if so which species and SPAs?	
55.	At what point in time should	

	estimated wind farm effects be incorporated into PVA (year of application, year of proposed completion, etc)?	
56.	Over what time period should the PVAs be run?	
57.	Which 'baseline' demographic rates should the PVAs use?	
58.	How should estimated displacement, barrier, and collision effects be combined for the PVAs?	
59.	What combination of productivity and adult survival effects on adults (and immature?) in the breeding (and non-breeding?) season should be assumed in the wind farm effect scenarios?	
60.	Which PVA metrics should be presented?	
61.	Can the original PVAs produced by CEH be relied upon (will depend upon answers above)?	
62.	What other information is required to help inform advice on adverse impact on site integrity?	

Follow on questions from MS-LOT after the meeting on the 19 July 2017 and MSS response.

MS-LOT have now had the scoping advice from SNH and RSPB for all Forth and Tay developers. We have also had the ornithology wash up meeting which you attended. During that meeting the SNH and RSPB positions in relation to the ornithology table of questions was recorded. This has been sent to SNH and RSPB for refinement and to ensure that it accurately reflects discussions at the meeting. I have attached the draft table at present but will send on the final version once SNH and RSPB have reviewed it. MS-LOT request advice where there are differing views between SNH and RSPB on certain points. The question numbers relate to the numbers in the table.

My questions are:

2. RSPB suggested GBBG and LBBG should be included in an EIA assessment,

however the ES submitted by Inch Cape assessed effects to be negligible therefore I would propose to scope these species out, do you agree?

MSS agree that the assessed effects are negligible and that this provides a good reason to scope out GBBG and LBBG.

2. For the pSPA species SNH advised that displacement should be assessed, RSPB advised that displacement and collision should be assessed. Please provide MSS advice on this point with justification.

Where proposed WTG locations are within the pSPA boundary, it would seem sensible for collision effects to also be included within the assessment. This is because the potential windfarm effects are occurring within the pSPA, which evidence indicates is a particularly important foraging area for the species potentially affected.

4. Which Conservation objectives do you consider to be most relevant?

For all four wind farms, the Conservation Objective “Population of the species as a viable component of the site” captures all of the other COs for the existing colony SPAs, and this should be the focus of the assessment. For NNG only, the conservation objectives of the pSPA relating to deterioration of habitats should also be considered due to its overlap with the pSPA .

5. Should displacement be assessed for kittiwake?

Yes, it should be included in the assessment. Macro avoidance/ displacement has been observed at some wind farms, and whilst displacement and collision effects may be mutually exclusive for individuals, this may not be the case at the population level. Also, the CEH displacement report (Searle *et al*., 2014) indicated that displacement/ barrier effects have the potential to effect individuals and impact populations.

10. Do MSS advise a qualitative or quantitative assessment for pSPA species for NnG, SNH advised qualitative, RSPB advised matrix. Please provide justification.

Where a species’ reference population is an existing breeding colony SPA, quantitative. Where this is not the case, effects should be quantified but due to the lack of an appropriate reference population for these species the matrix approach is not possible and the assessment of the population consequences will need to be qualitative.

11. If your answer to Q5 is that a displacement assessment should be completed for kittiwake, what displacement rate would you advise (RSPB advise 50%)?

The displacement rate should be 30%. This value takes into account the advice from SNH, the advice from the RSPB, the approach taken in the original assessments for the Forth and Tay, and the lower number of WTG (necessitating either a greater WTG spacing or reduced overall wind farm footprint) in the new applications. If the matrix approach is used, the mortality rates should match those advised by SNH for the other (auk) species.

24. For non-breeding gannet and kittiwake would you advise site survey age structure or stable age structure to determine age structure?

The age structure of the non-breeding season effects should be based on the age structure derived from the at-sea survey data at this time of year. If this is not available then the stable age structure will provide the best available evidence and should be used.

26. For the breeding season which other projects do you consider should be included in CIA. Of these which should be included in the PVAs for the CIA?

For the breeding season, the CIA should consider effects from projects within mean max foraging range of the colony SPA under consideration. If available, the MS commissioned Apportioning Tool provides an output that ranks colonies by likelihood of a bird at a windfarm origination from that colony. For the CIA, effects should be considered quantitatively for the windfarm in isolation and in combination with the other three F&T wind farms. Effects from other windfarms should be considered within the CIA qualitatively.

PVA should be produced for the estimated effects from:

- the windfarm in isolation (effects throughout the year and on all age classes),
- the wind farm in combination with the other three F&T windfarms (effects throughout the year and on all age classes)
- for gannet and kittiwake the breeding season effects from the F&T wind farms combined with the non-breeding season effects from the offshore wind farms in UK waters (but see MSS advice in points 1-4 below)

27. For non-breeding season SNH advised for kittiwake and gannet all North Sea UK windfarms should be included in CIA. RSPB advise also include a qualitative assessment of North Sea European sites. Please provide MSS advice on this point.

At the meeting we discussed contacting PINS which I have done. P141 of East Anglia 3 ES includes A UK NS CIA, please consider and provide views.

See 26 above and final row of MSS advice below. Note that it is assumed that the

SNH and RSPB advice relates to collision effects only.

31. Please provide MSS advice on most appropriate nocturnal activity scores with justification.

MSS advice is to use the scores advised by SNH. RSPB advise using a score of 2 for gannet but the justification for this appears to conflate nocturnal activity with colony attendance, foraging activity and timing of at-sea surveys without an adequate empirical basis.

51. Do you consider that PVAs should be provided for Buchan Ness to Collieston Coast and St. Abbs to Fast Castle SPAs?

Yes, unless the estimated cumulative effects from the F&T projects are less than a reduction in annual adult survival of 0.2%.

52. Please provide MSS view on whether deterministic or stochastic models should be used.

Stochastic models should be used as these have been found to be precautionary (Lande, R., Engen, S. & Sæther, B.-E. (2003) Stochastic populated dynamics in ecology and conservation. Oxford University Press, Oxford), are able to provide a greater range of potentially informative outputs, and constitute are the best available information. The PVAs should be density independent.

Please provide detail of any concerns you have with the advice provided by SNH or RSPB.

1. SNH advise that the displacement rates for guillemot, razorbill and puffin should be assumed to be 60%. This is higher than the rates that they advised for the previous assessments of ICOL, SGA and SGB, which SNH advised would have lower displacement rates due to the lower turbine density/ higher turbine spacing on these windfarms. If the number of WTG is even lower for the new applications for ICOL, SGA and SGB (and indeed NNG) then either the WTG density within the windfarm will also be lower, or the dimensions of the windfarm will be smaller. The displacement rate should reflect this, and MSS advise a displacement rate of 50% be used. This is the higher end of the range of 40-50% advised by SNH in the original F&T windfarms with reduced WTG density.

2. Both SNH and the RSPB advise the monthly maximum at-sea survey estimates should be used to inform the collision risk assessment rather than the mean values. This is a change to advice provided for other windfarms, and the rationale is unclear from the SNH advice. The suggestion appears to be that it is in order to account for uncertainty, but the approach advised ignores uncertainty/

variability and instead appears to be aimed at being as precautionary as possible. Defaulting to the most precautionary approach available is not in itself a justification, and runs the very high risk of producing an estimated effect that is highly likely to be unreasonable and unrealistically high. It also lacks robustness because with each year of survey undertaken, the likelihood of a higher value being identified would increase, and the representativeness of the high value would become increasingly questionable. The RSPB suggest that a reason for them advising this approach is due to the Regulator wishing to see a single effects estimate modelled in the PVA, but it was the RSPB that indicated at the meeting on 19.07.17 and in their subsequent email on 21.07.17 that they wished to see a single effects estimate (though this was not what they advised previously). Neither SNH nor the RSPB mention presentation of uncertainty around the monthly maximum values, which further undermines their “to account for uncertainty” justification. MSS would advise that the mean monthly estimates are presented alongside confidence limits, and that the mean values are those assumed in the effects scenarios incorporated into the PVAs because this is the most robust approach, is consistent with previous assessments, and will provide information on the uncertainty around the mean value in order to account for uncertainty.

3. SNH appear to be advising that alongside the baseline, PVAs should be run for the estimated WCS effects only. The RSPB indicated on 19.07.17 that they were in two minds over whether single effect scenarios should or should not be presented by the developer. MSS advise that PVAs are also run for estimated effects that are 10% higher and 10% lower than those estimated for the WCS. This should be for the windfarm combinations identified under 26 above. This is advised as MSS believe that it is important for the assessment to be able to consider the sensitivity of population consequences (as estimated by the PVAs) of windfarm effects that may be higher or lower than those estimated for the WCS, as this may have some bearing on the conclusions reached in the assessment.

4. It will be challenging to identify collision estimates from the other offshore wind farms in the UK that have been estimated and/or reported in a consistent manner (see 26 and 27 above). Many will have been estimated using approaches that are no longer deemed to be the best available approach. The cumulative totals obtained should therefore be treated with extreme caution, as should the outputs from PVAs should these cumulative effect totals be modelled.

Further advice requested by MS-LOT and provided by MSS on the most appropriate mortality rate from displacement.

We have had further advice from SNH on the most appropriate mortality rate from displacement (related to Q20 of the table) SNH now advise 2% for puffin and 1% for other auk species (both during the breeding and non-breeding season). RSPB suggest 2% during both seasons. Please could you provide the MSS view on this

point with reasons, also please advise value for kittiwake.

In response to your questions below:

- Assuming a reduction in adult mortality rate of 2% for displaced puffin during the breeding season seems appropriate considering the results of the CEH displacement model (Searle et al 2014) suggested that this species may be more susceptible to displacement effects than the other two auk species (guillemot and razorbill considered. It should be noted both that the tracking data available to that study were limited, and also that the update to the 2014 model (the "Fate of Displaced Birds" model) being produced by CEH aims to include puffin (as well as guillemot, razorbill and kittiwake).
- Assuming a reduction in adult mortality rate of 1% for displaced guillemot and razorbill during the breeding season is appropriate considering the results of the CEH displacement model (Searle et al 2014) that suggested these species were not particularly susceptible to displacement effects from the F&T wind farms.
- Assuming a reduction in adult mortality rate of 1% for displaced guillemot and razorbill during the non-breeding season is appropriate considering that they are no longer central-place foragers tied to the breeding colony at this time of year, but also taking into consideration that they do not disperse as widely as e.g. puffin during the non-breeding season.
- For kittiwake, the assessment of displacement during the breeding season using the SNCB guidance (the 'matrix' approach) should assume a reduction in adult mortality rate for displaced individuals of 2%. This takes into consideration the results from the CEH displacement model (Searle et al 2014) that indicated that displacement from the Forth and Tay windfarms had the potential to impact the SPA populations considered.

COMMENTS ON MARINE MAMMALS – provided for Inch Cape and used as basis of advice for NnGOWL

Marine Scotland Science
Inch Cape Scoping
Marine Mammals
31st July 2017

MSS have had the opportunity to review the scoping document provided by Inch Cape, to attend a meeting with the developer and their consultants, and to review the advice provided by SNH on the scoping report. MSS also had the opportunity to attend a workshop organised be Inch Cape, which took place on 27th July 2017, during which several important technical points were discussed, and which will also influence some of the details provided in the scoping opinion.

SNH have covered most of the issues that MSS would consider to be important and so our advice covers whether we agree with SNH's position, as well as raising other points for consideration, and drawing upon the discussions at the workshop on 27th July.

Species to be included in EIA and HRA

We agree with SNH that bottlenose dolphin, harbour seal, grey seal, harbour porpoise, minke whale and white beaked dolphin should be included in the EIA.

We also agree that there is connectivity between the project and the Moray Firth SAC for bottlenose dolphins, the Firth of Tay and Eden Estuary SAC for harbour seals and the Isle of May SAC for grey seals. These species and sites should be included in the HRA.

Management units, population sizes and distribution information

Bottlenose dolphin (*Tursiops truncatus*)

We agree with the management unit and population size recommended by SNH for bottlenose dolphin. During the workshop on 27th July there was discussion regarding distribution for bottlenose dolphin. An approach was agreed which provided an updated version of the distribution used in the original ES and MSS support this. The text of the notes from the workshop states:

> "*Agreement reached to assume, as per the assessment for the Original Development, the reference bottlenose dolphin population (195 individuals) should be split 50:50 between the east coast and the Moray Firth, and that 98 dolphins would be present at the time of piling activities off the east coast.*
>
> *Agreement reached that the 98 individuals assumed to be present off the east coast should be spread evenly across the area inside the 20 m depth contour as defined in the Original Development EIA, excluding areas in the Forth and Inner Tay where bottlenose dolphin are known not to be present (shaded red in Figure 1). These 98 animals will be spread evenly across the remaining grid cells (thereby increasing the density per grid cell).*"

Harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*)

We agree with SNH that the Scottish seal management areas should be used for grey and harbour seals, and advise that the 2016 population sizes will be available in the SCOS 2017 report (which will be available in draft in September 2017). Until that report is published, we recommend using the 2015 population sizes which are published in the SCOS 2016 report. SCOS reports are available from http://www.smru.st-andrews.ac.uk/research-policy/scos/

We advise that the seal usage maps produced by SMRU should be used for distribution data on both species. These are currently available directly from SMRU,

but will be updated and made available on NMPI in the next few months.

Harbour porpoise (*Phocoena phocoena*)
We agree with SNH regarding the management unit for harbour porpoise, which is based on the IAMMWG (2015) guidance. The relevant unit is the North Sea.
For an abundance estimate for this management unit, we advise that the SCANS-III surveys are the most up to date and that could usefully be used. Should this not be available, we agree with SNH that the estimate from the IAMMWG (2015) guidance can be used. We also agree with SNH that the SCANS-III survey results for block R can be used to provide a regional abundance estimate for use within the assessment. Should further information from SCANS-III become available in time to be used in the ES, we would recommend making reference to this.

Distribution data on harbour porpoise can be taken from the original ES, unless other more recently published data are available.

Minke whale (*Balaenoptera acutorostrata*)
We agree with SNH that the management unit is the Celtic and Greater North Seas as noted in IAMMWG (2015). We also agree with SNH regarding abundance estimates for minke whale, although, as with harbour porpoise, we advise that it may be feasible to incorporate information from the SCANS-III surveys.

Distribution data on minke whale can be taken from the original ES, unless other more recently published data are available.

White beaked dolphin (*Lagenorhynchus albirostris*)
We agree with SNH that the management unit is the Celtic and Greater North Seas as noted in IAMMWG (2015). We also agree with SNH regarding abundance estimates for minke whale, although, as with harbour porpoise, we advise that it may be feasible to incorporate information from the SCANS-III surveys.

Distribution data on white-beaked dolphin can be taken from the original ES, unless other more recently published data are available.

Impacts for assessment
MSS agree with the developer and SNH that the assessment will need to cover the impact of increasing the power of the hammer used to install the piled foundations. We also agree that since the other potential impacts to marine mammals are the same, or reduced, compared with the original ES, that this is the only area that will require consideration. This will involve updating assessments from the previous ES and we would advise that refining the design envelope to account for smaller number of turbines that the developer now intends to install, and the reduction in construction time as a result, will be likely to decrease the overall impact. This is likely to be of benefit to the developer.

MSS understands that the developer may seek to include geophysical surveys in the ES. We agree with SNH that this would be helpful, and consider that it will allow for better consideration of the whole project. However, we consider that it may be necessary on occasion for the developer to undertake geophysical surveys prior to a licence or consent being granted (for example, to inform consideration of such a licence or consent). We would therefore recommend that MS-LOT does not rule out the potential for geophysical surveys to be licensed through a stand-alone process.

Assessments to be undertaken

Underwater noise modelling and assessment

The maximum hammer energy proposed to be used has increased since the previous ES. We therefore advise that it will be necessary to update the noise propagation modelling to account for this. We agree with SNH that both instantaneous and cumulative PTS thresholds should be presented, modelled for each of the species noted above. We also agree with SNH that the developer should provide the total number of individuals from each species that may suffer PTS and the number that may be displaced through disturbance.

During the workshop there was discussion about including the period in which ADDs are utilised to move mammals away from the piling site, in the calculations of cumulative PTS. MSS would like to clarify that since ADDs are a mitigation tool, it may be more appropriate to undertake the assessment process without them, then include them as a mitigation at a later stage (as would commonly be undertaken in an EIA). Such an assessment would also provide good evidence regarding the efficacy of the proposed mitigation.

Thresholds for PTS are an area which has developed since the original ES. MSS recommend that the developer presents PTS thresholds from the Southall et al. (2007) review, since these were used in the original ES, to allow comparability. We also advise that the 2016 NOAA criteria are the most up to date scientific information. However, we note that the US Government has decided to review these criteria (refer to http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm for more information). MSS recommend that both sets of thresholds are considered in the ES, to ensure that the best available science is incorporated, and also to allow comparability with the previous ES.

MSS agree that a dose response curve should be used to determine the proportion of animals likely to be disturbed sufficiently to displace them by the piling noise. We note that both SNH and the developer have suggested using the dose response curve used in the original ES, which was based on harbour porpoise responses to pile driving at the Horns Rev II development. MSS advise that this was used in the previous assessment in the absence of any other data, and that there are some potential issues with this limited data set. Our concerns relate to the small sample

size and also to the very shallow water depths at the study site which may have an effect on noise propagation. Other data now exist, from pile driving studies (e.g. Dähne et al., 2013; Brandt et al., 2016), as well as from other impulsive sources (e.g. Thompson et al., 2013), and we would encourage the developer to make use of these where possible. MSS consider that in the absence of similar data for species other than harbour porpoise, that it is acceptable to use the same dose-response function for all species. We would, however, flag that this is an important knowledge gap.

Species impact assessment

For bottlenose dolphin, it will be necessary to assess the impacts of the development alone on the East Scotland management unit population, as well as cumulatively with other developments that may impact on the same population. MSS advice here differs from that of SNH. SNH consider that if the impact of the project alone is the same or less than the impact of the original project, that there is not a requirement for a cumulative assessment. MSS are concerned that this strategy may compromise the Appropriate Assessment that will be conducted in relation to the Moray Firth SAC.

MSS agree with the list of projects to be included in a cumulative assessment that is provided in the Scoping Report, but would agree with SNH that Aberdeen Harbour Expansion Project should also be included.

For harbour porpoise, minke whale and white beaked dolphin, discussion at the workshop on 27th July concluded that the developer should assess whether the new parameters of the development result in any greater impact to these species. If the new proposals do not result in increased impact, then no further assessment is required. MSS agree with this strategy, but also consider that there will be a need to put any impacts to these species into a population context, for the purposes of EPS licensing. While the EPS licence will not be part of the EIA process, we recommend that the need for this is recognised through the process, and that information is presented in a manner which will readily translate into the EPS process.

For harbour seal and grey seal, MSS are content to adopt the approach outlined above for harbour porpoise, minke whale and white-beaked dolphin, whereby further assessment is only carried out if the effects are found to be greater than in the previous ES. However, the developer should note that this will not remove the need for information to be provided in an HRA to inform the Appropriate Assessment for the Firth of Tay and Eden Estuary SAC and the Isle of May SAC.

Population level effect assessment

For species where population level impact assessments are undertaken, MSS recommend using the Interim Population Consequences of Disturbance (iPCOD) framework. The software for this model is available on the Marine Scotland website,

along with a report which suggests appropriate parameters for each species. MSS note that a new version of the software will shortly be available (also on the Marine Scotland website), which will allow for the use of a dose-response function for the displacement of animals as a result of exposure to noise.

MSS note the interim nature of the iPCOD framework. This is because there are currently insufficient data on the consequences of disturbance to individual animals, and hence to populations. MSS flag this as an important knowledge gap. The iPCOD framework utilises formal expert elicitation to produce statistical distributions of responses to disturbance, and to estimate the effects on vital rates of individuals (e.g. survival probability, reproductive rate), including the uncertainty in these predictions. An alternative framework, the DEPONS model, is available and uses measured responses of tagged harbour porpoise to impulsive noise sources to understand the effects of disturbance. However, this framework is currently only parameterised for harbour porpoise and so does not represent a viable assessment method for this development.

In the previous ES, a Population Viability Analysis (PVA) was used for population level assessments. This also used expert opinion on the responses to disturbance and their effect to vital rates. However, this was not a formally elicited expert opinion and did not include uncertainty around the responses or impacts to individuals. The framework for developing this model is also unsophisticated and cannot accommodate scenarios with variable numbers of developments in subsequent years (see advice on the Aberdeen Harbour Expansion Project Appropriate Assessment for further details). MSS recommend iPCOD over this PVA for these reasons.

In providing iPCOD outputs, MSS request that the ES (or an appendix) provides a comprehensive list of the parameters input. This should be sufficiently detailed such that MSS staff would be able to replicate the analysis. As a minimum this will include the piling schedule, the demographic parameters, and starting population size. MSS request that the developer provides a copy of the code used to run the model and any QA/QC outputs that the software produces.

References

Brandt et al. (2016) Effects of offshore pile driving on harbour porpoise abundance in the German Bight. Assessment of Noise Effects. Final Report. Prepared for Offshore Forum Windenergie. http://bioconsult-sh.de/site/assets/files/1573/1573.pdf

Dähne et al. (2013) Effects of pile-driving on harbour porpoises (Phocoena phocoena) at the first offshore wind farm in Germany. Environ. Res. Lett. 8, doi:10.1088/1748-9326/8/2/025002

IAMMWG (2015) Management Units for cetaceans in UK waters. JNCC Report number 547. http://jncc.defra.gov.uk/pdf/Report_547_webv2.pdf

SCOS (2016) Scientific Advice on Matters Related to the Management of Seal Populations: 2016. http://www.smru.st-andrews.ac.uk/files/2017/04/SCOS-2016.pdf

Southall et al. (2007) **Marine mammal noise exposure criteria.** Aquatic. Mammals., 33, pp. 411-521, 10.1578/AM.33.4.2007.411

Thompson et al. (2013) Short-term disturbance by a commercial two-dimensional seismic survey does not lead to long-term displacement of harbour porpoises. Proc Roy Soc B 280: 20132001. http://dx.doi.org/10.1098/rspb.2013.2001

COMMENTS ON PREDATOR BEHAVIOUR AROUND TURBINES – received 06 September 2017

In their response to the Neart na Gaoithe consultation The River Tweed Commission raise the issue of a change in predator behaviour around turbine structures and the possible impact on prey species e.g. salmon. Do you consider that there is enough evidence to suggest this may be a significant effect and this impact should be scoped into the EIA Report? If not, can this effect be scoped out? This is the only project of the three Forth and Tay developments for which this issue is raised.

There is still a lack of good information on the use of the development area by diadromous fish and it will be important that all new relevant information on this is considered. Nonetheless, MSS's view is that out-migrating salmon smolts and returning adult salmon will pass through the site. It is not known whether sea trout use the development area although recent unpublished survey work by MSS in the Moray Firth area found them to be present well away from the coast in that area, so they may be.

Turbine bases will provide shelter and potentially new feeding opportunities which might concentrate potential prey fish and / or predators under some situations.

There is published information from marine windfarms in south east England and north east Netherlands that harbour seals can target turbine bases during foraging. Russell, D.J.F., Brasseur, S.M.J.M., Thompson, D., Hastie, G.D., Janik, V.M., Aarts, G. et al. (2014) Marine mammals trace anthropogenic structures at sea. Current Biology, 24, R638–R639. A pdf is available from
http://www.sciencedirect.com/science/article/pii/S0960982214007490
http://ac.els-cdn.com/S0960982214007490/1-s2.0-S0960982214007490-

main.pdf?_tid=d9a7baac-8eb3-11e7-bbc3-00000aacb35f&acdnat=1504229056_0fbed636ed6222e9f8db2e1eef9b80d0
Although the paper did not speculate on what prey species were involved, news articles advised that the authors thought they might be being attracted by fish such as cod or whiting which were feeding on invertebrates such as barnacles and mussels which had colonised the bases. http://www.bbc.co.uk/nature/28375794 and http://www.independent.co.uk/environment/offshore-wind-farms-create-reef-effect-perfect-for-marine-wildlife-especially-seals-9619371.html

It is known that both smolts and adult salmon can under some situations, such as in rivers, aggregate at hard structures, sometimes to seek shelter from currents. However, MSS is not aware of any evidence to date that migrating smolts or adult salmon gather at turbine bases. The view of MSS would be that smolts or adult salmon while they were still offshore will be actively migrating and following cues taking them away from foundation bases. As such we have no reason to expect this to be a major issue. But there is still a lack of definite information. It is likely that better information will become available in the future from tracking of salmon in the vicinity of wind farms.

Estuaries, and particularly inner estuaries, are already known to be hotspots for seal predation on adult salmon as returning salmon may wait there to suitable conditions for them to enter rivers. As such it is possible that any factors that take seals away from estuaries could reduce predation pressure on adult salmon.

Sea trout could be present in the area when not actively migrating and as such might perhaps be more likely to seek shelter from turbine bases.

It would seem reasonable that in updating on the expected spatial and temporal distribution of diadromous fish that any relevant new information relating to potential interactions with predators should also be considered.

Appendix III - Note on updating flight height data in the Band collision risk model

Collision risk modelling – flight height data and spreadsheet advice

- Band CRM spreadsheets are available from the SOSS website: https://www.bto.org/science/wetland-and-marine/soss/projects

  However, please be aware that the 'Flightheight' tab is **NOT** up to date with advised flight height data: https://www.bto.org/sites/default/files/u28/downloads/Projects/Final_Report_SOSS02_Band2Tool.xlsm

- To access the most up to date flight height data the Flight Heights Spreadsheet must be downloaded: https://www.bto.org/sites/default/files/u28/downloads/Projects/Final_Report_SOSS02_FlightHeights2014.xls

  This uses the amended Johnston *et al.*. 2014 flight height data.

- Flight height data should be copied from the species-specific tabs in the Flight Heights Spreadsheet – copy the 'Maximum Likelihood' column into column B of the 'Flightheight' tab of the CRM excel spreadsheet. **Or** copy the species-specific column from the '1m_height_bands' in the Flight Heights Spreadsheet – copy the 'speciesname.est' column into column B of the 'Flightheight' tab of the CRM excel spreadsheet.

- Species-specific flight height data can be stored in the 'Flightheight' tab of the CRM excel spreadsheet to the right of column B, and then be copied and pasted into column B as required. However, column B is the only *active* column – only data placed in this column will be used to calculate collision risk.

- It should be checked that cell B7 (called 'Npoints') in the 'Flightheight' tab of the CRM excel spreadsheet has a value of 300. This ensures that all cells containing flight height data are taken into consideration when estimating collisions.

- It is worth naming the flight height columns in the 'Flightheight' tab of the CRM excel spreadsheet with the species the data relates to (as shown in the example spreadsheet) and an indication of the flight height data used (e.g. Gannet - Johnston corrected).

Appendix IV - MSS advice on presentation of outputs from PVA modelling

MSS advice on presentation of outputs from PVA modelling

MSS commissioned a research project undertaken by CEH to review the use of Population Viability Analysis (PVA) metrics in the context of assessing effects of offshore renewable developments on seabirds and to test PVA metric sensitivity to mis-specification of input parameters. The most useful metrics in this context are those that are least sensitive to such mis-specification, enabling more robust assessment of offshore renewable effects.

The report by Jitlal *et al.* (2017) which tested and validated metrics of change produced by PVA models is not yet published but a draft final version is available. The results support previous work undertaken by Cook *et al.* (2016). Jitlal *et al.* identify 3 metrics that MSS advise should be presented:

- median of the ratio of impacted to unimpacted annual growth rate
- median of the ratio of impacted to unimpacted population size
- centile for unimpacted population that matches the 50th centile for impacted population (n.b. Cook *et al.* did not consider this metric in their report)

Jitlal *et al.* found the ratio metric ‘median of the ratio of impacted to unimpacted annual growth rate’ was least sensitive, followed by the ratio metric ‘median of the ratio of impacted to unimpacted population size’ and then the probabilistic metric ‘centile for unimpacted population which matches the 50th centile for the impacted population’. They recommend that interpretation of outputs should take account of their relative sensitivities.

Jitlal *et al.* also conclude that the probabilistic PVA metric ‘probability of a population decline’ was much more sensitive and is not recommended for use in the context of assessing impacts of marine renewable development.

Each of the 3 metrics provides information on the change to populations associated with different attributes of the change. The median of the ratio of impacted and unimpacted annual growth rates provides information on how closely related the trends of the impacted and unimpacted scenarios are (n.b. it does not provide information on whether the trend changes from positive to negative). The population size metric provides information on how closely related the median population sizes of the impacted and unimpacted populations are at the end point of the assessment period (rather than the difference in size between the end of the assessment period and the start). The centile metric provides probabilistic information on how closely related the median impacted population is to the median of the unimpacted population, taking into account the distribution of population sizes associated with

the unimpacted population at the end point of the assessment period. By providing information on each of these attributes of the change resulting from the proposed activity the decision maker will be more fully informed than they would be otherwise.

Median of the ratio of impacted to unimpacted annual growth rate

The value of the assessed impact should be presented both for the project alone and for the cumulative/in-combination assessment. The value should be presented as a ratio e.g. 0.98, and the derived value from the ratio of the median difference in impacted and unimpacted annual growth rates would be 0.02.

Median of the ratio of impacted to unimpacted population size

The value of the assessed impact should be presented both for the project alone and for the cumulative/in-combination assessment. The value should be presented as a ratio i.e. 0.85, and the derived value from the median difference between impacted and unimpacted population size would be 0.15.

Centile for unimpacted population that matches the 50th centile for impacted population

The population size for each of the centiles between 0.01 and 0.99 for the unimpacted population should be provided at 0.01 intervals. For certain types of population modelling this may be computationally demanding to the extent that it could delay the process of assessment. In which case a more limited set of centiles can be agreed.

The centile value of the predicted unimpacted population size that corresponds to the median value of the assessed effects on the impacted population size should also be presented. This should be provided for the project alone and for the cumulative/in-combination assessment.

Tabulation of outputs

scenario	median of the ratio of impacted to unimpacted annual growth rate (and correspondin g derived metric)	median of the ratio of impacted to unimpacted population size (and correspondi ng derived metric)	centile for impacted population that matches the 50th centile for unimpacted population	Adult survival rate (and corresponding derived metric)	Productivity rate (and corresponding derived metric)	End population size (breeding pairs)
unimpacted	1	1	.50	.91	0.40	100,000

cumulative effect	0.98 (0.02)	0.85 (0.15)	0.41	0.88 (0.03)	0.33 (0.07)	85,000
Project alone	0.99	0.96	0.48			96,000

References:

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.

Jitlal, M., Burthe, S., Freeman, S. and Daunt F. 2017 Testing and validating metrics of change produced by Population Viability Analysis (PVA) – Marine Scotland Science commissioned report (currently unpublished)

Appendix V - Licensing Process

Consent Timescale and Application Quality

In December 2007, the Scottish Ministers announced an aspirational target to process new section 36 applications within a 9 month period, provided a Public Local Inquiry ("PLI") is not held. This scoping opinion is specifically designed to improve the quality of advice provided to developers and thus reduce the risk of further information being requested and subject to further publicity and consultation cycles. The Scottish Ministers will complete a processing agreement with NnGOWL.

Application

The application letter must detail how many licences are being sought, what marine licensable activities are proposed and what legislation the application is being made under.

Developers should be aware that the ES should also be submitted in a user-friendly PDF format which can be placed on the Scottish Government website. If requested to do so the developer must sent to the Scottish Ministers such further hard copies of the EIA Report as requested. Developers may be asked to issue the EIA report directly to consultees and in which case consultee address lists should be obtained from the Scottish Ministers.

Scottish Natural Heritage ("SNH") has produced a Service Level Statement ("SLS") for renewable energy consultation. This statement provides information regarding the level of input that can be expected from SNH at various stages of the EIA process. Annex A of the SLS details a list of references, which should be fully considered as part of the EIA process. A copy of the SLS and other vital information can be found on the renewable energy section of their website – www.snh.org.uk.

Ordnance Survey ("OS") Mapping Records

Developers are requested at application stage to submit a detailed OS plan showing the site boundary and location of all deposits and onshore supporting infrastructure in a format compatible with The Scottish Government's Spatial Data Management Environment ("SDME"), along with appropriate metadata. The SDME is based around Oracle RDBMS and ESRI ArcSDE and all incoming data should be supplied in ESRI shape file format. The SDME also contains a metadata recording system based on the ISO template within ESRI ArcCatalog (agreed standard used by The Scottish Government); all metadata should be provided in this format.

Gatecheck

The Scottish Ministers undertake a gatecheck prior to formal submission of

applications and advise you to take full advantage of this service. The gatecheck is not designed as an in depth evaluation of the content of an EIA Report. However, it will allow the Scottish Ministers the confidence that minimum legislative requirements have been met prior to formal submission of the EIA Report. This should reduce the risk of the potential requirement for you to submit an addendum to the EIA Report and therefore be subject to re-advertisement and re-consultation. In order to assist the gatecheck process, a thorough gap analysis (Appendix VI) of the issues identified in this Scoping Opinion should be drawn up for submission with the EIA Report. The timeline for the gatecheck will be agreed with NnGOWL through the processing agreement.

Advertisement

Where the developer has provided the Scottish Ministers with an EIA Report, the developer must publish their proposals in accordance with Regulation 14 of The Electricity Works 2017 (as amended) and Regulation 16 of The Marine Works 2017 (as amended). Licensing information and guidance, including the specific details of the adverts to be placed in the press, can be obtained from Marine Scotland. In addition, requirements under The Electricity (Applications for Consent) Regulations 1990 must be met .

If additional information is submitted further public notices will be required.

EPS licence

European Protected Species ("EPS") are animals and plants (species listed in Annex IV of the Habitats Directive) that are afforded protection under The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended). All cetacean species (whales, dolphins and porpoise) are European Protected Species. If any activity is likely to cause disturbance or injury to a European Protected Species a licence is required to undertake the activity legally.

A licence may be granted to undertake such activities if certain strict criteria are met:

- there is a licensable purpose;
- there are no satisfactory alternatives, and;
- the actions authorised will not be detrimental to the maintenance of the population of the species concerned at favourable conservation status in their natural range.

Applicants must give consideration to the three fundamental tests and may choose to apply for an EPS licence following any grant of consent once construction methods have been finalized, however it is useful to include a shadow EPS assessment within the EIA Report.

Basking sharks are also afforded protection under the Wildlife & Countryside Act 1981 (as Amended by the Nature Conservation (Scotland) Act 2004).

Appendix VI - Gap Analysis

APPLICATION - Consultation Gap Ana

Project:	
Date issued:	

Legend:

Closed
Ongoing
Open

MS LOT: each individual comment raised by the consultee should be on a separate line.

	APPLICANT TO COMPLETE												
	Consultee								Applicant				
	Consultee	Number/reference	Consultee's response	ES/Addendum	Chapter/paragraph	Objection (yes/no)	Condition requested	Summary of response (Key concern, etc)	Response from applicant	Action required	Evidence	Evidence sent to MS-LOT (date)	Comments
Example	SNH		*From our review of the supporting information for the application, including both the Environmental Statement (ES) and Habitat Regulations Appraisal (HRA) reports, we conclude that for this proposal alone there is no adverse effect on site integrity for bird interests.*	ES	6 Para 1.19	No	No	Conclusion of no adverse effect on site integrity for bird interests	No response required				
			We have assessed all other natural heritage interests and can confirm that we raise no other issues which could significantly impact on international or national interests.		6 Para 1.20		No	no significantly impact on international or national interests.	No response required		e.g. meeting minutes, emails, agreements, etc.		
			We support the commitment provided in the ES (Chapter 2) to agree and implement a Project Environmental Management Plan (PEMP).		6 Para 1.23		if yes, Copy condition requested by consultee	Need to submit PEMP	PEMP will be developed after/during consent and submitted to MS LOT	Meetings with MS LOT to discuss draft PEMP	Meeting minutes (doc ref numberxxx) *Include further updates regarding meetings, resolution on issues, etc*	Evidence sent to LOT on 01/01/2016 *Include further updates regarding meetings, resolution on issues, etc*	