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SCOTTISH MINISTERS ASSESSMENT OF THE PROJECT'S IMPLICATIONS FOR DESIGNATED SPECIAL AREAS OF CONSERVATION ("SAC"), SPECIAL PROTECTION AREAS ("SPA") AND PROPOSED SPECIAL PROTECTION AREAS ("pSPA") IN VIEW OF THE SITES' CONSERVATION OBJECTIVES

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 (AS AMENDED) AND FOR MARINE LICENCES UNDER THE MARINE (SCOTLAND) ACT 2010 AND MARINE AND COASTAL ACCESS ACT 2009 FOR THE CONSTRUCTION AND OPERATION OF THE MORAY WEST OFFSHORE WIND FARM AND ASSOCIATED OFFSHORE TRANSMISSION INFRASTRUCTURE

SITE DETAILS: MORAY WEST OFFSHORE WIND FARM AND EXPORT CABLE CORRIDOR BOUNDARY – APPROXIMATELY 22.5KM EAST OF THE CAITHNESS COASTLINE IN THE OUTER MORAY FIRTH

Name	Assessor or Approver	Date
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1 Introduction

1.1.1 This appropriate assessment ("AA") relates to the application ("the Application") submitted by Moray Offshore Windfarm (West) Limited ("the Company") for consent under section 36 ("s.36") of the Electricity Act 1989 (as amended) ("the Electricity Act 1989") and marine licences under the Marine (Scotland) Act 2010 and the Marine and Costal Access Act 2009 to construct and operate an offshore generating station 22.5 kilometres ("km") to the east of the Caithness coastline in the Moray Firth ("the Development"), comprising up to 85 wind turbine generators ("WTGs"), with a combined maximum generating capacity of around 850 Megawatt ("MW").

1.1.2 The assessment has been undertaken by Scottish Ministers and is required under regulation 48 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), and regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (collectively referred to as "the Habitats Regulations"). This AA is in accordance with Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive") and Council Directive 2009/147/EC on the conservation of wild birds ("the Birds Directive"). Scottish Ministers, as the 'competent authority' under the Habitats Regulations, must be satisfied that the Development will not adversely affect the integrity of any European site or European offshore marine site (special areas of conservation ("SAC") and special protection areas ("SPA")) either in isolation or in-combination with other plans or projects before they can grant consent for the Development.

1.1.3 A detailed AA has been undertaken and Scottish Natural Heritage ("SNH") has been consulted.

2 Appropriate assessment ("AA") conclusion

2.1.1 This AA concludes that there will be no adverse effects on the site integrity of the Buchan Ness to Collieston Coast SPA, East Caithness Cliffs SPA, North Caithness Cliffs SPA, Troup, Pennan and Lion's Head SPA, Moray Firth proposed SPA ("pSPA"), Moray Firth SAC or Dornoch Firth and Morrich More SAC, (where each SAC, SPA or pSPA is taken as a whole) from the Development either in isolation or in-combination with other plans or projects, providing that the conditions set out in Section 4 are complied with.

2.1.2 Scottish Ministers consider that the most up to date and best scientific evidence available has been used in reaching the conclusion that the Development will not adversely affect the integrity of these sites and are satisfied that no reasonable scientific doubt remains.

3 Background to including assessment of proposed SPAs

3.1.1 The Scottish Ministers are currently in the process of identifying a suite of new marine SPAs in Scotland. In 2014, advice was received from the statutory nature conservation bodies ("SNCBs") on the sites most suitable for designation and at this stage they became draft SPAs ("dSPA"). Once the Scottish Ministers have agreed the case for a dSPA to be the subject of a public consultation, the proposal is given the status of pSPA and receives policy protection, which effectively offers the sites the same level of protection 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 the Scottish Planning Policy (at paragraph 210), the UK Marine Policy Statement (at paragraph 3.1.3) and Scotland's National Marine Plan at paragraph 4.45.

3.1.2 It is not a legal requirement under the Habitats Directive or the Habitats Regulations for this assessment to assess the implications of the Development on any pSPAs. Nevertheless, this AA includes an assessment of implications upon these sites in accordance with domestic policy. The Scottish Ministers are required to consider article 4(4) of the Birds Directive in respect of pSPAs. The considerations under article 4(4) of the Birds Directive are separate and distinct to the considerations which must be assessed under this Habitats Directive assessment but they are, nevertheless, set out within this AA (see paragraphs 21.3.1 to 21.3.2).

3.1.3 In accordance with the Habitats Regulations the Scottish Ministers, acting as soon as reasonably practicable following the formal designation of the pSPA, will review their decisions if the Development is authorised. If required this will include a supplementary AA being undertaken concerning the implications of the Development on the site as designated (as the site is currently a pSPA, at present, the conservation objectives are in draft form and will be finalised at the point that the site is designated).

4 Details of proposed operation

4.1.1 The Company has submitted two separate marine licence applications in respect of the generating station and the transmission works under part 4 of the Marine and Costal Access Act 2009 and part 4 of the Marine (Scotland) Act 2010. In addition, the Company has submitted an application for s.36 consent under the Electricity Act 1989 in respect of the Development. A full

description of the Development can be found in Chapter 4 of the Environmental Impact Assessment Report ("EIA Report") (as submitted in July 2018). The s.36 consent and marine licences applied for are for an operational period of 25 years.

4.1.2 The Company proposes to construct and operate a large-scale offshore wind farm and associated offshore transmission infrastructure, located 22.5km to the east of the Caithness Coast in the outer Moray Firth. This Development will consist of a maximum of 85 WTGs. The turbine foundation type will be decided post consent. In addition to the WTGs, up to two offshore substation platforms ("OSPs") and one meteorological mast is proposed. Should two OSPs be installed, an inter-connector cable may be required to connect the OSPs. Two 65km offshore export cables are proposed, which will run from the OSPs to a landfall point between Sandend Beach and Redhythe Point in Aberdeenshire.

4.1.3 The Company submitted a scoping report and a request for a scoping opinion in relation to the generating station aspect of the Development to Scottish Ministers in May 2016. Following consultation with statutory consultees and other stakeholders, the Scottish Ministers issued a scoping opinion in respect of the generating station aspect of Development on 15 August 2016 ("Generating Station Scoping Opinion"), advising on the scope of assessment required in respect of the Application. The Generating Station Scoping Opinion included advice on the Habitats Regulations Appraisal ("HRA") requirements and advised that information to inform the HRA must be submitted in conjunction with the EIA Report.

4.1.4 The Company submitted a scoping report and a request for a scoping opinion in relation to the offshore transmission aspect of the Development to Scottish Ministers in May 2017. Following consultation with statutory consultees and other stakeholders, the Scottish Ministers issued a scoping opinion in respect of the offshore transmission aspect of the Development on 30 August 2018 ("Transmission Infrastructure Scoping Opinion"), advising on the scope of assessment required in respect of the Application. The Generating Station Scoping Opinion and the Transmission Infrastructure Scoping Opinion are referred to collectively in this AA as the "Scoping Opinion". Due to the extended period of time between the Scoping Opinion being issued and the Application, several meetings were held with the Company to discuss assessment methodologies prior to the submission of the Application.

4.1.5 The Company submitted a HRA screening report to the Scottish Ministers and SNH in September 2017. The Scottish Ministers provided a HRA screening opinion in October 2017 identifying that there was potential for

likely significant effect ("LSE") on ornithology, marine mammal and habitat features.

4.1.6 The Application for the Development considered four different sizes of WTG ranging from Model 1 (smallest) to Model 4 (largest), although Model 4 was later removed from the design options through the submission of a report providing additional information on the Application ("EIA Addendum Report") (see paragraph 4.1.11).Table 1 below provides an overview of the different model parameters.

Table 1 Comparison of WTG parameters

Parameter	Model 1	Model 2	Model 3	Model 4
Maximum number of WTGs	85	85	72	62
Minimum height of lowest blade tip above highest astronomical tide (HAT) (m)	35	35	35	35
Maximum blade tip height above HAT (m)	199	230	265	285
Maximum rotor blade diameter (m)	164	195	230	250

4.1.7 A range of substructure and foundation types were considered within the Application as follows:

- Piled monopile foundations ('monopiles') - these comprise a single hollow steel tube (or pile), which penetrates the seabed. Monopiles are usually installed using a technique called percussive piling which involves knocking the pile into the seabed using a large hammer. In areas where the seabed is very hard (e.g. rock) the monopiles may need to be drilled into the seabed;

- Pin-pile jacket foundations - these comprise a steel lattice structure, anchored to the seabed with small pin-piles. Jackets are likely to be four-legged, although three-legged jackets are also being considered. The pin-piles are installed the same way as the monopiles;

- Suction caisson foundations - a suction caisson is a bucket shaped structure that is attached to the seabed by 'suction' created when the caisson penetrates the seabed and water is then pumped out of the space between the caisson and the seabed. Suction caissons can be attached to either the legs of the steel lattice jacket substructures or the bottom of a monopile substructure; and

- Gravity base foundations - these comprise concrete structures, sometimes including additional ballast (typically sand, gravel, rock or dredged material) that sit on the seabed to support the turbine tower. Gravity bases vary in shape, but are significantly wider at the base (at seabed level) to provide support and stability to the structure. Conical or upside down T-shaped bases are being considered for the Development.

4.1.8 OSPs will be located on substructures as outlined above or alternatively on jack-up platform substructures.

4.1.9 The Development will require inter array cabling to connect the WTGs to the OSPs, interconnector cabling to connect the OSPs (if required) and up to two export cable circuits. The cables will be buried where possible and protected (e.g. rock placement or concrete mattresses) where burial is not feasible. Cables will be buried using one or a combination of methods including ploughing, jetting and cutting.

4.1.10 It is currently planned that the construction of the Development would commence in 2022 and end in 2024 – a period of approximately 36 months. Table 2 below provides an overview of the timescales.

Table 2 Indicative Construction Timescales

Activity	Indicative Timescale
Offshore construction commencement	Q1 2022
Piling (only applicable to piled foundation solution)	Q2 2022 – Q1 2023
Substructure Installation	Q2 – Q3 2023
Inter array cable installation	Q2 – Q4 2023
OSP Installation	Q3 2023
Export cable installation	Q3 2023 – Q1 2024
WTG Installation	Q2 2024 – Q4 2024
First Generation	Q4 2024

4.1.11 The Company subsequently submitted the EIA Addendum Report. The EIA Addendum Report related to a variation to the Development site boundary, removal of the Model 4 WTG parameter option and a reduction in the operational life of the Development from 50 to 25 years.

4.1.12 The Company subsequently requested that only the site boundary as submitted in the original Application be considered in the determination for consent.

4.1.13 Figure 1 provides a chart detailing the Development area, including the offshore export cable corridor.

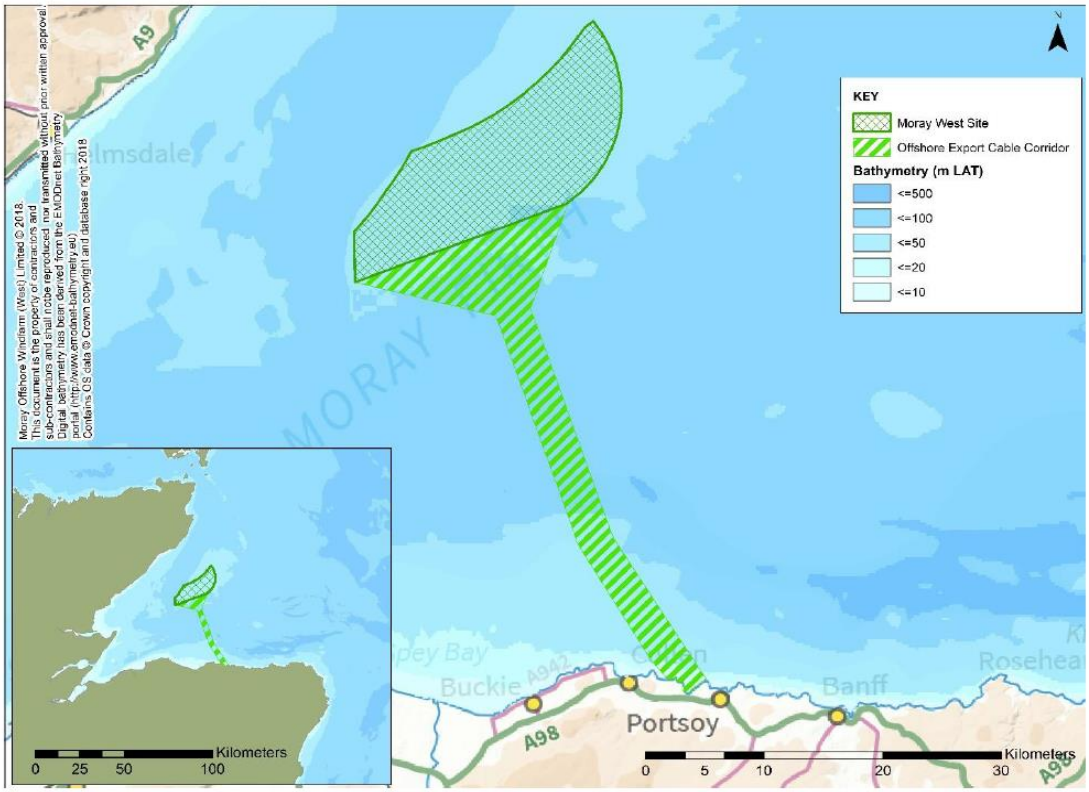

Figure 1 Chart of Generating Station and Cable Corridor

Source: The EIA Report – Non Technical Summary

5 Consultation

5.1.1 The Company submitted the Application, including the EIA Report and a Report to Inform an Appropriate Assessment ("RIAA"), on 5 July 2018. Scottish Ministers accepted the Application and sent copies of it to SNH and other relevant consultees on 8 July 2018 for a 42 day consultation period.

5.1.2 A Population Viability Analysis ("PVA Report") amending results in the RIAA was submitted on 31 August 2018 and SNH and the Royal Society for the Protection of Birds Scotland ("RSPB Scotland") were. On 7 September 2018, RSPB Scotland and SNH provided detailed comments and Marine Scotland Science ("MSS") provided scientific advice.

5.1.3 The Company submitted the EIA Addendum Report on 23 November 2018, and SNH, RSPB Scotland and other relevant consultees were consulted for a further 42 day period. Detailed comments were received from SNH and RSPB Scotland, and MSS provided scientific advice.

5.1.4 Due to the request by SNH for further information, to inform the AA, on the assessment of great black-backed gull ("GBBG"), a report was submitted by the Company ("GBBG Report") on 18 March 2019 and SNH and RSPB Scotland were consulted.

6 Main points raised during consultation

6.1.1 The main points by each of the respondents that included HRA specific comments are summarised below. Copies of consultation responses received by Scottish Ministers relating to the Application can be accessed here. Copies of consultation responses to the EIA Addendum Report can be accessed here. Copies of consultation responses to the GBBG Report can be accessed here.

6.2 SNH

6.2.1 In its response dated 7 September 2018 ("SNH Consultation Response"), SNH objected to the Development.

6.2.2 SNH advised that the Development would have an adverse effect on site integrity for kittiwake as a qualifying interest of the East and North Caithness Cliffs SPAs in-combination with the Moray East Offshore Wind Farm and Beatrice Offshore Wind Farm (when considered these are referred to as the "Moray Firth Developments"). SNH identified collision risk as the key impact.

6.2.3 SNH advised that for the Development in isolation there was insufficient evidence to conclude that there would be no adverse effect on site integrity for kittiwake as a qualifying interest of the East Caithness Cliffs SPA. This was due to uncertainty with the impact assessment methodology, in particular the manner in which the PVA was undertaken.

6.2.4 For the Development in-combination with the Moray Firth Developments, SNH advised that it was unable to conclude that there would be no adverse effect on site integrity for common guillemot and razorbill as qualifying interests of the East Caithness Cliffs SPA. This was due to potential issues with the impact assessment methodology, in particular as regards the manner in which displacement had been calculated.

6.2.5 Due to the GBBG not being included in the RIAA, SNH advised that it had insufficient information to reach a conclusion for this species as a qualifying interest of East Caithness Cliffs SPA.

6.2.6 SNH advised that for the Development in isolation and in-combination with the other Moray Firth Developments there would be no adverse effect on site integrity of any SPAs with respect to the following qualifying interests:

- East Caithness Cliffs SPA – fulmar and herring gull;
- North Caithness Cliffs SPA – common guillemot, razorbill, puffin, fulmar;
- Buchan Ness to Collieston Coast SPA – herring gull, common guillemot, fulmar and kittiwake; and
- Troup, Pennan and Lion's Head SPA – herring gull, kittiwake, common guillemot, razorbill, fulmar.

6.2.7 SNH also advised that for the Development in isolation and in-combination with the Moray Firth Developments there would be no adverse effect on site integrity for all of the qualifying interests of the Moray Firth pSPA.

6.2.8 SNH provided a further response in relation to the EIA Addendum Report dated 4 January 2019 ("SNH Response to EIA Addendum Report"). SNH maintained its objection as it considered the Development would have an adverse effect on site integrity for kittiwake as a qualifying interest of the East Caithness Cliffs SPA and the North Caithness Cliffs SPA in-combination with the Moray Firth Developments. SNH noted that the Company had proposed a number of refinements to the impact assessment for kittiwake, but that only those that had been independently validated could be accepted. Based on SNH's assessment of the accepted refinements, it concluded that the predicted impacts had not changed significantly from the original assessment detailed in the RIAA.

6.2.9 SNH advised that it still had insufficient information to reach a conclusion for GBBG as a qualifying feature of East Caithness Cliffs SPA. From the information provided SNH advised that the Development could have an adverse effect on site integrity for GBBG as a qualifying interest of East Caithness Cliffs SPA. The key impact would be from collision risk when the Development is considered in-combination with the Moray Firth Developments. SNH added that further information on in-combination impact assessment and population modelling was required for this species.

6.2.10 SNH advised that as a result of the EIA Addendum Report submitted for displacement and the changes to the project, in particular the reduction of the operational life of the Development from 50 to 25 years, it could conclude that there would be no adverse effect on the site integrity of the East Caithness Cliffs SPA with respect to common guillemot and razorbill.

6.2.11 Following the consultation on the GBBG Report, on 2 April 2019 SNH advised that the Development in-combination with the Moray Firth Developments would have an adverse effect on the integrity of East Caithness Cliffs SPA with respect to GBBG. SNH advised that if s.36 consent was granted then pre-construction monitoring should be undertaken to understand the movements of adult GBBG recorded in the Development site during the breeding season.

Marine Mammals

6.2.12 SNH advised that there would be no adverse effect on the site integrity of the Moray Firth SAC with respect to the bottlenose dolphin qualifying interest, provided appropriate mitigation is implemented through s.36 consent and/or marine licence conditions.

6.2.13 SNH advised that there would be no adverse effect on site integrity of the Dornoch Firth and Morrich More SAC with respect to the harbour seal qualifying interest, provided appropriate mitigation is implemented through s.36 consent and/or marine licence conditions. SNH advised that for the Development both in isolation and in-combination with the Moray Firth Developments there would be no significant long term effect on the population trajectory of harbour seals.

Habitat

6.2.14 SNH identified no LSE on any habitat features and this was confirmed in its correspondence dated 18 April 2019.

6.3 RSPB Scotland

6.3.1 RSPB Scotland objected to the Application on 7 September 2018.

6.3.2 RSPB Scotland noted that the Company had used more up to date assessment methods than the Moray Firth Developments, but that it considered that the assessment confirms that the impacts of the already consented Moray Firth Developments exceeds the environmental capacity of regional seabird populations to cope with new threats.

6.3.3 RSPB Scotland advised that the Development in-combination with the Moray Firth Developments would lead to an adverse effect on the site integrity of East Caithness Cliffs and North Caithness Cliffs SPAs with respect to kittiwake. RSPB Scotland advised that the effects would likely lead to an adverse effect on the site integrity of Troup, Pennan and Lion’s Heads SPA with respect to kittiwake.

6.3.4 RSPB Scotland raised concerns regarding the assessment of impacts on GBBG, herring gull, guillemot, razorbill and puffin. In addition RSPB Scotland advised that gannet should be included in the assessment. The inclusion of gannet in the RIAA was, however, not advised by SNH through the scoping exercise or HRA screening exercise.

6.3.5 RSPB Scotland provided a response to the EIA Addendum Report on 11 January 2019 ("RSPB Response to EIA Addendum Report"). It advised that its objection was maintained, highlighting particular concern in regard to predicted impacts on kittiwake.

6.3.6 Following the consultation on the GBBG Report, on 2 April 2019 RSPB Scotland advised that the Development in-combination with the Moray Firth Developments would have an adverse effect on the integrity of East Caithness Cliffs SPA with respect to GBBG.

6.3.7 Issues raised by the RSPB Scotland are fully addressed in Appendix 3.

SECTION 2: INFORMATION ON NATURA SITES

7 Background information and qualifying interests for the relevant Natura sites

7.1.1 This section provides links to the SNH interactive website in Table 3 below, where background information on the sites being considered in this assessment is available. The qualifying interests for the sites are listed below at Table 4 and the conservation objectives at Table 5 Figure 2 provides chart of the SPAs, pSPA and SACs considered within this AA.

Table 3 Name of Natura sites affected and current status

SPA: **East Caithness Cliffs SPA** https://sitelink.nature.scot/site/8492 **North Caithness Cliffs SPA** https://sitelink.nature.scot/site/8554

Buchan Ness to Collieston Coast SPA

https://sitelink.nature.scot/site/8473

Troup, Pennan and Lion's Head SPA

https://sitelink.nature.scot/site/8587

SAC:

Moray Firth SAC
https://sitelink.nature.scot/site/8327

Dornoch Firth and Morrich More SAC

https://sitelink.nature.scot/site/8242

pSPA:

Moray Firth pSPA

https://sitelink.nature.scot/site/10490

Table 4 European qualifying interests

East Caithness Cliffs SPA

- Cormorant (*Phalacrocorax carbo*)*, breeding
- Fulmar (*Fulmarus glacialis*)*, breeding
- Great black-backed gull (*Larus marinus*)*, breeding
- Guillemot (*Uria aalge*), breeding
- Herring gull (*Larus argentatus*), breeding
- Kittiwake (*Rissa tridactyla*), breeding
- Peregrine (*Falco peregrinus*), breeding
- Razorbill (*Alca torda*), breeding
- Shag (*Phalacrocorax aristotelis*), breeding
- Seabird assemblage, breeding

* indicates assemblage qualifier only

North Caithness Cliffs SPA

- Fulmar (*Fulmarus glacialis*)*, breeding
- Guillemot (*Uria aalge*), breeding
- Kittiwake (*Rissa tridactyla*)*, breeding
- Peregrine (*Falco peregrinus*), breeding
- Puffin (*Fratercula arctica*)*, breeding
- Razorbill (*Alca torda*)*, breeding
- Seabird assemblage, breeding

Buchan Ness to Collieston Coast SPA

- Fulmar (*Fulmarus glacialis*)*, breeding
- Guillemot (*Uria aalge*)*, breeding
- Herring gull (*Larus argentatus*)*, breeding
- Kittiwake (*Rissa tridactyla*)*, breeding
- Shag (*Phalacrocorax aristotelis*)*, breeding
- Seabird assemblage, breeding

Troup, Pennan and Lion's Head SPA

- Fulmar (*Fulmarus glacialis*)*, breeding
- Guillemot (*Uria aalge*), breeding
- Herring gull (*Larus argentatus*)*, breeding
- Kittiwake (*Rissa tridactyla*)*, breeding
- Razorbill (*Alca torda*)*, breeding
- Seabird assemblage, breeding

Moray Firth SAC

- Bottlenose dolphin (*Tursiops truncatus*)
- Subtidal sandbanks

Dornoch Firth and Morrich More SAC

- Harbour (common) seal (*Phoca vitulina*)
- Otter (*Lutra lutra*)
- Atlantic salt meadows
- Coastal dune heathland*
- Dune grassland*
- Dunes with juniper thickets*

- Estuaries
- Glasswort and other annuals colonising mud and sand
- Humid dune slacks
- Intertidal mudflats and sandflats
- Lime-deficient dune heathland with crowberry*
- Reefs
- Shifting dunes
- Shifting dunes with marram
- Subtidal sandbanks

* indicates priority habitat

Moray Firth pSPA

- Common scoter (*Melanitta nigra*), non-breeding
- Eider (*Somateria mollissima*), non-breeding
- Goldeneye (*Bucephala clangula*), non-breeding
- Great northern diver (*Gavia immer*), non-breeding
- Long-tailed duck (*Clangula hyemalis*), non-breeding
- Red-breasted merganser (*Mergus serrator*), non-breeding
- Red-throated diver (*Gavia stellata*), non-breeding
- Scaup (*Aythya marila*), non-breeding
- Shag (*Phalacrocorax aristotelis*), breeding
- Shag (*Phalacrocorax aristotelis*), non-breeding
- Slavonian grebe (*Podiceps auritus*), non-breeding
- Velvet scoter (*Melanitta fusca*), non-breeding

Table 5 Conservation objectives

SPA: East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Head SPA To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in

the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats
- Supporting the species
- No significant disturbance of the species

SAC:

Conservation Objectives for the following Qualifying Habitats:

SAC	**Qualifying Habitats**
Moray Firth	Subtidal sandbanks
Dornoch Firth and Morrich More	Atlantic salt meadows Coastal dune heathland Dune grassland Dunes with juniper thickets Estuaries Glasswort and other annuals colo mud and sand Humid dune slacks Intertidal mudflats and sandflats Lime-deficient dune heathland crowberry Reefs Shifting dunes Shifting dunes with marram Subtidal sandbanks

To avoid deterioration of the qualifying habitat thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying habitat that the following are maintained in the long term:

- Extent of the habitat on site
- Distribution of the habitat within site
- Structure and function of the habitat
- Processes supporting the habitat
- Distribution of typical species of the habitat
- Viability of typical species as components of the habitat

- No significant disturbance of typical species of the habitat

Conservation Objectives for the following Qualifying Interests:

SAC	Qualifying Interest(s)
Moray Firth	Bottlenose dolphin

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are established then maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

SAC	Qualifying Interest(s)
Dornoch Firth and Morrich More	Harbour (Common) Seal Otter

To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

pSPA:

Moray Firth pSPA (Draft Conservation Objectives)

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, subject to natural change, thus ensuring that the integrity of the site is maintained in the long-term and it continues to make an appropriate contribution to achieving the aims of the Birds Directive for each of the qualifying species.

This contribution will be achieved through delivering the following objectives for each of the site's qualifying features:

a) Avoid significant mortality, injury and disturbance of the qualifying features, so that the distribution of the species and ability to use the site are maintained in the long-term;
b) To maintain the habitats and food resources of the qualifying features in favourable condition.

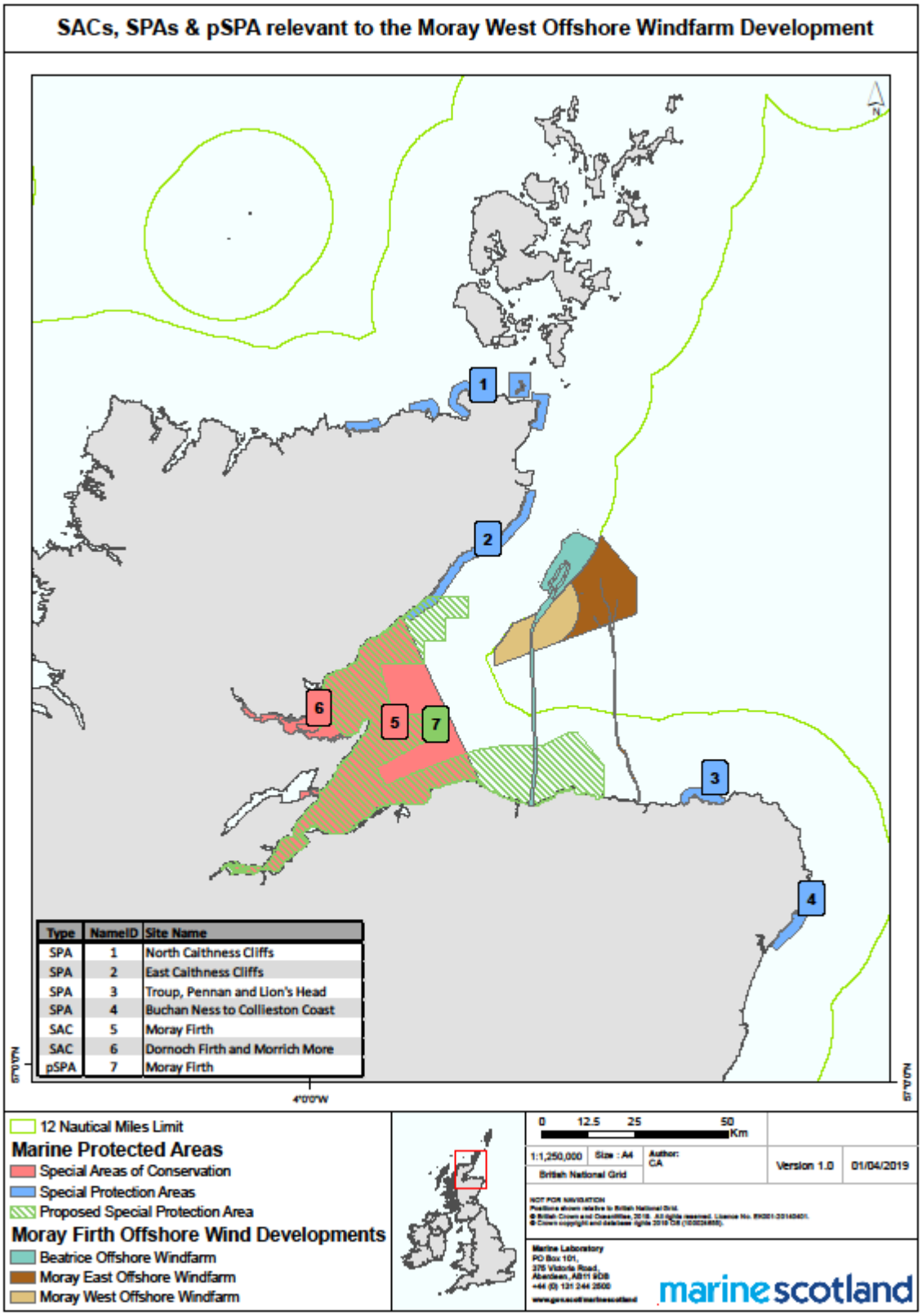

Figure 2 SPAs, pSPA and SACs considered within this AA

SECTION 3: ASSESSMENT IN RELATION TO REGULATION 48 OF THE CONSERVATION (NATURAL HABITATS, &C.) REGULATIONS 1994 (AS AMENDED) AND REGULATION 63 OF THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017

8 Requirement for appropriate assessment

8.1 Is the operation directly connected with or necessary to conservation management of the site?

8.1.1 The operation is not directly connected with or necessary to conservation management of the site.

8.2 Is the operation likely to have a significant effect on the qualifying interests?

8.2.1 LSE has been identified on the following qualifying interests of the SACs, SPAs and pSPA:

MARINE MAMMALS

Moray Firth SAC

- Bottlenose dolphin

Dornoch Firth and Morrich More SAC

- Harbour seal

8.2.2 The RIAA identified that there could be LSE on the qualifying interests of the above SACs during the construction, operational and maintenance phase of the Development arising from:

- Collision with vessels during construction and operation / maintenance
- Underwater noise – piling
- Underwater noise from construction / decommissioning activities (excluding piling)

ORNITHOLOGY

East Caithness Cliffs SPA

- Kittiwake
- GBBG

- Guillemot
- Razorbill
- Herring gull
- Fulmar

North Caithness Cliffs SPA

- Kittiwake
- Guillemot
- Razorbill
- Puffin
- Fulmar

Buchan Ness to Collieston Coast SPA

- Kittiwake
- Herring gull
- Guillemot
- Fulmar

Troup, Pennan and Lion's Head SPA

- Herring gull
- Kittiwake
- Guillemot
- Razorbill
- Fulmar

Moray Firth pSPA

- All species

8.2.3 Section 4.6 of the RIAA identified that there could be LSE on the qualifying interests of the pSPA and SPAs listed above during the operational and maintenance phase of the Development arising from:

- Mortality as a result of direct collision with turbines during the operational phase of the Development;
- Displacement and disturbance resulting in effective habitat loss from an area around turbines and other offshore activities during the construction(e.g. by vessels), operational and decommissioning phases of the Development;
- Barrier effects caused by the physical presence of turbines; and
- Direct habitat loss during construction, operation and decommissioning.

8.2.4 In the SNH Consultation Response, SNH confirmed that the Development is likely to have LSE on a number of qualifying interests of the Moray Firth SAC, Dornoch Firth and Morrich More SAC, East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Head SPA and the Moray Firth pSPA.

8.2.5 Scottish Ministers agree with the advice provided by SNH and have undertaken an AA for the qualifying interests and sites listed above.

9 Appropriate assessment of the implications for the site in view of the site's conservation objectives.

9.1.1 The following assessment is based upon the information contained in the EIA Report, RIAA, EIA Addendum Report and GBBG Report, and the advice received from SNH and MSS. Consideration has also been given to other consultation responses detailed above. Consideration of the effect on site integrity for each European site or European offshore marine site and qualifying interest(s) follows below.

9.1.2 For each of the qualifying interests the worst case scenario ("WCS") has been considered and details of the WCS has been provided in the RIAA and EIA Addendum Report. For the ornithology in-combination assessment, the WCS is considered to be the Development in-combination with the Moray Firth Developments. When considering non-breeding season effects for kittiwake the 2014 consents granted for the Neart na Gaoithe Offshore Wind Farm ("NnG Wind Farm"), the Inch Cape Offshore Wind Farm, and the Seagreen Alpha and Bravo Offshore Wind Farms (referred to collectively as "the Forth and Tay Developments") are considered to represent the WCS. These and other smaller scale projects included in the in-combination assessment are as described at Appendix 1 of this AA. Again in relation to the kittiwake assessment the offshore wind farms in UK North Sea waters are considered ("the North Sea Developments"). These are detailed in Appendix 2.

10 Marine Mammal SACs - Moray Firth SAC, Dornoch Firth and Morrich More SAC

10.1.1 Section 7 of the RIAA provides a full explanation of the assessment methods for bottlenose dolphin and harbour seal. Section 7.5 of the RIAA provides a summary of the assessment of adverse effects from pile driving noise on harbour seals and bottlenose dolphins. For both species, the predicted number of individuals disturbed, and the predicted number of individuals that experience a permanent threshold shift ("PTS") in hearing (i.e. physiological injury) (which was calculated using the National Marine Fisheries

Service("NMFS") (2016)[1] thresholds (also referred to as the National Oceanic and Atmospheric Administration ("NOAA") (2016) thresholds)) are presented. The number of individuals impacted are used to inform the population level consequences of disturbance, using the interim Population Consequences of Disturbance ("iPCoD") framework. For bottlenose dolphins, the assessment results are provided for the Development in isolation and in-combination with the Moray Firth Developments, the Forth and Tay Developments and the Aberdeen Harbour Expansion Project ("AHEP") which uses explosive charges. For harbour seals, the assessment results are provided for the Development in isolation and in-combination with the Moray Firth Developments.

10.1.2 Advice provided by SNH and MSS highlights a number of issues that provide relevant context for this AA. The noise modelling used a 0.5% conversion factor to convert hammer energy into acoustic noise, whereas SNH and MSS advised that a 1% conversion factor, would be considered to be more precautionary. Due to concerns raised regarding the conversion factor, the EIA Addendum Report reassessed the majority of the more pertinent noise modelling scenarios using the more precautionary 1% conversion factor. Despite an increase in the number of animals disturbed, the percentage of the reference population for each species remained small. Consequently, SNH and MSS, concluded that the impact of disturbance for all species remained minor. There were aspects of the modelling presented by the Company that were precautionary. For example, the inclusion of PTS in the population-level consequences of disturbance for bottlenose dolphins for the in-combination assessment resulted in a large difference between the impacted and un-impacted population sizes after the simulated 24 years. However, only one development predicted any PTS, and this was later revised to zero dolphins in an updated assessment. This highlighted that these results are sensitive to assumptions relating to WCS, particularly with respect to information presented on the other developments detailed in paragraph 10.1.1 above, when considered in-combination.

[1] National Marine Fisheries Service (2016) Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts. (U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-55, 178 p. National Marine Fisheries Service).

11 BOTTLENOSE DOLPHIN – Moray Firth SAC

11.1.1 The RIAA references the bottlenose dolphin population estimate to be 195 individuals (95% Highest Posterior Density Interval 164 – 224). Section 7.5 of the RIAA provides a summary of the bottlenose dolphin assessment, which includes the noise modelling and population consequences of disturbance for the project in isolation. It was concluded that, with the adoption of a Marine Mammal Mitigation Plan ("MMMP"), the risk of PTS as a result of pile driving noise is negligible. For the WCS, 14.6 bottlenose dolphins representing 7.5 % of the population were predicted to be disturbed. The results providing the WCS from iPCoD reported the ratio of forecast impacted to un-impacted population size after 24 years as 0.982. Consequently, the assessment concluded that the predicted level of disturbance occurring over a maximum period of two breeding seasons would not result in a significant long term change in the population growth rate and no long term change in the population trajectory. Therefore, there is no indication of an adverse effect on the integrity of the Moray Firth SAC with respect to the bottlenose dolphin feature as a result of pile driving noise. The in-combination assessment (with the projects named in paragraph 10.1.1), presented in section 7.6 of the RIAA, concluded that disturbance may cause a small and temporary change in the trajectory of the bottlenose dolphin population, but that there would be no adverse effect on the Moray Firth SAC as a result of displacement effects associated with the Development in-combination with the Moray Firth Developments, the Forth and Tay Developments and AHEP. In terms of the iPCoD model outputs, this conclusion was based on the ratio of impacted to un-impacted population size after 24 years of being 0.941. The iPCoD analysis was also presented with the inclusion of PTS, but it was considered by MSS to be overly precautionary (see paragraphs 11.1.2 and 11.1.3 below).

11.1.2 The assessment carried out by the Company was completed using version 3 of iPCoD which predates the latest expert elicitations covering PTS ("Version 4") and subsequently, disturbance ("Version 5"). From Version 4 onwards the manner in which PTS is assessed has radically changed, in that the effect of PTS is not as large as was previously assumed. Therefore, even if there were individuals predicted to suffer PTS, the effect on the population would not be as marked as is suggested in the in-combination assessment summarised in the RIAA. SNH concluded that there would be no adverse effect on site integrity of the Moray Firth SAC with respect to bottlenose dolphin as a qualifying interest provided that appropriate mitigation is implemented through s.36 consent and/or marine licence conditions

11.1.3 To provide further reassurance regarding its conclusions, SNH re-ran the iPCoD framework based on a realistic WCS for the in-combination impact, providing advice to Scottish Ministers on 26 September 2018. Its results,

using the median ratio of the impacted to un-impacted population size, concluded that, after 24 years, the in-combination assessment was 0.94. Therefore, the results from the disturbance only assessment detailed in the RIAA were comparable to the results obtained by SNH (see paragraph 11.1.1; whilst the results in the RIAA which included PTS were shown to be overly precautionary).

11.1.4 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the population using the Moray Firth SAC, the predicted levels of effect and population consequences, the precaution in the assessment methods, and the advice from SNH. Scottish Ministers conclude that subject to the appliance of conditions, the Development will not adversely affect the site integrity of the Moray Firth SAC with respect to bottlenose dolphin, either alone or in-combination with the Moray Firth Developments, the Forth and Tay Developments and AHEP.

12 HARBOUR SEAL - Dornoch Firth and Morrich More

12.1.1 The RIAA references the harbour seal population estimate within the Moray Firth Management Unit area as being 1,306 individuals (95% Confidence Interval ("CI"): 1,068 – 1,741); the general trend taken from moult counts suggests that the population is relatively stable. The annual moult count within the Dornoch Firth and Morrich More SAC has fluctuated year-on-year from a maximum of 290 in 2003 to a minimum of 85 in 2016. Over the period between 2002 and 2016 the counts show an average per annum 0.48% decline in numbers. If the 2016 count of 85 is scaled to include the proportion of seals in the water at the time of the count, the abundance of harbour seals in the Dornoch Firth and Morrich More SAC during the 2016 August moult is estimated to be 118 animals (95%CI 97 to 157).

12.1.2 Section 7.5 of the RIAA provides a summary of the harbour seal assessment, which includes the noise modelling and population consequences of disturbance for the Development in isolation. It was concluded that, with the adoption of a MMMP, the risk of PTS as a result of pile driving noise is negligible. For the WCS, 19.6 harbour seals (0.4% of the population) are predicted to be disturbed. The iPCoD assessment concluded that there is no risk of a population level effect, as the simulated impacted and un-impacted populations were virtually identical. Therefore, it was concluded that there would be no adverse effect on the integrity of the Dornoch Firth and Morrich More SAC with respect to harbour seal as a result of pile driving noise. The in-combination assessment with the Moray Firth Developments, presented in section 7.6 of the RIAA, found that disturbance represented a small and temporary change in the trajectory of the harbour seal population. The iPCoD results showed that after 24 years, the median ratio of the impacted to un-

impacted population size was 0.979. Therefore, it was concluded that there would be no adverse effect on the harbour seal population as a result of displacement effects associated with the Development in-combination with the Moray Firth Developments. The iPCoD analysis did not consider PTS in the in-combination assessment as the Company estimated zero individuals experiencing PTS for the Development and the Moray Firth Developments.

12.1.3 SNH advised that there would be no adverse effect on site integrity of the Dornoch Firth and Morrich More SAC with respect to harbour seal as a qualifying interest, provided that appropriate mitigation is implemented through s.36 consent and/or marine licence conditions. SNH further concluded that both in isolation and in-combination with the Moray Firth Developments there would be no significant long term effect on the population trajectory for harbour seals.

12.1.4 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the population at the site, the predicted levels of effect and population consequences, the precaution in the assessment methods and the advice from SNH. Scottish Ministers conclude that subject to the appliance of conditions, the Development will not adversely affect the site integrity of the Dornoch Firth and Morrich More SAC with respect to harbour seals, either alone or in-combination with the Moray Firth Developments.

13 Seabird SPAs – East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Head SPA, and Moray Firth pSPA

13.1.1 The Scottish Ministers consider that the primary focus of the AA should be the conservation objectives relating to the maintenance of the relevant qualifying species as a viable component of the sites.

13.1.2 The RIAA provides a full explanation of the assessment methods starting from page 49. The ornithology assessments firstly estimated the predicted levels of effect (collision and/or displacement, depending on the species). Secondly, the numbers of individuals that are affected for each species were assigned to age classes (e.g. breeding and non-breeding juveniles). These individuals were then apportioned to SPA and non-SPA breeding colonies. Lastly, where advised through the Scoping Opinion and subsequent consultation responses and discussion, the population level consequences of these effects were estimated using PVA. PVA was originally undertaken assuming 35 year and 50 year operational life. However, in the EIA Addendum Report, the Company committed to a 25 year operational life, with PVA outputs presented for this time period for species included in the EIA

Addendum Report. The assessment results were provided for the Development in isolation and in-combination with the Moray Firth Developments and other offshore wind farm projects and proposals identified in Appendix 4.3 of the RIAA. Further detail on the projects considered in-combination by Scottish Ministers is provided at Appendices 1 and 2 of this assessment.

14 KITTIWAKE – East Caithness Cliffs SPA, North Caithness Cliffs SPA, Troup, Pennan and Lion's Heads SPA, and Buchan Ness to Collieston Coast SPA

14.1.1 Scottish kittiwake populations have experienced significant declines over the last 30 years and this decline was highlighted in advice received from both SNH and RSPB Scotland. The reason for the decline is uncertain, although factors such as climate change and changes to prey distribution are very likely to be key drivers. The results of the modelling for collision and displacement impacts were presented in the EIA Report, RIAA and EIA Addendum Report.

14.1.2 Following consultation responses to the Application (including the RIAA), the Company submitted the EIA Addendum Report, which included SPA apportioned impacts following displacement and collision risk modelling. Displacement effects were assessed using the matrix approach (assuming a 30% displacement rate and 2% mortality rate, a 2km buffer was also included) and collision effects using option 2 of the Band 2012 collision risk model and a 98.9% avoidance rate. The Company proposed a number of refinements to the assessment methodology. The SNH Response to EIA Addendum Report advised as to which of these refinements that SNH found to be acceptable, and these have been taken forward in the AA. The RIAA and EIA Addendum Report considered the maximum design envelope of 85 turbines.

14.1.3 For the kittiwake assessment, the SNH Response to EIA Addendum Report advised on the refinements that it accepted. The Company's refinements and SNH's views on these are as follows:

14.1.4 *Apportioning* - The Company recalculated the apportioning for the Moray Firth Developments, as the method has developed since these applications were submitted. This included consideration of immature and sabbatical birds. The Company used boat-based data from Moray East Offshore Wind Farm to calculate the proportion of immature kittiwake for the Moray Firth Developments. The Company also undertook a further analysis using

survival rates to estimate the proportion of older immatures present. SNH accepted these refinements.

14.1.5 *Nocturnal activity factors* - The Company proposed a correction to account for updated nocturnal activity factors at all North Sea Developments considered in-combination, dependent on latitude. SNH advised that whilst this suggestion has merit, the approach has not been validated and SNH did not accept this refinement.

14.1.6 *Updated project designs / design refinements* – In the EIA Addendum Report, the Company committed to reducing kittiwake collisions to 53 per annum and to reduce turbine numbers from 85 to 79 if this cannot be achieved through other changes. In section 1.2 of the EIA Addendum Report, the Company recalculated the collision estimates from the Moray East Offshore Wind Farm to incorporate revisions to that project through the "Development Specification and Layout Plan". The number of turbines reduced from 159 to 100. The use of the final turbine scenario for Moray East Offshore Wind Farm reduces the annual collision estimate from Moray East Offshore Wind Farm by 64%. SNH accepted this refinement.

14.1.7 *Collision estimates* - The Company also recalculated the collision estimates from the NnG Wind Farm based on the variation to the s.36 consent granted for that project in 2015 (the number of turbines reduced in the assessment from 127 to 75). This resulted in a 57% reduction in collision risk estimates for the NnG Wind Farm. SNH accepted this refinement.

14.1.8 *Correction factor* - The Company proposed revising collision estimates using a correction factor based on the MacArthur Green (2017)[2] Crown Estate headroom report which calculates a 15% reduction in kittiwake collision estimates for cumulative impacts assessments in the North Sea comparing as-built to consented scenarios. SNH accepted the refinements in relation to the Moray East Offshore Wind Farm and NnG Wind Farm but did not accept the use of the correction factor refinement for the other North Sea Developments as the approach had not been independently verified.

14.1.9 *Flight speeds* - The Company recalculated the collision estimates for the Moray Firth Developments based on new flight speeds detailed by Skov et al (2018).[3] This reduced the collision estimates at Beatrice Offshore Wind Farm

[2] MacArthur Green (2017). Estimates of Ornithological Headroom in Offshore Wind Farm Collision Mortality. The Crown Estate. Available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-001095-DI_HOW03_Appendix%2043.pdf .

[3] Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/ .

and Moray East Offshore Wind Farm by 24% and 23% respectively. The Company proposed using a correction factor for other North Sea Developments based on the change to collision estimates as a result of these new flight speeds detailed by Skov et al (2018).[4] SNH accepted the refinements in relation to the Moray Firth Developments; however, SNH advised that whilst the correction factor approach for the North Sea Developments had merit, the correction factor suggested had not been validated or tested. SNH did not, therefore, accept the refinement in relation to the North Sea Developments.

14.1.10 *Avoidance rates and Band model* - The Company presented a range of collision estimates calculated using the avoidance rates advised by SNH together with other SNCBs,[5] and the Cook et al (2014)[6] avoidance rate for kittiwake (i.e. 98.9 – 99.2%). The Cook et al (2014) avoidance rate of 99.2% reduces the collision estimate for kittiwakes by 27% when compared to the collision estimate using the SNH recommended avoidance rate of 98.9%. SNH did not accept this refinement.

14.1.11 *Biologically* Defined *Minimum Population Size ("BDMPS*") - The Company proposed to adjust the proportion of birds in the BDMPS region based on a tiered dispersal of kittiwakes during the non-breeding season between three regions (local winter population to Moray Firth Developments, Scottish Developments, and all Scottish and English offshore wind farms presented in EIA Addendum Report, section 3.6.2.6). SNH did not accept this refinement.

14.2 East Caithness Cliffs SPA - Kittiwake - Development in Isolation

14.2.1 The citation population for kittiwake at East Caithness Cliffs SPA is 32,500 pairs (classified 1996, with counts from 1985-87). The most recent published whole SPA count is from 2015 when 24,460 pairs were counted,[7] a decline

[4] Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/ .

[5] Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review. 25th November 2014. https://www.nature.scot/sites/default/files/2018-02/SNCB%20Position%20Note%20on%20avoidance%20rates%20for%20use%20in%20collision%20risk%20modelling.pdf .

[6] Cook, A.S.C.P., Burton, N.H.K., Humphreys, E.M., Masden, E.A. (2014) The Avoidance Rates of Collision Between Birds and Offshore Turbines. Scottish Marine and Freshwater Science Vol 5 No 16. Edinburgh: Scottish Government, 247p. DOI: 10.7489/1553-1.

[7] Swann, B. 2016. Seabird counts at East Caithness Cliffs SPA for marine renewable casework. Scottish Natural Heritage Commissioned Report No. 902. Available at: https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20902%20-

of 39.5% since 1999 (40,450 pairs). The most recent status for the SPA is of favourable maintained;[8] however, that assessment was issued prior to the availability of the 2015 count.

14.2.2 The Development area (including 2km buffer) does not overlap with the East Caithness Cliffs SPA. Published information on kittiwake foraging ranges (Thaxter et al, 2012)[9] suggests it is very likely that breeding period kittiwakes from the East Caithness Cliffs SPA would occur in the Development area (including 2km buffer), as well as the other Moray Firth Development areas.

14.2.3 For the Development in isolation, assuming the SNH agreed displacement and collision effect estimation and apportioning methods (i.e. using the SNH apportioning approach, refinements to the Collision Risk Model ("CRM") agreed in the SNH Response to EIA Addendum Report and the SNH seasonal definitions), mortality by displacement is estimated as 30 adult kittiwake during the breeding season and 1 kittiwake (all age classes) during the non-breeding season, giving a total annual mortality from displacement of 31 individuals (EIA Addendum Report, table 3.15). Mortality from collision is estimated as 51 adult kittiwake during the breeding season and a further 1 adult during the non-breeding season, a total of 52 (EIA Addendum Report, table 3.47, including refinements 1-4 which were accepted by SNH). The total annual mortality from displacement and collision is 83 individuals for the Development in isolation.

14.2.4 PVA was undertaken by the Company for East Caithness Cliffs SPA and presented in the EIA Addendum Report. Assuming 25 years of operation and mortality of 84 individuals for displacement and collision mortality combined (the closest figure for which PVA outputs were presented), for the Development in isolation the median of the ratio of impacted to un-impacted population size is 0.950 and the ratio of impacted to un-impacted growth rate is 0.998 (EIA Addendum Report, table 3.49).

14.2.5 PVA was not undertaken for the collision only mortality of 52 individuals for the Development in isolation; however, this can be estimated from the information available. Assuming 25 years of operation and a mortality of 57 individuals, for the Development in isolation, the median of the ratio of impacted to un-impacted population size is 0.965 and the ratio of impacted

%20Seabird%20counts%20at%20East%20Caithness%20Cliffs%20SPA%20for%20marine%20renewable%20casework.pdf .

[8] SNH (2019). Sitelinks. Scottish Natural Heritage https://gateway.snh.gov.uk/sitelink/index.js .

[9] Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W., Burton, N.H.K. (2012) Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation Vol 156: 53–61.

to un-impacted growth rate is 0.999 (EIA Addendum Report, table 3.35). For a mortality of 52 individuals these metrics would be expected to increase slightly (a reduced impact).

14.2.6 On 18 April 2019, SNH advised that the Development in isolation would not adversely affect the integrity of the East Caithness Cliffs SPA with respect to kittiwake.

14.3 East Caithness Cliffs SPA - Kittiwake - Development In-combination

14.3.1 The RIAA and EIA Addendum Report record that in the breeding season it has been assumed that the Development may act in-combination with both the Moray East Offshore Wind Farm (as detailed in the Design Specification and Layout Plan) and Beatrice Offshore Wind Farm (as built), based on the foraging range of kittiwake from the SPA. In the non-breeding season, the Company is assumed to act in-combination with all wind farms located in the post and pre-breeding BDMPS for kittiwake as described by Furness (2015).[10] Details of projects included in the in-combination assessment are included at Appendices 1 and 2.

14.3.2 The cumulative total number of individuals of all ages experiencing annual mortality is assessed to be 66 from displacement (EIA Addendum Report, table 3.22) and 250 from collision (EIA Addendum Report, table 3.47 - including refinements 1-4 which were accepted by SNH), a total annual mortality of 316 for the Development in-combination.

14.3.3 PVA was undertaken by the Company for East Caithness Cliffs SPA. Assuming 25 years of operation, for the Development in-combination, a mortality figure of 321 (the closest figure to the combined displacement and collision mortality of 316) resulted in a median of the ratio of impacted to un-impacted population size of 0.823 and a ratio of impacted to un-impacted growth rate of 0.992 (EIA Addendum Report table 3.49).

14.3.4 For collision mortality alone, for the Development in-combination, the median of the ratio of impacted to un-impacted population size is 0.859, and the ratio of un-impacted to impacted growth rate is 0.994 (EIA Addendum Report table 3.49. These figures include the refinements (1-4) to the assessment undertaken by the Company which have been accepted by SNH (see paragraphs 14.1.2 to 14.1.11 above).

[10] 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.

14.3.5 Based on the ratio of impacted to un-impacted population size of 0.859 for collision only, the SNH Response to EIA Addendum Report advised that the Development in-combination with the Moray Firth Developments would have an adverse effect on the site integrity of East Caithness Cliffs SPA with respect to kittiwake.

14.4 North Caithness Cliffs SPA – Kittiwake - Development in Isolation

14.4.1 The citation population for kittiwake at North Caithness Cliffs SPA is 13,100 pairs (classified 1996, with counts from 1985-87).[11] The most recent published whole SPA count was from 2015 and 2016 when 5,568 pairs were counted,[12] a decline of 55% since 1999 and 2000 (10,147 pairs) and 64% since 1986. The most recent status for the SPA is of unfavourable declining.[13]

14.4.2 The Development area (including 2km buffer) does not overlap with the North Caithness Cliffs SPA. Published information on kittiwake foraging ranges (Thaxter et al, 2012)[14] suggests it is very likely that breeding period kittiwake from the North Caithness Cliffs SPA would occur in the Development area (including 2km buffer), as well as the other Moray Firth Development areas.

14.4.3 Following SNH agreed displacement and collision effect estimation and apportioning methods (i.e. using the SNH apportioning approach, refinements to the CRM agreed in the SNH Response to EIA Addendum Report, and the SNH seasonal definitions), annual mortality of all age classes for the Development in isolation from displacement is estimated as 1 individual (EIA Addendum Report, table 3.19) and for collision mortality 2 individuals (EIA Addendum Report, table 3.51 – including refinements 1-4, which were accepted by SNH), a total of 3 individuals.

14.4.4 PVA was undertaken by the Company for North Caithness Cliffs SPA for 25 years of operation. For the Development in isolation for combined collision and displacement mortality the median of the ratio of impacted to un-impacted population size is 0.992 and the ratio of impacted to un-impacted

[11] SNH (2019). Sitelinks. Scottish Natural Heritage https://gateway.snh.gov.uk/sitelink/index.js .
[12]Swann, B. 2018. Seabird counts at North Caithness Cliffs SPA in 2015 and 2016 for Marine Renewables Casework. Scottish Natural Heritage Research Report No. 965. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20SNH%20Research%20Report%20965%20-%20Seabird%20counts%20at%20North%20Caithness%20Cliffs%20SPA%20in%202015%20and%202016%20%20for%20Marine%20Renewable%20Casework.pdf

[13] SNH (2019). Sitelinks. Scottish Natural Heritage https://gateway.snh.gov.uk/sitelink/index.js .
[14] Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W., Burton, N.H.K. (2012) Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation Vol 156: 53–61.

growth rate is 1.00 (EIA Addendum Report, table 3.40). PVA was not undertaken for collision mortality alone for the Development in isolation, metrics would be similar to for 3 birds with a slightly reduced impact.

14.4.5 On 18 April 2019, SNH advised that the Development in isolation would not adversely affect the integrity of the North Caithness Cliffs SPA with respect to kittiwake.

14.5 North Caithness Cliffs SPA – Kittiwake - Development In-combination

14.5.1 The RIAA and EIA Addendum Report record that in the breeding season it has been assumed that the Development may act in-combination with both the Moray East Offshore Wind Farm (as detailed in the Design Specification and Layout Plan) and Beatrice Offshore Wind Farm (as built), based on the foraging range of kittiwake from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the post and pre-breeding BDMPS for kittiwake as described by Furness (2015).[15] Details of projects included in the in-combination assessment are included at Appendices 1 and 2.

14.5.2 The cumulative total number of individuals of all ages experiencing annual mortality is assessed to be 3 from displacement (EIA Addendum Report, table 3.23) and 45 from collision (EIA Addendum Report, table 3.51 – including refinements 1-4 which were accepted by SNH), a total annual mortality of 48 for the Development in-combination.

14.5.3 PVA was undertaken by the Company for the North Caithness Cliffs SPA and assuming 25 years of operation for the Development in-combination. For an annual mortality of 49 individuals (the closest PVA output provided by the Company) the median of the ratio of impacted to un-impacted population size is 0.878 and the ratio of impacted to un-impacted growth rate is 0.995 (EIA Addendum Report, table 3.51). These figures include the refinements 1-4 to the assessment undertaken by the Company which have been accepted by SNH (see paragraphs 14.1.2 to 14.1.11 above),

14.5.4 For collision mortality alone, for the Development in-combination, the median of the ratio of impacted to un-impacted population size is 0.887 and the ratio of impacted to un-impacted growth rate is 0.995 (EIA Addendum Report, table 3.51).

[15] 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.

14.5.5 Based on the ratio of impacted to un-impacted population size of 0.887 for collision only, the SNH Response to EIA Addendum Report advised that the Development in-combination with the Moray Firth Developments would have an adverse effect on site integrity of the North Caithness Cliffs SPA with respect to kittiwake.

14.6 Troup, Pennan and Lion's Heads SPA – Kittiwake - Development in Isolation

14.6.1 The citation population for kittiwake at Troup, Pennan and Lion's Heads SPA is 31,600 pairs (classified 1997, with counts from 1995). The RIAA reports that this population decreased to 7,180 pairs in 2015 but has since shown signs of a slight recovery with 10,503 pairs estimated in 2017. The most recent status for the SPA is of unfavourable.[16]

14.6.2 For the Development in isolation, the annual mortality of all age classes from displacement is estimated as 3-5 individuals (RIAA, table 6.8.12) and from collision mortality is 6 individuals (RIAA, table 6.8.13), a total of 9-11 individuals.

14.6.3 PVA modelling was not required for this SPA.

14.6.4 In the SNH Consultation Response, SNH advised that there would be no adverse effect on the site integrity of the Troup, Pennan and Lion's Heads SPA in respect of kittiwake as a result of the Development in isolation.

14.7 Troup, Pennan and Lion's Heads SPA – Kittiwake - Development In-combination

14.7.1 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with both the Moray East Offshore Wind Farm (as consented), Beatrice Offshore Wind Farm (as built), Kincardine Offshore Wind Farm and Hywind Offshore Wind Farm based on the foraging range of kittiwake from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the post and pre-breeding BDMPS for kittiwake as described by Furness (2015).[17] Details of projects included in the in-combination assessment are included at Appendices 1 and 2.

[16] SNH (2019). Sitelinks. Scottish Natural Heritage https://gateway.snh.gov.uk/sitelink/index.js .

[17] 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.

14.7.2 For the Development in-combination, the cumulative total number of kittiwake individuals experiencing annual mortality is assessed to be 4 from displacement (RIAA, table 6.9.45) and 80 from collision (RIAA, table 6.9.47), a total annual mortality of 84.

14.7.3 In the SNH Consultation Response, SNH advised that there would be no adverse effect on the site integrity of the Troup, Pennan and Lion's Heads SPA in respect of kittiwake as a result of the Development in-combination with the Moray Firth Developments and other North Sea Developments.

14.8 Buchan Ness to Collieston Coast SPA - Kittiwake Development in Isolation and In-combination

14.8.1 The citation population for kittiwake at Buchan Ness to Collieston Coast SPA is 13,452 pairs (at time of classification in 1998).[18] The most recent status for the SPA is of unfavourable no change.

14.8.2 Kittiwake from Buchan Ness to Collieston Coast SPA were outwith the foraging range of the Development area but were assessed in the RIAA for potential of disturbance and changes in prey availability during construction as the offshore export cable corridor is within foraging range. The Company concluded (paragraph 6.8.3.27 in RIAA) that there was no indication of an adverse effect as impact would be localised and at a low level. On 18 April 2019, SNH advised that given the temporary and localised nature of the cable corridor construction activities, and the relatively large foraging area of kittiwake, the Development would not adverse effect integrity of the Buchan Ness to Collieston Coast SPA with respect to kittiwake.

14.9 Kittiwake – Precaution in the Assessment

14.9.1 There are a number of precautionary assumptions made in this assessment which mean that the estimated cumulative total number of individuals impacted and the population consequences are likely to be over-estimates.

14.9.2 In the SNH Consultation Response, SNH advised that collision is the key impact for kittiwake. The inclusion of displacement in this assessment is likely to be precautionary, as is the assumption that collision and displacement effects are additive. In addition, the assessment of displacement does not take into account the potential for habituation. The assumption that a uniform proportion of birds are displaced from a 2km buffer around every project site and within project sites is likely to be very precautionary.

[18] SNH (2019). Sitelinks. Scottish Natural Heritage https://gateway.snh.gov.uk/sitelink/index.js .

14.9.3 Another example comes from the seabird collision avoidance study undertaken at Thanet Offshore Wind Farm which lends support to the view that the avoidance rates used in this assessment are likely to be highly precautionary (Skov et al, 2018).[19] This was proposed as a refinement to the assessment by the Company in the EIA Addendum Report but not accepted by SNH due to ongoing work commissioned by Joint Nature Conservation Committee ("JNCC")[20] to assess the avoidance rates proposed by Skov et al (2018).[21] Therefore this refinement was not considered in this AA.

14.9.4 Although SNH did not accept all the refinements proposed by the Company, it advised that it saw merit in some of the refinements, as detailed in paragraphs 14.1.2 to 14.1.11 above. As this AA is based only on the refinements which were accepted by SNH, the AA can be considered precautionary.

14.10 Kittiwake - Conclusion

14.10.1 In the SNH Consultation Response, SNH advised that the Development would not have an adverse effect on the site integrity for kittiwake as a qualifying interest of Troup, Pennan and Lion's Heads SPA in-combination with the Moray Firth Developments, the Forth and Tay Developments and the other North Sea Developments.

14.10.2 In the SNH Response to EIA Addendum Report, SNH advised that the Development would have an adverse effect on the site integrity for kittiwake as a qualifying interest of East Caithness Cliffs SPA and North Caithness Cliffs SPA in-combination with the Moray Firth Developments, the Forth and Tay Developments and the other North Sea Developments.

14.10.3 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the populations at the sites, the predicted levels of effect and population consequences, the precaution in the assessment methods and the advice from SNH. Scottish Ministers conclude that, subject to the appliance of conditions, there will be no adverse effect on the site integrity of the East Caithness Cliffs SPA, North Caithness Cliffs SPA, Troup, Pennan and Lion's Heads SPA and Buchan Ness to Collieston Coast SPA in

[19] Skov, H., Heinanen, S., Norman, T., Ward, R.M., Mendez-Roldan, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. . 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/

[20] http://jncc.defra.gov.uk/page-7680 .

[21] Skov, H., Heinanen, S., Norman, T., Ward, R.M., Mendez-Roldan, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. . 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/ .

respect of the kittiwake qualifying interest as a result of the Development in isolation or in-combination with the other Moray Firth Developments and projects detailed in Appendices 1 and 2.

15 HERRING GULL – East Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA

15.1.1 The Company was required to consider collision impacts for herring gull.

15.1.2 The closest SPA colonies to the Development are East Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA. Herring gull from these three SPAs were identified as being at possible risk from collision impacts. All three SPAs have unfavourable status with significant declines since designation.

Table 6 Details of SPA sites assessed for herring gull.

Site	Citation population (pairs)	Count year	Counts used in assessment (pairs)	Status
East Caithness Cliffs SPA	9,400	1985-87	3,411	Unfavourable No change
Buchan Ness to Collieston Coast SPA	4,292	1998*	3,317	Unfavourable No change
Troup, Pennan and Lion's Heads SPA	4,200	1995	2,001	Unfavourable Declining

Data from: [22],[23]

*Citation year, count year not known

15.1.3 This assessment uses collision risk modelled by the Company using the Band (2012) CRM with option 2 and an avoidance rate of 99.5%, flight speeds are from Skov et al (2018).[24] Development in isolation and in-

[22] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .
[23] Moray West, Report to Inform Appropriate Assessment (table 7.2 in Appendix 4.4). http://marine.gov.scot/data/moray-west-offshore-windfarm-report-inform-appropriate-assessment .
[24] Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/ .

combination assessments were undertaken by the Company for East Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA.

15.1.4 The RIAA assumed that in the breeding season the Development may act in-combination with the Moray Firth Developments for East Caithness Cliffs SPA, plus Kincardine Offshore Wind Farm and Hywind Offshore Wind Farm for Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA based on the foraging range of herring gull from the SPAs. In the non-breeding season, the Development is assumed to act in-combination with all wind farms located in the non-breeding BDMPS for herring gull as described by Furness (2015).[25]

15.1.5 The RIAA estimated that the total collision mortality for the Development in isolation would be 12 herring gull during the breeding season and 1 bird during the non-breeding season (EIA Report, chapter 10, table 10.7.9), an annual total of 13 birds. Following apportioning, this additional mortality only affected East Caithness Cliffs SPA, with mortality of 4 herring gull during breeding season and 0 herring gull during the non-breeding season apportioned to the SPA. For the Development in-combination with other Moray Firth Developments, collision mortality during breeding for East Caithness Cliffs SPA is 14 herring gulls, with 5 further birds during the non-breeding in-combination with the North Sea Developments (RIAA, table 6.9.17), an annual total of 19 birds.

15.1.6 PVA modelling was not undertaken for herring gull for Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA. PVA was undertaken for herring gull for East Caithness Cliffs SPA; however, this was performed in 50 bird increments, so is not useful for the estimated level of impact. Due to the low predicted collision effects on herring gull, revised PVA was not required to be undertaken as part of the EIA Addendum Report.

15.2 Herring gull – Precaution in the Assessment

15.2.1 There are a number of precautionary assumptions made in this AA which mean that the estimated cumulative collision total and their population consequences are highly likely to be over-estimates.

[25] 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.

15.2.2 For example, the seabird collision avoidance study undertaken at Thanet Offshore Wind Farm lends support to the view that the avoidance rates used in this assessment are likely to be highly precautionary (Skov et al, 2018).[26]

15.3 Herring gull – Conclusion

15.3.1 In the SNH Consultation Response, SNH advised that the Development would not have an adverse effect on the site integrity of East Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA in isolation or in-combination with the Moray Firth Developments, and other proposed or consented wind farms with respect to herring gull as a qualifying interest.

15.3.2 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the populations at the sites, the predicted levels of effect and population consequences, the precaution in the assessment methods and the advice from SNH. Scottish Ministers conclude that, subject to the appliance of conditions, there will be no adverse effect on the site integrity of East Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA in respect of the herring gull as a qualifying interest as a result of the Development in isolation or in-combination with the other Moray Firth Developments and projects detailed in Appendices 1 and 2.

16 GREAT BLACK-BACKED GULL – East Caithness Cliffs SPA – Development in Isolation and In-combination

16.1.1 The Company was required to consider collision impacts for GBBG.

16.1.2 The closest SPA colony to the Development is East Caithness Cliffs SPA. Other SPAs are outwith foraging range for GBBG. GBBG from East Caithness Cliffs SPA were identified as being at possible risk from collision impacts.

16.1.3 The results of the modelling for collision impacts were initially presented in the EIA Report, RIAA, and EIA Addendum Report. Following consultation responses on the RIAA and EIA Addendum Report from SNH and MSS, a further note was provided by the Company - the GBBG Report. This AA follows the results presented in the GBBG Report. This AA uses collision risk modelled by the Company using the Band (2012) CRM with option 2 and an

[26] Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/ .

avoidance rate of 99.5%. For the assessment of the impact of the Development in-combination the Moray Firth Developments were included for both the breeding and non-breeding periods. For the Moray Firth Developments, collision estimates were presented using the Band (2012) CRM for both options 1 and 3, with avoidance rates 99.5% and 98.9% respectively. The assessment here follows the results for option 3 as advised by MSS in its advice on the GBBG Report dated 10 April 2019 ("MSS Advice on GBBG Report"). The Company proposed seven refinements to the assessment methodology, which were presented in the GBBG Report. The refinements were accepted in the MSS Advice on GBBG Report and by SNH. The refinements are as follows (numbering follows that used in the GBBG Report):

16.1.4 *Updated project design for Moray East.* The CRM project design parameters were presented in the GBBG Report (Annex A). The Development was for 85 x 12MW turbines. Beatrice Offshore Wind Farm used the as-built scenario (development under construction) for 84 x 7MW turbines. For Moray East Offshore Wind Farm, CRM was initially run for the worst case consented design (159 x 7 MW turbines) presented in the EIA Report, RIAA, and EIA Addendum Report. In the GBBG Report, the as-built scenario (as specified in the Moray East Design Specification and Layout Plan) was used for CRM modelling, this is for 100 x 9.525MW turbines.

16.1.5 *Updated flight speed.* The Company recalculated the collision estimates for the Moray Firth Developments based on new flight speeds detailed by Skov et al(2018).[27] This reduces collision estimates for the Moray Firth Developments.

16.1.6 *Boat-based bias correction*. The ornithology baseline survey data for the Moray Firth Developments was derived from boat based observations. A correction factor was applied to this data to account for the abundance of gulls likely being overestimated in such surveys when gulls are attracted to or follow survey vessels.

16.1.7 *Proportion of adults.* Before apportioning collisions, sub-adults were excluded; this proportion of adults was based on the proportion of adults observed on the at-sea surveys for each of the Moray Firth Developments.

16.1.8 *Proportion from SPA (breeding).* Apportioning during the breeding period followed SNH guidance using a two-stage approach, whereby collisions were

[27] Skov, H., Heinänen, S., Norman, T., Ward, R.M., Méndez-Roldán, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/ .

first apportioned to all colonies within foraging range, both SPA and non-SPA, using Seabird 2000 colony counts. Thereafter, SPA collisions were apportioned amongst SPAs using the latest available SPA colony counts.

16.1.9 *Exclude sabbaticals*. A proportion of adults are expected to skip breeding in a given year (sabbatical), a correction factor was applied during the breeding season to exclude these birds.

16.1.10 *Apportioning (non-breeding) and winter influx*. For the non-breeding season collisions were apportioned to the Moray Firth regional population of GBBGin proportion to colony size. Additionally the influx during the non-breeding season of non-UK GBBG is accounted for.

16.1.11 The citation population for GBBG at East Caithness Cliffs SPA is 800 pairs (classified 1996, with counts from 1985-87). The most recent published whole SPA count is from 2015 when 266 pairs (apparently occupied territories) were counted,[28] an increase of 47.8%% since 1999 though a decrease from the citation population. The most recent status for the SPA is of unfavourable no change.[29]

16.1.12 Following apportioning to East Caithness Cliffs SPA, for the Development in isolation collision mortality for GBBG was 1.5 adults during the breeding season and 0.4 during the non-breeding season, an annual total of 2.0 for the Development in isolation. For the Development in-combination with the Moray Firth Developments collision mortality during breeding season for birds from East Caithness Cliffs SPA is 2.4 GBBG, with 0.9 further birds during the non-breeding season in-combination with the Moray Firth Developments, an annual total of 3.4 birds for the Development in-combination with the Moray Firth Developments (GBBG Report, table 1.2). As GBBG from the East Caithness Cliffs SPA are expected to remain within the confines of the Moray Firth region during the non-breeding season, offshore wind farms from other regions of the North Sea are not included in the in-combination assessment.

16.1.13 PVA was undertaken by the Company for East Caithness Cliffs SPA. Assuming 25 years of operation, for the Development in-isolation for collision mortality the ratio of impacted to un-impacted population size is 0.898 and

[28] Swann, B. 2016. Seabird counts at East Caithness Cliffs SPA for marine renewable casework. Scottish Natural Heritage Commissioned Report No. 902. Available at: https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20902%20-%20Seabird%20counts%20at%20East%20Caithness%20Cliffs%20SPA%20for%20marine%20renewable%20casework.pdf .

[29] SNH (2019). Sitelinks. Scottish Natural Heritage https://gateway.snh.gov.uk/sitelink/index.js .

the ratio of impacted to un-impacted growth rate is 0.996. For the Development in-combination with the other Moray Firth Developments for collision mortality the median of the ratio of impacted to un-impacted population size is 0.851 and the ratio of impacted to un-impacted growth rate is 0.994 (GBBG Report, table 1.4).

16.1.14 On 2 April 2019, in its consultation response to the GBBG Report, SNH advised that the Development in-combination with the Moray Firth Developments would have an adverse effect on site integrity of the East Caithness Cliffs SPA with respect to GBBG. SNH cited the ratio of impacted to un-impacted population size (range of 0.76-0.85 following CRM option 1 or 3 for the Moray Firth Developments) and noted that the ratio of impacted to un-impacted growth rate also indicates adverse changes.

16.1.15 SNH advised that if s.36 consent was to be granted, then pre-construction monitoring to understand the movements of adult GBBG recorded in the Development site during the breeding season should be undertaken. Monitoring should involve tagging and ringing GBBG within the Development site at sea to establish colony origin, and to help inform any requirements for monitoring during the operational phase. In the MSS Advice on GBBG Report, MSS advised that this approach to monitoring would provide useful data on the origin of the birds observed at sea; however, it is unclear how practicable it would be to perform such a study as it is likely to be challenging to catch the gulls at sea. Such a study could be complemented by a further Global Positioning System ("GPS") tagging study of gulls at East Caithness Cliffs SPA and potentially other Moray Firth colonies. GPS devices and attachment methods have advanced since the original study,[30] so it is likely that gulls could be tracked for longer time periods than previously.

16.2 GBBG – Precaution in the Assessment

16.2.1 There are precautionary assumptions made in this AA which mean that the estimated cumulative collision total and the population consequences are likely to be over-estimates. The Company highlighted in the EIA Addendum Report and the GBBG Report the limited evidence of GBBG from East Caithness Cliffs utilising the offshore marine environment including the Development site.[31] The AA assuming use of the Development site can therefore be considered to be precautionary.

[30] Archibald., K., Evans, D. and Votier, S. (2014). East Caithness Cliffs SPA gull Tracking Report 2014. Environment & Sustainability Institute, University of Exeter.

[31] Archibald., K., Evans, D. and Votier, S. (2014). East Caithness Cliffs SPA gull Tracking Report 2014. Environment & Sustainability Institute, University of Exeter.

16.3 GBBG – Conclusion

16.3.1 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the populations at the sites, the predicted levels of effect and population consequences, and the advice from SNH. The in-combination predicted effects in this AA (3.4 breeding GBBG from East Caithness Cliffs SPA) are less than those predicted in the AAs completed for the Moray East Offshore Wind Farm and Beatrice Offshore Wind Farm in March 2014. In these AAs, the in-combination effect from these two projects was 3.95 breeding GBBG from East Caithness Cliffs SPA. The Scottish Ministers conclude that, subject to the appliance of conditions, there will be no adverse effect on the site integrity of East Caithness Cliffs SPA in respect of GBBG as a result of the Development in isolation or in-combination with the other Moray Firth Developments and projects detailed in Appendix 1.

17 RAZORBILL – East Caithness Cliffs SPA, North Caithness Cliffs SPA, and Troup, Pennan and Lion's Heads SPA

17.1.1 The Scoping Opinion advised that the Company was only required to consider displacement effects as razorbill fly lower than the height of the turbine blades so are not at risk from collision.

17.1.2 The closest large razorbill colonies to the Development are at the East Caithness Cliffs SPA, North Caithness Cliffs SPA, and Troup, Pennan and Lion's Heads SPA. These three SPAs were identified as being at possible risk from the impacts of displacement.

17.1.3 This assessment follows the advice on displacement of razorbill provided in the Scoping Opinion and subsequent discussions and assesses the Development area plus 2km buffer. A 60% displacement rate and 1% mortality rate are assumed during the breeding and non-breeding seasons.

17.1.4 The razorbill assessment provided in the RIAA was updated in the EIA Addendum Report to include revised PVA.

17.2 East Caithness Cliffs SPA – Razorbill – Development in Isolation

17.2.1 The razorbill population at East Caithness Cliffs SPA is in a favourable maintained condition with an increase in population from 15,800 individuals[32] at the time of site designation (classified 1996, with counts from 1985-87) to 30,042 birds in 2015.[33]

[32] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .

[33] Swann, B. 2016. Seabird counts at East Caithness Cliffs SPA for Marine

17.2.2 It is estimated that 8 razorbill from the East Caithness Cliffs SPA may be impacted by displacement mortality during the breeding season and a further 2 razorbill of all ages may be impacted during the non-breeding season (EIA Addendum Report, table 3.11). The potential loss is assessed as 10 razorbill across the year.

17.2.3 PVAs were undertaken by the Company for East Caithness Cliffs SPA over a period of 25 years in increments of 10 birds. Thus, the assessed loss of 10 razorbill is one of the scenarios for which PVA outputs were provided. Assuming an effect of 10 mortalities, for East Caithness Cliffs SPA after 25 years, the median of the ratio of impacted to un-impacted population size for the Development in isolation is 0.993 and the ratio of impacted to un-impacted growth rate is 1.000 (EIA Addendum Report, table 3.26).

17.2.4 SNH advised that the Development in isolation would not result in an adverse effect on site integrity to the East Caithness Cliffs SPA with respect to razorbill.

17.3 East Caithness Cliffs SPA – Razorbill – Development In-combination

17.3.1 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments based on the foraging range of razorbill from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the post, non and pre-breeding BDMPS for razorbill as described by Furness (2015).[34]

17.3.2 It is estimated that 28 razorbill from the East Caithness Cliffs SPA may be impacted by displacement mortality during the breeding season for Moray West in-combination with Moray Firth Developments and a further 12 birds of all ages may be impacted during the non-breeding season for Moray West in-combination with North Sea Developments (EIA Addendum Report, table 3.21). The potential loss is assessed as 40 razorbill across the year.

Renewables Casework. Scottish Natural Heritage Research Report No. 902. Online: https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20902%20-%20Seabird%20counts%20at%20East%20Caithness%20Cliffs%20SPA%20for%20marine%20renewable%20casework.pdf .

[34] 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.

17.3.3 PVAs were undertaken by the Company for East Caithness Cliffs SPA over a period of 25 years in increments of 10 birds. Thus, the assessed loss of 40 razorbills is one of the scenarios for which PVA outputs were provided. Assuming an effect of 40 mortalities, for East Caithness Cliffs SPA after 25 years, the median of the ratio of impacted to un-impacted population size for the Development in-combination is 0.972 and the ratio of impacted to un-impacted growth rate is 0.999 (EIA Addendum Report, table 3.26).

17.3.4 In the SNH Response to EIA Addendum Report, SNH advised that the Development in-combination would not result in an adverse effect on site integrity of the East Caithness Cliffs SPA with respect to razorbill.

17.4 North Caithness Cliffs SPA – Razorbill – Development in Isolation and In-combination

17.4.1 The razorbill population at North Caithness Cliffs SPA is in a favourable recovered condition with 4,000 individuals[35] when designated (classified 1996, with counts from 1985-87) and 3,503 birds in 2015 and 2016.[36]

17.4.2 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments based on the foraging range of razorbill from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the post, non and pre-breeding BDMPS for razorbill as described by Furness (2015).

17.4.3 It is estimated that 1 razorbill from the North Caithness Cliffs SPA may be impacted from displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments and a further 2 birds of all ages may be impacted during the non-breeding season for the Development in-combination with the North Sea Developments (RIAA, table 6.9.39 and 6.9.40). The potential loss is assessed as 3 razorbill across the year.

17.4.4 PVA modelling was not undertaken for this SPA in the range of impacts estimated.

[35] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .
[36] Swann, B. 2018. Seabird counts at North Caithness Cliffs SPA in 2015 and 2016 for Marine Renewables Casework. Scottish Natural Heritage Research Report No. 965. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20SNH%20Research%20Report%20965%20-%20Seabird%20counts%20at%20North%20Caithness%20Cliffs%20SPA%20in%202015%20and%202016%20%20for%20Marine%20Renewable%20Casework.pdf

17.4.5 SNH advised that the Development in isolation and in-combination would not result in an adverse effect on the site integrity of the North Caithness Cliffs SPA with respect to razorbill.

17.5 Troup, Pennan and Lion's Heads SPA – Razorbill – Development in Isolation and in-combination

17.5.1 The razorbill population at Troup, Pennan and Lion's Heads SPA is in an unfavourable, declining condition with 4,800 individuals[37] when designated (classified 1997, with counts from 1995).

17.5.2 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments, Kincardine Offshore Wind Farm and Hywind Offshore Wind Farm, based on the foraging range of razorbill from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the post, non and pre-breeding BDMPS for razorbill as described by Furness (2015).[38]

17.5.3 It is estimated that 1 razorbill from the Troup, Pennan and Lion's Heads SPA may be impacted by displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments and a further 2 birds of all ages may be impacted during the non-breeding season for the Development in-combination with the North Sea Developments (RIAA, tables 6.9.54-6.9.57). The potential loss is assessed as 3 razorbill across the year.

17.5.4 PVA modelling was not required for this SPA.

17.5.5 In the SNH Consultation Response, SNH advised that the Development, in isolation and in-combination, would not result in an adverse effect on the site integrity of the Troup, Pennan and Lion's Heads SPA with respect to razorbill.

17.6 Razorbill – Precaution in the Assessment

17.6.1 Scottish Ministers consider that the assessment completed by the Company with respect to razorbill is precautionary. In particular, the inclusion of a 2km buffer to all the Moray Firth Development sites, and no habituation to the wind

[37] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .

[38] 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.

farms. The inclusion of the 2km buffer in the displacement assessment has led to predicted displacement effects which are much greater than if the wind farm areas had been considered without the buffer.

17.7 Razorbill – Conclusion

17.7.1 In the SNH Consultation Response and the SNH Response to EIA Addendum Report, SNH advised that the Development would not have an adverse effect on the site integrity for razorbill as a qualifying interest of East Caithness Cliffs SPA, North Caithness Cliffs SPA, and Troup, Pennan and Lion's Heads SPA in isolation or in-combination with the Moray Firth Developments.

17.7.2 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the populations at the sites, the predicted levels of effect and population consequences, the precaution in the assessment methods and the advice from SNH. Scottish Ministers conclude that, subject to the appliance of conditions, there will be no adverse effect on the site integrity of the East Caithness Cliffs SPA, North Caithness Cliffs SPA, and Troup, Pennan and Lion's Heads SPA in respect of the razorbill as a qualifying interest as a result of the Development in isolation or in-combination with the other Moray Firth Developments and projects detailed in Appendices 1 and 2.

18 GUILLEMOT – East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast and Troup, Pennan and Lion's Heads SPA

18.1.1 The Scoping Opinion advised that the Company was only required to consider displacement effects as guillemot fly lower than the height of the turbine blades so are not at risk from collision.

18.1.2 The closest large guillemot colonies to the Development site are at the East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA. Guillemot at these four SPAs were identified as being at possible risk from the impacts of displacement.

18.1.3 This assessment follows the advice on displacement of guillemot provided in the Scoping Opinion and subsequent discussions, and assesses the Development site plus 2km buffer. A 60% displacement rate and 1% mortality rate are assumed during the breeding and non-breeding seasons.

18.2 East Caithness Cliffs SPA – guillemot – Development in Isolation

18.2.1 The guillemot population at East Caithness Cliffs SPA is in a favourable maintained condition with an increase in population from 106,700 individuals[39] when designated (classified 1996, with counts from 1985-87) to 149,228 birds in 2015, an increase of 40% though a slight decrease of 6.2% since 1999 (159,108 birds).[40]

18.2.2 It is estimated that 68 guillemot from the East Caithness Cliffs SPA may be impacted by displacement mortality during the breeding season and a further 26 birds of all ages may be impacted during the non-breeding season (EIA Addendum Report, table 3.7). The potential loss is assessed as 94 guillemots across the year.

18.2.3 PVAs were undertaken by the Company for East Caithness Cliffs SPA over a period of 25 years in increments of 10 birds. Thus, the assessed loss of 94 guillemot is not one of the scenarios for which PVA outputs are provided. Assuming an effect of 90 mortalities, for East Caithness Cliffs SPA after 25 years, the median of the ratio of impacted to un-impacted population size for the Development in isolation is 0.987 and the ratio of impacted to un-impacted growth rate is 0.999 (EIA Addendum Report, table 3.24), for 94 birds these metrics would likely be slightly reduced.

18.2.4 In the SNH Response to EIA Addendum Report, SNH advised that the Development in isolation would not result in an adverse effect on site integrity of the East Caithness Cliffs SPA with respect to guillemot.

18.3 East Caithness Cliffs SPA – Guillemot – Development In-combination

18.3.1 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments based on the foraging range of guillemot from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind

[39] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .

[40] Swann, B. 2016. Seabird counts at East Caithness Cliffs SPA for Marine Renewables Casework. Scottish Natural Heritage Research Report No. 902. Available at: https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20902%20-%20Seabird%20counts%20at%20East%20Caithness%20Cliffs%20SPA%20for%20marine%20renewable%20casework.pdf .

farms located in the non-breeding BDMPS for guillemot as described by Furness (2015).[41]

18.3.2 It is estimated that 198 guillemots from the East Caithness Cliffs SPA may be impacted by displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments and a further 61 birds of all ages may be impacted during the non-breeding season for Moray West in-combination the North Sea Developments (EIA Addendum Report, table 3.20). The potential loss is assessed as 259 guillemots across the year.

18.3.3 PVAs were undertaken by the Company for East Caithness Cliffs SPA over a period of 25 years in increments of 10 birds. Thus, the assessed loss of 259 guillemots is not one of the scenarios for which PVA outputs are provided. Assuming an effect of 260 mortalities, for East Caithness Cliffs SPA after 25 years, the median of the ratio of impacted to un-impacted population size for the Development in-combination is 0.964 and the ratio of impacted to un-impacted growth rate is 0.999 (EIA Addendum Report, table 3.24).

18.3.4 The SNH Response to EIA Addendum Report advised that the Development in isolation or in-combination would not result in an adverse effect on site integrity of the East Caithness Cliffs SPA with respect to guillemot.

18.4 North Caithness Cliffs SPA – Guillemot – Development in Isolation and In-combination

18.4.1 The guillemot population at North Caithness Cliffs SPA is in a favourable maintained condition with 38,300 individuals[42] when designated (classified 1996, with counts from 1985-87) and 38,863 birds in 2015 and 2016[43], a 53% decline since 1999 (72,725 individuals).

18.4.2 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments

[41] 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.
[42] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .
[43] Swann, B. 2018. Seabird counts at North Caithness Cliffs SPA in 2015 and 2016 for Marine Renewables Casework. Scottish Natural Heritage Research Report No. 965. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20SNH%20Research%20Report%20965%20-%20Seabird%20counts%20at%20North%20Caithness%20Cliffs%20SPA%20in%202015%20and%202016%20%20for%20Marine%20Renewable%20Casework.pdf

based on the foraging range of guillemot from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the non-breeding BDMPS for guillemot as described by Furness (2015).[44]

18.4.3 It is estimated that 12 guillemot from the North Caithness Cliffs SPA may be impacted by displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments (RIAA, table 6.9.36) and a further 25 birds of all ages may be impacted during the non-breeding season for the Development in-combination with the North Sea Developments (RIAA, table 6.9.37). The potential loss is assessed as 37 guillemot across the year.

18.4.4 PVA modelling was not undertaken for this SPA in the range of impacts estimated for 25 years, though PVA output was provided for a mortality of 50 birds modelled over 35 years, the median of the ratio of impacted to un-impacted population size is 0.950 and the ratio of impacted to un-impacted growth rate is 0.997 (RIAA, table 6.9.34), for 25 years for a mortality of 37 these metrics would be expected to increase (i.e. reduced population level impact).

18.4.5 In the SNH Consultation Response, SNH advised that the Development in isolation and in-combination would not result in an adverse effect on site integrity of the North Caithness Cliffs SPA with respect to guillemot.

18.5 Buchan Ness to Collieston Coast SPA – Guillemot – Development in Isolation and in-combination

18.5.1 The guillemot population at Buchan Ness to Collieston Coast SPA is in a favourable maintained condition with 8,640 pairs[45] when designated (classified 1998).

18.5.2 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments, Kincardine Offshore Wind Farm and Hywind Offshore Wind Farm, based on the foraging range of guillemot from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms

[44] 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.

[45] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .

located in the non-breeding BDMPS for guillemot as described by Furness (2015).[46]

18.5.3 It is estimated that 3 guillemot from the Buchan Ness to Collieston Coast SPA may be impacted by displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments (RIAA, table 6.9.8) and a further 8 birds of all ages may be impacted during the non-breeding season for the Development in-combination with the Forth and Tay Developments and the North Sea Developments (RIAA, table 6.9.9). The potential loss is assessed as 11 guillemot across the year.

18.5.4 PVA modelling was not undertaken for this SPA.

18.5.5 SNH advised that the Development in isolation and in-combination would not result in an adverse effect on site integrity of the Buchan Ness to Collieston Coast SPA with respect to guillemot.

18.6 Troup, Pennan and Lion's Heads SPA – Guillemot – Development in Isolation and In-combination

18.6.1 The guillemot population at Troup, Pennan and Lion's Heads SPA is in an unfavourable declining condition with 4,800 individuals[47] when designated (classified 1997, with counts from 1995).

18.6.2 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments, Kincardine Offshore Wind Farm and Hywind Offshore Wind Farm, based on the foraging range of guillemot from the SPA. In the non-breeding seasons, the Development is assumed to act in-combination with all wind farms located in the non-breeding BDMPS for guillemot as described by Furness (2015).[48]

18.6.3 It is estimated that 6 guillemot from the Troup, Pennan and Lion's Heads SPA may be impacted by displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments (RIAA, table 6.9.51) and a further 6 birds of all ages may be impacted during the

[46] 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.
[47] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp .
[48] 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.

non-breeding season for the Development in-combination with the North Sea Developments (RIAA, table 6.9.52). The potential loss is assessed as 12 guillemot across the year.

18.6.4 PVA modelling was not undertaken for this SPA.

18.6.5 In the SNH Consultation Response, SNH advised that the Development in isolation and in-combination would not result in an adverse effect on site integrity to the Troup, Pennan and Lion's Heads SPA with respect to guillemot.

18.7 Guillemot – Precaution in the Assessment

18.7.1 Scottish Ministers consider that the assessment completed by the Company with respect to guillemot is precautionary. In particular, the inclusion of a 2km buffer to all the Moray Firth Development sites, and no habituation to the wind farms. The inclusion of the 2km buffer in the displacement assessment has led to predicted displacement effects which are much greater than if the Development sites had been considered without the buffer.

18.8 Guillemot – Conclusion

18.8.1 In advice dated 7 September 2018 (SNH Consultation Response) and 4 January 2019 (SNH Response to EIA Addendum Report), SNH advised that the Development would not have an adverse effect on the site integrity of East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast and Troup, Pennan and Lion's Heads SPA with respect to guillemot, in isolation or in-combination with the Moray Firth Developments, and other proposed or consented wind farms.

18.8.2 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the populations at the sites, the predicted levels of effect and population consequences, the precaution in the assessment methods and the advice from SNH. Scottish Ministers conclude that, subject to the appliance of conditions, there would be no adverse effect on the site integrity of the East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast and Troup, Pennan and Lion's Heads SPA in respect of the guillemot as a qualifying interest as a result of the Development in isolation or in-combination with the other Moray Firth Developments and projects detailed in Appendices 1 and 2.

19 PUFFIN - North Caithness Cliffs SPA

19.1.1 The Scoping Opinion advised that the Company was only required to consider displacement effects as puffin fly lower than the height of the turbine blades so are not at risk from collision. Displacement impacts during the non-breeding season were not required to be assessed as, following breeding, puffins disperse widely and are not present within the Moray Firth region in significant numbers.

19.1.2 The closest large puffin colony to the Development is located at North Caithness Cliffs SPA.

19.1.3 This assessment follows the advice on displacement of puffin provided in the Scoping Opinion and subsequent discussions, and assesses the Development site plus 2km buffer. A 60% displacement rate and 2% mortality rate are assumed during the breeding season.

19.2 North Caithness Cliffs SPA – Puffin - Development in Isolation and In-combination

19.2.1 The puffin population at North Caithness Cliffs SPA is in a favourable maintained condition with 2,080 pairs[49] (converted count, raw count was 3,500 adult individuals ashore)[50] when designated (classified 1996, with counts from 1985-87) declining to 3,053 birds (adult individuals ashore) in 2015 and 2016.[51]

19.2.2 The RIAA records that in the breeding season it has been assumed that the Development may act in-combination with the Moray Firth Developments, based on the foraging range of puffin from the SPA. In the non-breeding season, the approach applied for the Development was applied for all projects (i.e. using the contribution of the SPA population to the wider regional BDMPS population).

[49] SNH (2017b). Sitelinks. Scottish Natural Heritage. https://gateway.snh.gov.uk/sitelink/index.jsp

[50] Swann, B. 2016. Seabird counts at East Caithness Cliffs SPA for marine renewable casework. Scottish Natural Heritage Commissioned Report No. 902. Available at: https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20902%20-%20Seabird%20counts%20at%20East%20Caithness%20Cliffs%20SPA%20for%20marine%20renewable%20casework.pdf .

[51] Swann, B. 2018. Seabird counts at North Caithness Cliffs SPA in 2015 and 2016 for Marine Renewables Casework. Scottish Natural Heritage Research Report No. 965. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20SNH%20Research%20Report%20965%20-%20Seabird%20counts%20at%20North%20Caithness%20Cliffs%20SPA%20in%202015%20and%202016%20%20for%20Marine%20Renewable%20Casework.pdf .

19.2.3 It was estimated that 40 puffin from North Caithness Cliffs SPA may be impacted by displacement mortality during the breeding season for the Development in-combination with the Moray Firth Developments (RIAA, table 6.9.44).

19.2.4 PVA modelling was not required for this SPA.

19.2.5 In the SNH Consultation Response, SNH advised that the Development in isolation and in-combination would not result in an adverse effect on the site integrity of the North Caithness Cliffs SPA with respect to puffin.

19.3 Puffin - Conclusion

19.3.1 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the population at the site, the predicted levels of effect and population consequences and the advice from SNH. Scottish Ministers conclude that, subject to the appliance of conditions, the Development will not adversely affect the site integrity of North Caithness Cliffs SPA with respect to puffin in isolation or in-combination with the other Moray Firth Developments and projects detailed in Appendix 1.

20 FULMAR – East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA

20.1.1 The Company was only required to consider displacement effects as fulmar fly lower than the height of the turbine blades so are not at risk from collision.

20.1.2 The closest large fulmar colonies to the Development are at the East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast and Troup, Pennan and Lion's Heads SPA. Fulmar at these four SPAs were identified as being at possible risk from the impacts of displacement.

20.1.3 This assessment follows general guidance[52] on displacement of fulmar and assesses the Development site plus 2km buffer. A 10-40% displacement rate and 1% mortality rate are assumed during the breeding and non-breeding seasons.

20.1.4 The RIAA estimated that 1-2 fulmar of all ages from all sites (i.e. un-apportioned) may be impacted by displacement mortality during the breeding season and a further 4-10 birds of all ages from all sites (i.e. un-apportioned) may be impacted during the non-breeding season for the Development in

[52] http://jncc.defra.gov.uk/pdf/Joint_SNCB_Interim_Displacement_AdviceNote_2017.pdf .

isolation (RIAA, table 6.8.8). The potential loss is assessed as 5-12 fulmars across the year.

20.1.5 Due to the negligible effects predicted on fulmar, in-combination effects were not assessed.

20.2 Fulmar – Precaution in the Assessment

20.2.1 Scottish Ministers consider that the assessment completed by the Company with respect to fulmar is precautionary. In particular, the inclusion of a 2km buffer for the Development site, no habituation to the Development, and the low assessed sensitivity of fulmar to displacement.[53]

20.3 Fulmar – Conclusion

20.3.1 In the SNH Consultation Response, SNH advised that the Development would not have an adverse effect of East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA in-combination with the Moray Firth Developments, and other proposed or consented wind farms with respect to fulmar.

20.3.2 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the populations at the sites, the predicted levels of effect and population consequences, the precaution in the assessment methods and the advice from SNH. Scottish Ministers conclude that, subject to the appliance of conditions, there will be no adverse effect on the site integrity of East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Heads SPA in respect of fulmar as a qualifying interest as a result of the Development in isolation or in-combination with the Moray Firth Developments and projects detailed in Appendices 1 and 2.

21 Moray Firth pSPA

21.1.1 The Development does not overlap with the pSPA except for part of the Offshore Export Cable Corridor ("OECC"). Section 6.8.7 of the RIAA considers the impacts from the OECC on the pSPA. Disturbance and

[53] Wade H.M., Masden. E.A., Jackson, A.C. and Furness, R.W. (2016). Incorporating data uncertainty when estimating potential vulnerability of Scottish seabirds to marine renewable energy developments. Marine Policy 70, 108–113. Available at: https://www.sciencedirect.com/science/article/pii/S0308597X1630241X?via%3Dihub

changes to prey availability during the construction and decommissioning phases of the project were considered to be the key impacts which may cause LSE on the qualifying interests. The qualifying interests were considered as follows:

21.1.2 *Scaup* – the RIAA reported no apparent overlap of the OECC with observations of the species and concluded no adverse effect on the integrity of the pSPA with respect to scaup.

21.1.3 *Eider duck* – the RIAA reported low densities of eider duck where the OECC is proposed, and concluded that there would be no adverse effect on the integrity of the site with respect to eider duck due to disturbance or as a result of indirect effects on prey availability.

21.1.4 *Velvet scoter* – the RIAA reported no apparent overlap of the OECC with observations of the species and concluded no adverse effect on the integrity of the pSPA with respect to velvet scoter.

21.1.5 *Common scoter* - the RIAA reported no apparent overlap of the OECC with observations of the species and concluded no adverse effect on the integrity of the pSPA with respect to common scoter.

21.1.6 *Long-tailed duck* – the RIAA reported low densities of long-tailed duck where the OECC is proposed, and concluded that there would be no adverse effect on the integrity of the site with respect to long-tailed duck due to disturbance or as a result of indirect effects on prey availability.

21.1.7 *Goldeneye* - the RIAA reported no apparent overlap of the OECC with observations of the species and concluded no adverse effect on the integrity of the pSPA with respect to goldeneye.

21.1.8 *Red-breasted merganser* - the RIAA reported no apparent overlap of the OECC with observations of the species and concluded no adverse effect on the integrity of the pSPA with respect to red-breasted merganser.

21.1.9 *Red-throated diver* - the RIAA reported low densities of red-throated diver where the OECC is proposed, although aggregations of the species along the coast east of Lossiemouth is in relative close proximity to the OECC. The RIAA concluded that there would be no adverse effect on the integrity of the site with respect to long-tailed duck due to disturbance or as a result of indirect effects on prey availability.

21.1.10 *Great-northern diver* - the RIAA reported low densities of great-northern diver where the OECC is proposed, and concluded that there would be no adverse

effect on the integrity of the site with respect to great northern-diver due to disturbance or as a result of indirect effects on prey availability.

21.1.11 *Slavonian grebe* - the RIAA reported no apparent overlap of the OECC with observations of the species and concluded no adverse effect on the integrity of the pSPA with respect to Slavonian grebe.

21.1.12 *Shag* - the RIAA reported no apparent overlap of the OECC with observations of the species during the breeding season. There is some overlap between observations of the species and the OECC in the non-breeding season. The RIAA reported that although there may be some disturbance to the species in the non-breeding season it is unlikely that the levels of disturbance predicted would have any population level effects on shag. The RIAA concluded that there would be no adverse effect on the integrity of the site with respect to shag due to disturbance or as a result of indirect effects on prey availability.

21.1.13 In the SNH Consultation Response, SNH advised that for the Development alone and in-combination there would be no adverse effect on the site integrity for all of the qualifying interests of the Moray Firth pSPA. SNH advised that any disturbance during construction would be temporary in nature, and the loss of habitat along the cable route would be small/reversible. SNH advised that mitigation to minimise further any potential impacts should be detailed in the any post consent plans, such as the Vessel Management Plan ("VMP"), Cable Management Plan, and the cable routing study. These plans will be required through conditions of the s.36 consent and/or marine licences if granted.

21.2 Moray Firth pSPA - conclusion

21.2.1 In reaching their conclusion, Scottish Ministers have considered the conservation objectives, the limited overlap of the OECC with the qualifying interests, the limited impacts on prey species, the large area of habitat available and advice from SNH. Scottish Ministers conclude that there will be no adverse effect on the site integrity of the Moray Firth pSPA as a result of impacts arising from prey availability or disturbance from the Development in isolation or in-combination with the Moray Firth Developments.

21.3 Consideration of the pSPA under Article 4(4) of the Birds Directive

21.3.1 As detailed in paragraph 3.1.2, as the Moray Firth pSPA has not yet been designated, it also falls within the regime governed by the first sentence of Article 4(4) of the Birds Directive as follows:

"In respect of the protection areas referred to in paragraphs 1 and 2, Member States shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article. Outside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats."

21.3.2 The Scottish Ministers have considered the information contained within the RIAA and the advice provided by SNH and conclude that the works will not cause pollution or deterioration of habitats and any disturbance will be negligible.

22 Overall Conclusion

22.1.1 In the ornithology assessments above Scottish Ministers have considered the conservation objective of "maintaining the population of the species as a viable component of the site" on the individual qualifying features of the SPAs, as well as additional conservation objectives in relation to the pSPA.

22.1.2 For the qualifying interests of the sites concerned, Scottish Ministers have determined that the Development in isolation and in-combination will not affect the populations as viable components of the SPAs. Scottish Ministers also conclude that the Development will not, in isolation or in-combination with the projects detailed in Appendices 1 and 2, adversely affect the integrity of the East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Heads SPA or Moray Firth pSPA where each SPA is taken as a whole.

22.1.3 In reaching their conclusion, Scottish Ministers consider that the most up to date and best scientific evidence available has been used and are satisfied that no reasonable scientific doubt remains. The Scottish Ministers conclude that, subject to the appliance of conditions, the Development with a 25 year operational life will not have an adverse effect on the site integrity of the East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Heads SPA or Moray Firth pSPA in isolation or in-combination with the Moray Firth Developments and other projects detailed in Appendices 1 and 2.

22.2 Reasons for diverging from SNH advice

22.2.1 In reaching their conclusions, Scottish Ministers have given considerable weight to SNH's advice. The methods advised by SNH through scoping and additional information requested by SNH have been fully incorporated into this assessment. As such, divergence from SNH advice is limited to differing

conclusions in relation to site integrity for kittiwake at East Caithness Cliffs SPA and North Caithness Cliffs SPA and GBBG at East Caithness Cliffs SPA. In reaching a different conclusion, Scottish Ministers consider that the level of impact being adverse to site integrity is a subjective opinion. In reaching their own conclusions, Scottish Ministers have taken account of the entire context of this assessment, in particular its precautionary assumptions, which make it unlikely the number of impacted individuals will be as large as the values presented in the assessment. For these reasons, Scottish Ministers consider the levels of assessed impact to be reasonable and are convinced there will be no adverse impacts on site integrity of any of the SACs, SPAs or the pSPA considered in this AA.

SECTION 4: CONDITIONS

23 Requirement for conditions

23.1.1 The requirement for the below conditions is as a result of Moray West's commitments in the EIA Report, EIA Addendum Report and RIAA, along with SNH's advice regarding mitigation measures to ensure that there will be no adverse effect on the site integrity of the Natura sites listed above.

23.1.2 The conditions below relate to Natura concerns as well as covering other interests. The conditions here are written in their complete form and so may also refer to non-Natura interests. Where reference is made to other conditions these are numbered as per the condition numbers which will be used in the s.36 consent and marine licences if granted.

1. Duration of the Consent

The consent is for a period of 25 years from the date of Final Commissioning of the Development.

Written confirmation of the dates of First Commissioning of the Development and Final Commissioning of the Development must be provided by the Company to the Scottish Ministers and to Aberdeenshire Council, Moray Council, the Highland Council and Scottish Ministers no later than one calendar month after these respective dates.

***Reason**: To define the duration of the consent.*

2. Decommissioning

There must be no Commencement of the Development unless a Decommissioning Programme ("DP") has been submitted to and approved in writing by the Scottish Ministers. Such approval may only be granted following consultation by the Scottish Ministers with Scottish Environmental Protection Agency ("SEPA") and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The DP must outline measures for the decommissioning of the Development, proposals for the removal of the Development, the management and timing of the works and, environmental management provisions.

The Development must be decommissioned in accordance with the approved DP, unless otherwise agreed in writing in advance with the Scottish Ministers.

***Reason**: To ensure the decommissioning and removal of the Development in an appropriate and environmentally acceptable manner, and in the interests of safety and environmental protection.*

3. Implementation in accordance with approved plans and requirements of this consent

Except as otherwise required by the terms of this consent, the Development must be constructed and operated in accordance with the Application and any other supplementary and supporting information lodged in support of the Application (such as the additional environmental information ("EIA Addendum Report"), submitted by the Company on 23 November 2018, the Population Viability Analysis Report ("PVA Report") submitted by the Company on 31 August 2018 and "the Information to Inform HRA - Great Black-Backed Gull" Report ("GBBG Report"), submitted on 18 March 2019).

***Reason**: To ensure that the Development is carried out in accordance with the approved details.*

4. Construction Method Statement

The Company must, no later than six months prior to the Commencement of the Development submit a Construction Method Statement ("CMS"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with SNH, MCA, NLB, SFF, Aberdeenshire Council and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted.

The CMS must include, but not be limited to:

a) Methods of construction as they relate to all aspects of the Development.

b) Details of the commencement dates, duration and phasing for the key elements of construction, the working areas, the construction procedures and good working practices for installing the Development.

c) Details of the roles and responsibilities, chain of command and contact details of company personnel, any contractors or sub-contractors involved during the construction of the Development.

d) Details of the manner in which the construction related mitigation steps proposed in the Application are to be delivered.

The CMS must adhere to the construction methods assessed in the Application. The CMS also must, so far as is reasonably practicable, be consistent with the Design Statement ("DS"), the Environmental Management Plan ("EMP"), the Vessel Management Plan ("VMP"), the Navigational Safety Plan ("NSP"), the Piling Strategy ("PS"), the Cable Plan ("CaP") and the Lighting and Marking Plan ("LMP").

The final CMS must be sent to Moray Council and the Highland Council for information only.

***Reason**: To ensure the appropriate construction management of the Development, taking into account mitigation measures to protect the environment and other users of the marine area.*

5. Piling Strategy

The Company must, no later than six months prior to the Commencement of the Development, submit a Piling Strategy ("PS"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with SNH and any such other advisors as may be required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted.

The PS must include, but not be limited to:

a) Details of expected noise levels from pile-drilling/driving in order to inform point d below;

b) Full details of the proposed method and anticipated duration of piling to be carried out at all locations;

c) Details of soft-start piling procedures and anticipated maximum piling energy required at each pile location; and

d) Details of any mitigation such as Passive Acoustic Monitoring ("PAM"), Marine Mammal Observers ("MMO"), use of Acoustic Deterrent Devices ("ADD") and monitoring to be employed during pile-driving, as agreed by the Scottish Ministers.

The PS must be in accordance with the Application and must also reflect any relevant monitoring or data collection carried out after submission of the Application. The PS must demonstrate the means by which the exposure to and/or the effects of underwater noise have been mitigated in respect to harbour porpoise, minke whale, bottlenose dolphin, harbour seal, grey seal and Atlantic salmon.

The PS must, so far as is reasonably practicable, be consistent with the EMP, the Project Environmental Monitoring Programme ("PEMP") and the CMS.

Reason*: To mitigate the underwater noise impacts arising from piling activity.*

6. **Environmental Management Plan**

The Company must, no later than six months prior to the Commencement of the Development, submit an Environmental Management Plan ("EMP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with SNH and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted.

The EMP must provide the over-arching framework for on-site environmental management during the phases of development as follows:

a) All construction as required to be undertaken before the Final Commissioning of the Development; and

b) The operational lifespan of the Development from the Final Commissioning of the Development until the cessation of electricity generation (environmental management during decommissioning is addressed by the Decommissioning Programme provided for by condition 3).

The EMP must be in accordance with the Application insofar as it relates to environmental management measures. The EMP must set out the roles, responsibilities and chain of command for the Company personnel, any contractors or sub-contractors in respect of environmental management for the protection of environmental interests during the construction and operation of the Development. It must address, but not be limited to, the following over-arching requirements for environmental management during construction:

a) Mitigation measures to prevent significant adverse impacts to environmental interests, as identified in the Application and pre-consent and pre-construction monitoring or data collection, and include reference to relevant parts of the CMS (refer to condition 10);

b) Marine Pollution and Contingency Plan ("MPCP");

c) Management measures to prevent the introduction of invasive non-native marine species;

d) A site waste management plan (dealing with all aspects of waste produced during the construction period), including details of contingency planning in the event of accidental release of materials which could cause harm to the environment. Wherever possible the waste hierarchy of reduce, reuse and recycle should be encouraged; and

e) The reporting mechanisms that will be used to provide the Scottish Ministers and relevant stakeholders with regular updates on construction activity, including any environmental issues that have been encountered and the way in these have been addressed.

The EMP must be regularly reviewed by the Company and the Scottish Ministers or Moray Firth Regional Advisory Group ("MFRAG"), at intervals agreed by the Scottish Ministers. Reviews must include, but not be limited to, the reviews of updated information on construction methods and operations of the Development and updated working practices.

The EMP must be informed, so far as is reasonably practicable, by the baseline monitoring or data collection undertaken as part of the Application and the PEMP.

Reason: *To ensure that all construction and operation activities are carried out in a manner that minimises their impact on the environment, and that mitigation measures contained in the Application, or as otherwise agreed are fully implemented.*

7. Vessel Management Plan

The Company must, no later than six months prior to the Commencement of the Development, submit a Vessel Management Plan ("VMP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with SNH, MCA, RYA, SFF and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted.

The VMP must include, but not be limited to, the following details:

a) The number, types and specification of vessels required;

b) How vessel management will be coordinated, particularly during construction but also during operation;

c) Location of working port(s), the routes of passage, the frequency with which vessels will be required to transit between port(s) and the site and indicative vessel transit corridors proposed to be used during construction and operation of the Development; and

The confirmed individual vessel details must be notified to the Scottish Ministers in writing no later than 14 days prior to the Commencement of the Development, and thereafter, any changes to the details supplied must be notified to the Scottish Ministers, as soon as practicable, prior to any such change being implemented in the construction or operation of the Development.

The VMP must, so far as is reasonably practicable, be consistent with the CMS, the EMP, the PEMP, the NSP, and the LMP.

***Reason**: To mitigate the impact of vessels.*

8. Inter Array Cable Plan

The Company must, no later than six months prior to the Commencement of the Development, submit a Cable Plan ("CaP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with SNH, MCA, SFF and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted. The CaP must be in accordance with the Application.

The CaP must include, but not be limited to, the following:

a) The vessel types, location, duration and cable laying techniques for the inter array cables;

b) The results of monitoring or data collection work (including geophysical, geotechnical and benthic surveys) which will help inform inter array cable routing;

c) Technical specification of inter array cables, including a desk based assessment of attenuation of electro-magnetic field strengths and shielding;

d) A Cable Burial Risk Assessment ("CBRA") to ascertain burial depths and where necessary alternative protection measures;

e) Methodologies for post construction and operational surveys (e.g. over trawl) of the inter array cables where mechanical protection of cables laid on the sea bed is deployed; and

f) Methodologies for inter array cable inspection with measures to address and report to the Scottish Ministers any exposure of inter array cables.

Any consented cable protection works must ensure existing and future safe navigation is not compromised. The Scottish Ministers will accept a maximum of 5% reduction in surrounding depth referenced to Chart Datum. Any greater reduction in depth must be agreed in writing by the Scottish Ministers.

Reason: *To ensure all environmental and navigational issues are considered for the location and construction of the inter array cables.*

9. Export Cable Plan

The Licensee must, no later than six months prior to the Commencement of the Works, submit a CaP, in writing, to the Licensing Authority for its written approval. Such approval may only be granted following consultation by the Licensing Authority with SNH, MCA, SFF, SEPA, Mountaineering Scotland, FSDCC and any such other advisors or organisations as may be required at the discretion of the Licensing Authority. Commencement of the Works cannot take place until such approval is granted. The CaP must be in accordance with the Application.

The CaP must include, but not be limited to, the following:

a) The vessel types used in the licensed activities;

b) The finalised location of the export cable route;

c) The duration and timings of the licensed activities;

d) The cable laying techniques, including measures to bury cables where target burial has not initially been achieved;

e) Measures to ensure the remediation, where practicable, of any seabed obstacles created during construction;

f) The results of monitoring or data collection work (including geophysical, geotechnical and benthic surveys) which will help inform cable routing;

g) Technical specification of cables, including a desk based assessment of attenuation of electro-magnetic field strengths and shielding;

h) A cable burial risk assessment, to ascertain burial depths and where necessary alternative protection measures, and a mechanism for risk-based approach to protection measures where target burial has not been achieved;

i) Survey methodologies and planning (inspection, over trawl, post-lay) for the cables through their operational life ; and

j) Measures to address and report to the Licensing Authority any exposure of cables or risk to users of the sea from cables.

Any licensed cable protection works must ensure existing and future safe navigation is not compromised. The Licensing Authority will accept a maximum of 5% reduction in surrounding depth referenced to Chart Datum. Any greater reduction in depth must be agreed in writing by the Licensing Authority.

***Reason**: To ensure all environmental and navigational issues are considered for the location and construction of the export cables.*

APPENDIX 1: IN-COMBINATION ASSESSMENT – OTHER PLANS AND PROJECTS

24 In-Combination Assessment (Other Plans & Projects) - Introduction

24.1.1 The AA above provides a detailed in-combination assessment with the Moray Firth Developments and where relevant the North Sea Developments for ornithology and also with the Forth and Tay Developments and AHEP for bottlenose dolphin.

24.1.2 Scottish Ministers are aware of a number of activities which currently have a marine licence and/or s.36 consent and where LSE was identified on the qualifying interests of the Moray Firth SAC, the Dornoch Firth and Morrich More SAC, East Caithness Cliffs SPA, North Caithness Cliffs SPA, Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Head SPA and Moray Firth pSPA.

24.1.3 Scottish Ministers have considered these other projects in reaching their conclusions above.

24.1.4 Table 7 below provides a summary of the projects which have been considered in this assessment. An overall conclusion regarding in-combination effects is included within the main body of the AA.

Table 7 Projects for which there is currently an active marine licence, s.36 consent and / or European Protected Species (EPS) Licence and where LSE was identified on the qualifying interests of the sites

Project Name	Licence/Consent Type(s)	Relevant site(s)
Aberdeen Harbour Expansion Project	Construction	• Moray Firth SAC • Buchan Ness to Collieston Coast SPA
Aberdeen Harbour maintenance dredge	Maintenance dredge and sea disposal	• Moray Firth SAC
Avoch Harbour trust	Construction	• Moray Firth pSPA
Beatrice Offshore Wind Farm	Offshore wind farm	• Moray Firth SAC • Dornoch Firth and Morrich More SAC • East Caithness Cliffs SPA

		• North Caithness Cliffs SPA
Caithness Moray High Voltage Direct Current (“HVDC”) cable – geophysical survey	EPS	• Moray Firth SAC
Caithness Moray HVDC cable – rock placement	Construction (rock placement)	• Moray Firth SAC • Dornoch Firth and Morrich More SAC • Buchan Ness to Collieston Coast SPA • East Caithness Cliffs SPA • North Caitheness Cliffs SPA • Troup, Pennan and Lion’s Head SPA • Moray Firth pSPA
Cromarty Harbour Trust – maintenance dredge and sea disposal	Maintenance dredge and disposal	• Moray Firth SAC
Dounreay Tri – Hexicon	Offshore wind farm	• Buchan Ness to Collieston Coast SPA • East Caithness Cliffs SPA • North Caitheness Cliffs SPA • Troup, Pennan and Lion’s Head SPA
European Offshore Wind Deployment Centre (“EOWDC”)	Offshore wind farm (operational phase only)	• Moray Firth SAC • Buchan Ness to Collieston Coast SPA • Troup, Pennan and Lion’s Head SPA
Global Energy Nigg maintenance dredge	Maintenance dredge and disposal	• Moray Firth SAC
Hywind Scotland Pilot Park	Offshore wind farm (Operational phase only)	• Moray Firth SAC • Buchan Ness to Collieston Coast SPA
Inch Cape Offshore Wind	Offshore wind farm	• Moray Firth SAC • Buchan Ness to Collieston Coast SPA

Farm (2014 consent)		
Kincardine Floating Offshore Wind Farm	Offshore wind farm	• Moray Firth SAC • Buchan Ness to Collieston Coast SPA • Troup, Pennan and Lion's Head SPA
Meygen	Offshore tidal array	• Moray Firth SAC • East Caithness Cliffs SPA • North Caithness Cliffs SPA
Montrose Port Authority construction of quay wall	Construction	• Moray Firth SAC
Montrose Port Authority – sea disposal	Sea disposal	• Moray Firth SAC
Moray Council capital dredge	Capital dredge	• Moray Firth SAC
Moray East Offshore Transmission Infrastructure	Offshore transmission infrastructure	• Moray Firth SAC • Dornoch Firth and Morrich More SAC • East Caithness Cliffs SPA • North Caithness Cliffs SPA
Moray Offshore Eastern Development	Offshore wind farm	• Moray Firth SAC • Dornoch Firth and Morrich More SAC • East Caithness Cliffs SPA • North Caithness Cliffs SPA
Neart na Gaoithe Offshore Wind Farm (2014 consent as varied)	Offshore wind farm	• Moray Firth SAC • Buchan Ness to Collieston Coast SPA
Port of Cromarty Firth – Phase 4 (Invergordon)	Construction, dredging, sea disposal and land reclamation	• Moray Firth SAC • Dornoch Firth and Morrich More SAC • Moray Firth pSPA
Scottish Water sea outfall extension - Ardersier	Sea outfall extension	• Moray Firth SAC • Moray Firth pSPA
Seagreen Alpha and Bravo	Offshore wind farm	• Moray Firth SAC

Offshore Wind Farms (2014 consents)		• Buchan Ness to Collieston Coast SPA

25 Project Descriptions

25.1.1 Descriptions of the projects considered in the in-combination assessment are detailed below.

Offshore Renewables Projects

25.2 Beatrice Offshore Wind Farm

25.2.1 Installation and operation of the Beatrice Offshore Wind Farm which is located in the outer Moray Firth 13.5km from the Caithness coast. The total area of the development is 131.5km.[2] The operational lifespan of the wind farm is expected to be 25 years.

25.2.2 The original application was for a design envelope of up to 277 wind turbine generators ("WTGs") and a maximum generating capacity of up to 1,000MW. Since consent was granted in 2014, the design has been revised and the development will comprise 84 turbines. Piling operations and cable laying activities are now complete.

25.2.3 Also included in the infrastructure is:

- Up to a maximum of three Offshore Substation Platforms ("OSPs");
- Up to a maximum of three meteorological masts; and
- Up to 350km of inter-array cabling linking the turbines, OSPs and meteorological masts.

25.2.4 Construction started in April 2017 and will continue until approximately the end of 2019. A full project description can be found here.

25.3 Moray Offshore Eastern Development

25.3.1 The Moray Offshore Eastern Development consists of three proposed wind farm sites: the Telford, Stevenson and MacColl Wind Farms. The original design envelope was for up to 339 WTGs with a maximum generating capacity of up to 1,500MW. This was reduced to a design with a maximum generating capacity of up to 1,116MW and for a maximum of 186 WTGs when consent was granted in 2014. The Design Specification and Layout Plan has

subsequently reduced the number of turbines to 100, and a variation granted in 2018 removed the overall maximum capacity from the s.36 consent. The proposals are located on the Smith Bank in the outer Moray Firth (approximately 22km from the Caithness coastline, in water depths of 38 – 57 metres ("m")). The operational lifespan of the wind farms is expected to be 25 years.

25.3.2 Substructure and foundation design for the WTGs will consist of either a mixture of steel lattice jackets with pin piles.

25.3.3 A full project description can be found **here**.

25.4 Moray East Modified Offshore Transmission Infrastructure

25.4.1 The construction and operation of offshore transmission infrastructure in the outer Moray Firth, to support the Moray Offshore Eastern Development, consisting:

- Up to 2 OSPs with associated substructures and foundations;
- Inter-platform cabling within the three consented Telford, Stevenson and MacColl Wind Farms; and
- Up to 4 triplecore submarine export cables between the OSPs and the shore.

25.5 Seagreen Alpha and Bravo Offshore Wind Farms

25.5.1 Installation and operation of the Seagreen Alpha and Bravo Offshore Wind Farms ("the Seagreen Developments"), located 27km off the Angus coastline, in the outer Firth of Forth and Firth of Tay region. Section 36 consent was granted in respect of both Seagreen Alpha and Seagreen Bravo and the associated transmission infrastructure in October 2014. In total the Seagreen Developments cover an area of approximately 391km.^{2} The operational lifespan for the Seagreen Developments is expected to be 25 years. The offshore transmission infrastructure will consist of up to 5 offshore substation platforms and 6 offshore export cables, in addition to inter-array cabling and scour protection. The s.36 consents for both projects were subsequently varied in 2018 to remove the maximum generating capacity for each site.

25.5.2 In September 2018, Seagreen Wind Energy Limited submitted applications for s.36 consent for revised designs for Seagreen Alpha and Bravo, within the same boundary as the consented projects. Seagreen Wind Energy Limited has submitted new applications for s.36 consent in order to reflect technological advancements in the intervening years since the s.36 consents

were granted in 2014. The operational lifespan of the revised design is expected to be 25 years. The Seagreen Developments will utilise the existing marine licence granted in respect of the offshore transmission infrastructure. It is anticipated that construction activities would take place over a period of four years.

Table 8 Summary of design parameters for the as-consented Seagreen Alpha and Bravo (2014) and new applications for s.36 consent (2018)

Design Parameter	As-consented (2014)	Application (2018)
Maximum number of WTGs	150	120
Rotor diameter	220m	167m
Blade tip height	209.7m	280m
Minimum blade tip clearance above LAT	29.8m	32.5m
Foundation options	Gravity base structures, pin piled jackets, suction caisson	As per 2014, expanded to include monopile foundation option at up to 70 WTG locations

25.5.3 A full project description of the existing consents can be found here and a description of the new applications can be found here.

25.6 Inch Cape Offshore Wind Farm

25.6.1 Construction and operation of the Inch Cape Offshore Wind Farm and associated offshore transmission infrastructure, located 15km east off the Angus coastline, for which consent was granted in October 2014. The operational lifespan of the project is expected to be 25 years. The project covers a total area of approximately 150km.^{2}

25.6.2 In August 2018, Inch Cape Offshore Limited submitted applications for marine licences and s.36 consent in respect of the revised design for the wind farm and offshore transmission infrastructure (with landfall at Cockenzie, East Lothian) to take advantage of technological advancements in the time period since consent was granted. The operational lifespan of the revised design is expected to be 50 years. Construction activities are anticipated to take approximately 24 months over a 3 year period.

Table 9 Summary of design parameters for the as-consented Inch Cape Offshore Wind Farm (2014) and new application (2018)

Design Parameter	As-consented (2014)	Application (2018)
Maximum number of WTGs	110	72
Blade tip height (above LAT)	215m	291m
Rotor diameter	Up to 172m	Up to 250m
Offshore substation platforms	5	2
Offshore Export Cables	6	2
Foundation options	Jackets and driven piles, jacket and suction piles, jacket and drilled piles, jacket and gravity based and gravity base	As per 2014, but with the inclusion of monopiles for jackets and driven piles
Inter-array cable length	353km	190km
Export cable length	83km	8km

25.6.3 A full project description of the existing consents can be found here and a description of the new applications can be found here.

25.7 Neart na Gaoithe Offshore Wind Farm (Revised Design)

25.7.1 Construction and operation of the NnG Wind Farm and associated offshore transmission infrastructure, located 15.5km east of Fife Ness in the Firth of Forth, for which consent was granted in October 2014. The operational lifespan of the project is expected to be 25 years. The s.36 consent was subsequently varied in 2015 to increase the maximum rated turbine capacity and increase the maximum turbine hub heights and platform heights. The project covers a total area of approximately 150km.[2]

25.7.2 In March 2018, NnG Wind Farm Limited submitted applications for marine licences and s.36 consent in respect of the revised design for the wind farm and offshore transmission infrastructure to take advantage of technological advancements in the time period since s.36 consent was granted. In December 2018, s.36 consent and marine licences were granted and the development is expected to have an operational lifespan of 50 years. Construction activities are anticipated to take between 2020 and 2022.

25.7.3 It is likely that the NnG Wind Farm will be built in accordance with the s.36 consent granted in 2018; however, the as varied s.36 consent granted in

2015 has been considered in the in-combination assessment as this represents the WCS.

Table 10 Summary of design parameters for the NnG Wind Farm varied s.36 consent (2015) and s.36 consent (2018)

Design Envelope Parameter	**s.36 consent (2018)**	**varied s.36 consent (2015)**
Maximum number of WTGs	54	75
Maximum rotor tip height (above LAT)	208m	197m
Maximum hub height	126m	115m
Maximum rotor diameter	167m	126-152m
Minimum spacing between WTGs	800m	450m
Blade clearance above LAT	35m	30.5m
Maximum number of piles per foundation (Offshore Substation Platforms)	8	8
Number of piles per foundation (turbines)	6	4
Foundation options	Jackets	1. Gravity Base Structures 2. Jackets
Inter-array cables	Up to 10 WTGs per collector unit Up to 14 circuits 14km cable length	Up to 6 WTGs per collector unit Up to 15 circuits 75- 120km cable length
Offshore Substation Platforms – maximum	21m	18m

level of topside above LAT		
Offshore Export Cable Length (per cable)	43km	33km

25.7.4 A full project description can be found **here**.

25.8 Hywind Scotland Pilot Park

25.8.1 Five 6MW turbines have been installed approximately 25km off the coast at Peterhead, north east Scotland, just outside the 12 nautical mile territorial water limit. The project will be expected to produce up to 135GWh of electricity per year. The turbines are positioned between 800 to 1,600m apart and attached to the seabed by a three-point mooring spread and anchoring system. Three anchors are required per turbine and the radius of the mooring system extends 600 to 1,200m out from each turbine.

25.8.2 The turbines are connected by inter-array cables which may require stabilisation in some locations. The export cable, which transports electricity from the Pilot Park to shore at Peterhead, is buried where seabed conditions allow. Where this is not possible cable protection in the form of concrete mattresses and rock is required. Both the inter-array and export cables have 33 kilovolt ("kV") transfer voltage. The export cable comes ashore at Peterhead and connects to the local distribution network at SSE Peterhead Grange substation. The onshore project infrastructure comprises an underground cable approximately 1.5km in length and a small switchgear yard facility close to Peterhead Grange substation.

25.8.3 This project has now finished construction and moved into the operational phase. A full project description can be found **here.**

25.9 Dounreay Tri Floating Wind Demonstration Project

25.9.1 The Development will consist of a demonstration floating offshore wind farm called Dounreay Trì which shall consist:

- A two turbine offshore wind farm with an installed capacity of between 8 to 12MW, at least 6km off Dounreay, Caithness;
- A single, 33 kV, export cable to bring the power to shore immediately to the west of the Dounreay Restoration Site fence line; and

- Subject to a Connection Offer from Scottish and Southern Energy Power Distribution, the associated onshore electrical infrastructure to connect the project at, or near, the existing substation at Dounreay.

25.9.2 The main offshore components will include:

- Two offshore wind turbines;
- A floating foundation;
- Mooring clump weight;
- Mooring chain and/or steel lines;
- Drag embedment anchors;
- One cable to bring the renewable electricity ashore; and
- Scour protection for the anchors and the export cable, where necessary.

25.9.3 A full project description can be found **here**.

25.9.4 The AA for this project concluded that there would be no adverse effect on the site integrity of any SPAs provided the conditions set out in the AA were complied with.

25.10 European Offshore Wind Deployment Centre ("EOWDC")

25.10.1 Installation and operation of a EOWDC consisting of 11 turbines, inter-array and export cables located 2 to 4.5km east of Blackdog, Aberdeenshire. Construction commenced in November 2017, beginning with foundations and cabling. Construction works are concluded and the project is now in the operational phase. A full project description can be found **here**.

25.10.2 The AA for this project concluded that there would be no adverse effect on any SPAs or SACs subject to conditions attached to the s.36 consent.

25.11 Kincardine Floating Offshore Wind Farm

25.11.1 The works consist of the construction and operation of a demonstrator floating offshore wind farm development, located to the south east of Aberdeen, approximately eight miles from the Scottish coastline. The development is considered a commercial demonstrator site, which will utilise floating semi-submersible technology to install six or eight WTGs, with a combined maximum generating capacity of 50MW, in approximately 60 to 80 m of water. The proposal also includes inter-array cabling to the connection point at the onshore Redmoss substation, Altens, Aberdeen. A full project description can be found **here**. The construction works are scheduled to take place in three phases between March 2018 and June 2020.

25.11.2 The AA for this project concluded that there would be no adverse effect on any SPAs or SACs subject to conditions attached to the s.36 consent.

25.12 Meygen

25.12.1 Construction and operation of a tidal array in the Inner Sound of the Pentland Firth. Phase 1 of the project is nearing completion with 4 tidal turbines having been installed. Phases 1b and 1c are likely to commence late 2019.

25.12.2 A full project description can be found here.

25.12.3 The AA for this project concluded that there would be no adverse effect on any SPAs or SACs subject to conditions attached to the s.36 consent.

Large-scale construction projects

25.13 Aberdeen Harbour Expansion Project ("AHEP") – construction works, capital dredging and sea disposal operations

25.13.1 Development of a new harbour facility at Nigg Bay, Aberdeen, approximately 0.8km south of the existing harbour in Aberdeen City centre. The works include the construction of two breakwaters, quaysides and associated infrastructure, a large-scale capital dredge and dredge spoil deposit operation. Works commenced in late 2016 and are scheduled to take place over a 3 year period. Construction works began in May 2017 with the construction of the northern breakwater.

25.13.2 Dredging operations are expected to last until September 2018, which is when their dredging licence expires. Blasting operations are expected to commence in August 2018 for a maximum of 7 consecutive months; however, these timescales may be subject to change. Impact piling will no longer be used and rotary piling used instead, which is thought to produce less noise. All marine elements of the works are scheduled to be complete by February 2020.

25.13.3 Full details of the project can be found in the documentation **here**.

25.13.4 The AA for this project concluded that there would be no adverse effect on the site integrity of any SPAs or SACs provided that the conditions set out in the AA were complied with.

25.14 Port of Cromarty Firth Phase 4 – Construction of Laydown Area & Capital Dredging

25.14.1 These works involve land reclamation to provide an additional 4.5 hectares of laydown space to the west of the previously completed phase 3 development, including the construction of 215m of quay wall to create a new berth adjacent to the existing berth 5, providing a 369m long combined quay face. Fendering will then be installed along berth 5 and the new berth 6.

25.14.2 A rock armour revetment will be constructed along the north and west sides of the new laydown area with a tubular and sheet piled wall forming the new quay. The existing rock armour will be removed from the western edge of the phase 3 development and re-used on phase 4. The area will then be lined with a geotextile membrane and infilled, before appropriate drainage, bollards and services are installed prior to surfacing.

25.14.3 Dredging will be required along the toe of the new revetment structure and a second campaign will be required to create a finished depth of 12 metres along the new berth. The total dredge volume is estimated to be 110,000 meter cubed ("m^3"). It is anticipated that up to 60,000m^3 of dredge material will be suitable for re-use within the land reclamation and that the remainder will be deposited at the Sutors dredge spoil deposit area

25.14.4 The works are scheduled to take place between 1 November 2018 and 31 March 2020.

Dredging operations, maintenance works and small-scale construction projects

25.15 Avoch Harbour – Construction of a Groyne, Pontoon and Slipway

25.15.1 These works involve the construction of an armoured rock groyne which was undertaken in 2017. Pontoon installation is due to commence in March 2019 and is expected to be complete by October 2019. The concrete slipway will be constructed in March 2021 / 2022.

25.15.2 The AA completed for these works concluded that there would be no adverse effect on the integrity of the Moray Firth pSPA.

25.16 Caithness Moray Cable – Rock Protection

25.16.1 The works consist of the placement of rock protection along the route of the Caithness to Moray subsea cable within the marine area adjacent to Scotland (within 12 nautical miles). The rock is placed from a vessel either by fall pipe or by crane and rock grab.

25.16.2 The AA completed for these works concluded that there would be no adverse effect on the integrity of the Buchan Ness to Collieston Coast SPA, the Dornoch Firth and Morrich More SAC, the East Caithness Cliffs SPA, the Moray Firth SAC, the Moray Firth pSPA, the North Caithness Cliffs SPA, and the Troup, Pennan and Lion's Heads SPA.

25.17 Montrose Port Authority – construction of a new quay wall

25.17.1 The proposed works include the construction of a new quay wall and hard standing area. The new quay wall will be a piled structure installed using a combination of vibro and impact piling. If necessary, the existing quay wall will then be removed before the area is infilled to form the final surface. The main piling works were scheduled to commence in September 2018. Works are scheduled to continue until June 2019.

25.17.2 The AA completed for the construction of new quay wall and hard standing area at Montrose concluded that there would be no adverse effect on the integrity of the Moray Firth SAC.

25.18 Scottish Water sea outfall extension – Ardersier

25.18.1 The works are to extend the outfall pipe to the lowest astronomical tide by installing a new 310m long pipe in order to meet Scottish Environment Protection Agency's dilution requirements.

25.18.2 The AA concluded that there would be no adverse impacts to the integrity of the Moray Firth SAC or the Moray Firth pSPA.

Dredging and Sea Disposal

Table 11 Dredging and sea disposal operations which were identified as having a likely significant effect on the bottlenose dolphin qualifying feature of the Moray Firth SAC

Location of Dredge	Type of Dredge	Amount of Dredge Material	Disposal Site
Aberdeen Harbour – Maintenance dredge	Maintenance	645,000m3	Aberdeen
Cullen (Moray Council capital dredge)	Capital	1,000m3	Buckie
Findochty (Moray Council capital dredge)	Capital	2,900m3	Buckie
Global Energy Nigg		6,000m3	Sutors

Hopeman (Moray Council capital dredge)	Capital	500m3	Burghead
Portknockie (Moray Council capital dredge)	Capital	1,000m3	Buckie
Montrose	Maintenance	246,000 wet tonnes	Lunan
Cromarty Harbour	Maintenance	2000m3	Sutors

EPS Licences

25.19 Scottish and Southern Energy ("SSE"), Geophysical survey and cable laying activities

25.19.1 SSE applied for a EPS licence for geophysical survey works, use of positioning equipment, and cable laying activities along the route of the Caithness to Moray high-voltage, direct current cable. The survey works consist of the use of geophysical equipment which emits sound and noise generate from cable laying activities. The cable laying works were initially licensed until 31 March 2018 but SSE have since applied for two variations to extend the validity of the licence. The current licence expires on 31 August 2019.

25.19.2 The AA for this project concluded that there would be no adverse effect on the site integrity of the Moray Firth SAC provided that the work is undertaken strictly in accordance with the agreed mitigation.

26 Assessment of in-combination effects

26.1 Assessment of in-combination effects on the Buchan Ness to Collieston Coast SPA

26.1.1 The following projects have the potential to have a LSE on the relevant qualifying interests of the Buchan Ness to Collieston Coast SPA:

- AHEP
- Caithness Moray HVDC cable – rock placement
- Dounreay Tri – Hexicon
- EOWDC
- Hywind Scotland Pilot Park Project
- Inch Cape Offshore Wind Farm
- Kincardine Floating Offshore Wind Farm
- NnG Wind Farm
- Seagreen Alpha and Bravo Offshore Wind Farms

26.1.2 The Caithness Moray HVDC cable rock placement project work is scheduled to be completed in August 2019 and therefore no temporal overlap with the Development is anticipated. The AA for the HVDC works concluded that there would be no adverse effect on the site integrity due to the limited extent and duration of disturbance to foraging seabirds and prey species.

26.1.3 The AAs for AHEP and the offshore wind farm projects listed in paragraph 26.1.1 concluded that there would be no adverse effect on the site integrity of the Buchan Ness to Collieston Coast SPA, either in isolation or in-combination with other plans or projects, provided that the conditions set out in the AAs and marine licences and s.36 consents were implemented and complied with. The proposed timeframes for the Development will overlap with the operational phases of the projects listed in paragraph 26.1.1. The AAs for these projects identified LSE on the relevant qualifying interests of the SPA during the operational phases of the works as a result of collision risks and displacement and barrier effects.

26.1.4 Scottish Ministers have considered the projects at paragraph 26.1.1 in the in-combination assessment completed.

26.2 Assessment of in-combination effects on the East Caithness Cliffs SPA

26.2.1 The following projects have the potential to have a LSE on the relevant qualifying interests of the East Caithness Cliffs SPA:

- Beatrice Offshore Wind Farm
- Caithness Moray HVDC cable – rock placement
- Dounreay Tri – Hexicon
- Kincardine Floating Offshore Wind Farm
- Meygen
- Moray Offshore Eastern Development
- Moray East Offshore Transmission Infrastructure

26.2.2 The Caithness Moray HVDC cable rock placement project work is scheduled to be completed in August 2019 and therefore no temporal overlap is anticipated. The AA for the HVDC works concluded that there would be no adverse effect on the site integrity due to the limited extent and duration of disturbance to foraging seabirds and prey species. The risk of disturbance was minimised by implementing a management plan to ensure boat movements and anchoring do not take place within 1km of the East

Caithness Cliffs SPA during the breeding season (April to late August inclusive).

26.2.3 The Meygen tidal array currently consists of four tidal turbines. A deployment of an additional four turbines is due to commence in late 2019. S.36 consent was granted for the deployment of a maximum of 61 turbines although currently there is no deployment date for further turbines. The proposed timeframe for the Development will overlap with the operational phase of the Meygen tidal array. The AA for the Meygen works concluded that there would be no adverse effect on site integrity as disturbance impacts would be temporary and localised and any collision impacts during the operational phase would be unlikely to have a population level effect.

26.2.4 The AAs for the offshore wind farm projects listed at paragraph 26.2.1 concluded that there would be no adverse effect on the site integrity of the East Caithness Cliffs SPA, either in isolation or in-combination with other plans or projects, provided that the conditions set out in the marine licences and s.36 consents were implemented and complied with. Conditions were attached to the respective marine licences and s.36 consents to mitigate the impacts on the relevant qualifying interests of the SPA.

26.2.5 Scottish Ministers have considered the projects listed at paragraph 26.2.1 in the in-combination assessment completed.

26.3 Assessment of in-combination effects on the North Caithness Cliffs SPA

26.3.1 The following projects have the potential to have a LSE on the relevant qualifying interests of the North Caithness Cliffs SPA:

- Beatrice Offshore Wind Farm
- Caithness Moray HVDC cable – rock placement
- Dounreay Tri – Hexicon
- Kincardine Floating Offshore Wind Farm
- Meygen
- Moray Offshore Eastern Development
- Moray East Offshore Transmission Infrastructure

26.3.2 The Caithness Moray HVDC cable rock placement project work is scheduled to be completed in August 2019 and therefore no temporal overlap is anticipated. The AA for HVDC works concluded that there would be no adverse effect on the site integrity due to the limited extent and duration of disturbance to foraging seabirds and prey species.

26.3.3 The Meygen tidal array currently consists of four tidal turbines. A deployment of an additional four turbines is due to commence in late 2019. Section 36 consent was granted for the deployment of a maximum of 61 turbines although currently there is no deployment date for further turbines. The proposed timeframe for the Development will overlap with the operational phase of the Meygen tidal array. The AA for the Meygen works concluded that there would be no adverse effect on site integrity as disturbance impacts would be temporary and localised and any collision impacts during the operational phase would be unlikely to have a population level effect.

26.3.4 The AAs for the offshore wind farm projects listed at paragraph 26.3.1 concluded that there would no adverse effect on the site integrity of the North Caithness Cliffs SPA, either in isolation or in-combination with other plans or projects, provided that the conditions set out in the marine licences and s.36 consents were implemented and complied with. Conditions were attached to the respective marine licences and s.36 consents to mitigate the impacts on the relevant qualifying interests of the SPA.

26.3.5 Scottish Ministers have considered the projects at paragraph 26.3.1 in the in-combination assessment completed.

26.4 Assessment of in-combination effects on the Troup, Pennan and Lion's Head SPA

26.4.1 The following projects have the potential to have a LSE on the relevant qualifying interests of the Troup, Pennan and Lion's Head SPA:

- Caithness Moray HVDC cable – rock placement
- Dounreay Tri – Hexicon
- EOWDC
- Kincardine Floating Offshore Wind Farm

26.4.2 The Caithness Moray HVDC cable rock placement project work is scheduled to be completed in August 2019 and therefore no temporal overlap is anticipated. The AA for the HVDC works concluded that there would be no adverse effect on the site integrity due to the limited extent and duration of disturbance to foraging seabirds and prey species.

26.4.3 The AAs for the offshore wind farm projects listed at paragraph 26.4.1 concluded that there would be no adverse effect on site integrity of the Troup, Pennan and Lion's Head SPA either alone or in-combination with other plans and projects, provided that conditions set out in the marine licences and s.36 consents were implemented and complied with. The AAs for these projects

identified LSE on the relevant qualifying interests of the SPA. Conditions were attached to the respective marine licences and s.36 consents to mitigate the impacts on the relevant qualifying interests of the SPA.

26.4.4 Scottish Ministers have considered the projects listed at paragraph 26.4.1 in the in-combination assessment completed.

26.5 Assessment of in-combination effects on the Moray Firth SAC

26.5.1 The following projects have the potential to have a LSE on the bottlenose dolphin qualifying interest of the Moray Firth SAC:

- AHEP
- Aberdeen Harbour maintenance dredge
- Beatrice Offshore Wind Farm
- Caithness Moray HVDC cable – rock placement
- Caithness Moray HVDC cable – geophysical survey
- Cromarty Harbour Trust – maintenance dredge and sea disposal
- EOWDC
- Global Energy Nigg maintenance dredge
- Hywind Scotland Pilot Park
- Inch Cape Offshore Wind Farm
- Kincardine Floating Offshore Wind Farm
- Meygen
- Montrose Port Authority construction of quay wall
- Montrose Port Authority – sea disposal
- Moray Council capital dredge
- Moray Offshore Eastern Development
- Moray East Offshore Transmission Infrastructure
- NnG Wind Farm (Revised Design)
- Port of Cromarty Firth – Phase 4 (Invergordon)
- Scottish Water sea outfall extension – Ardersier
- Seagreen Alpha and Bravo Offshore Wind Farms

26.5.2 The AAs for the above projects concluded that there would no adverse effect on the site integrity of the Moray Firth SAC, either in isolation or in-combination with other plans or projects, provided that the conditions set out in the marine licences, EPS licences and s.36 consents were implemented and complied with. The AAs for these projects identified LSE on the relevant qualifying interests of the SAC. Conditions were attached to the respective marine licences and s.36 consents to mitigate the impacts on the bottlenose dolphin qualifying interests of the SAC.

26.5.3 With the exception of the offshore wind farms listed above and Meygen tidal array, all the projects listed at paragraph 26.5.1 are due to be complete before the Development commences construction in 2022.

26.5.4 Scottish Ministers have considered these projects in the in-combination assessment completed.

26.6 Assessment of in-combination effects on the Dornoch Firth and Morrich More SAC

26.6.1 The following projects have the potential to have a LSE on the relevant qualifying interests of the Dornoch Firth and Morrich More SAC:

- Beatrice Offshore Wind Farm
- Caithness Moray HVDC cable – rock placement
- Moray East Offshore Transmission Infrastructure
- Moray Offshore Eastern Development
- Port of Cromarty Firth – Phase 4 (Invergordon)

26.6.2 The AAs for the above projects concluded that there would no adverse effect on the site integrity of the Dornoch Firth and Morrich More SAC, either in isolation or in-combination with other plans or projects, provided that the conditions set out in the marine licences and s.36 consents were implemented and complied with.

26.6.3 Scottish Ministers have considered the projects at paragraph 26.6.1 in the in-combination assessment completed.

26.7 Assessment of in-combination effects on the Moray Firth pSPA

26.7.1 The following projects have the potential to have a LSE on the relevant qualifying interests of the Moray Firth pSPA:

- Avoch Harbour trust
- Caithness Moray HVDC cable – rock
- Scottish Water sea outfall extension - Ardersier placement

26.7.2 The AAs for the above projects concluded that there would no adverse effect on the site integrity of the Moray Firth pSPA, either in isolation or in-combination with other plans or projects, provided that the conditions set out in the marine licences and s.36 consents were implemented and complied with.

26.7.3 Scottish Ministers have considered the projects at paragraph 26.7.1 in the in-combination assessment completed.

APPENDIX TWO: IN-COMBINATION ASSESSMENT – NORTH SEA OFFSHORE WIND FARMS

List of the North Sea Developments assessed for non-breeding season effects:

1. Blyth Demonstrator
2. Dogger Creke Beck A&B
3. Dogger Teeside A&B
4. Dudgeon
5. East Anglia 1
6. East Anglia 3
7. EOWDC
8. Galloper
9. Greater Gabbard
10. Hornsea 1
11. Hornsea 2
12. Humber Gateway
13. Hywind
14. Inch Cape
15. Kentish Flats Extension
16. Kincardine
17. Lincs
18. London Array
19. Methil
20. Neart na Gaoithe
21. Race Bank
22. Seagreen Alpha and Bravo
23. Teeside
24. Thanet
25. Triton Knoll
26. Westermost Rough

APPENDIX THREE: ADDRESSING CONCERNS RAISED BY RSPB SCOTLAND

27 Addressing concerns raised by RSPB Scotland

27.1.1 RSPB Scotland has responded to several consultations in relation to the Application. This Appendix details the way in which Scottish Ministers have considered the concerns raised. RSPB Scotland responded to consultations as follows:

i. During the scoping phase to inform the Scoping Opinion – August 2016 & August 2017
ii. Following the HRA screening report – October 2017
iii. Following the Application (including EIA Report and RIAA) – September 2018
iv. Following the EIA Addendum Report – January 2019
v. Following the GBBG Report – April 2019

27.2 Scope of assessment

27.2.1 RSPB Scotland provided consultation responses during the scoping phase and on the subsequent HRA screening report. On the scoping report, RSPB Scotland was in general agreement with the suggested scope and assessment methodologies for ornithological interests. Some specific further suggestions were made by RSPB Scotland, these are addressed under the appropriate headings below.

27.3 HRA Screening

27.3.1 RSPB Scotland advised that some SPA sites and qualifying features further afield than those identified by the Company as being at risk from LSE could be affected depending on the foraging range of the qualifying species, specifically, gannet as a qualifying feature of Forth Islands SPA was identified. RSPB Scotland made this point again following the RIAA, noting that in-combination impacts on SPA populations for gannet should be assessed for the non-breeding season.

27.3.2 The mean maximum foraging range for gannet is 229 km (Thaxter et al, 2012).[54] The Forth Islands SPA, which is the nearest SPA colony to the Development site, with gannet as a qualifying feature lies beyond this range. The non-SPA colony of gannet at Gamrie and Pennan Coast Site of Special Scientific Interest ("SSSI") is closer to the Development site, for which the

[54] Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W., Burton, N.H.K. (2012) Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation 156: 53–61.

Company did perform PVA (RIAA, Appendix 4.5), the PVA indicates that even if all collisions from the Development were apportioned to the SSSI colony (12 annual collisions, EIA Report, Table. 10.7.7) the ratio of impacted to un-impacted population size would be >0.95 (RIAA, Appendix 4.5, Figure 5). In the SNH Consultation Response, SNH advised that there would be no major significant adverse impacts to gannet. Due to the very low numbers of annual collisions from the Development (during both the breeding and the non-breeding season), the fact that the Forth Island SPA lies beyond the mean maximum foraging range, and based on advice from SNH, Scottish Ministers consider that there will be no LSE on gannet as a feature of Forth Islands SPA, and therefore this species is not included in the AA.

27.4 Baseline survey data

27.4.1 In RSPB Scotland's consultation response to the HRA screening report in October 2017, RSPB Scotland stated) that the requirement for two years of baseline survey data for ornithology is a long established UK minimum standard. RSPB Scotland stated that site characterisation and environmental baseline should be based on site specific survey data that is equivalent to two full years of site survey effort. The Company used a single year of baseline survey data, though drew on survey data collected earlier for the other Moray Firth Developments to characterise baseline bird species abundance (EIA Report, Technical Appendix 10.2). RSPB Scotland also reiterated its general concern in its consultation response to the Application stating that the lack of two years of baseline survey data was an "important and fundamental omission to the assessment".

27.4.2 The approach to characterising the ornithological baseline was discussed between SNH, Marine Scotland and the Developer pre-application. However, the SNH Consultation Response noted that no agreement was reached on the suitable baseline values to take forward for impact assessment prior to submission of the Application. SNH also noted that the document outlining the Company's approach to the baseline data (EIA Report, Technical Appendix 10.2) was missing although it was later provided with the EIA Addendum Report.

27.4.3 MSS provided advice on an earlier draft of the method used to characterise the baseline bird densities "Decision Support System" in its consultation response to the Application dated 5 September 2018. MSS noted that the approach used to determine densities indicated that a "suitably precautionary approach" had been followed. MSS also noted that there was large variation between densities from different data sources and further noted that it would be useful for SNH and RSPB Scotland to view the document and review the appropriateness of the approach.

27.4.4 The Company included a revised version of the Decision Support System with its EIA Addendum Report (Annex B Updated Decision Support System Flow Charts and Report). However, no detailed comments were provided on this in the SNH Response to EIA Addendum Report. The RSPB Response to EIA Addendum Report did not make comment on Annex B, describing the manner in which the ornithological baseline was characterised.

27.4.5 Scottish Ministers consider that although two years of baseline characterisation surveys is preferable, the approach undertaken by the Company was suitably precautionary and adequate in order to inform the AA.

27.5 GBBG as a qualifying feature of East Caithness Cliffs SPA

27.5.1 In RSPB Scotland's consultation response to the Application dated 7 September 2018 ("RSPB Scotland Consultation Response"), RSPB Scotland stated that the assessment of GBBG in the EIA Report was not accurate and it was insufficient in HRA terms. RSPB Scotland stated that a full appropriate assessment is required for the species for relevant SPAs during both breeding and non-breeding seasons. The RSPB Response to EIA Addendum Report did not provide further comment on the species.

27.5.2 Following consultation responses from SNH, RSPB Scotland and MSS, further consideration of GBBG was requested. The Company provided additional consideration in the EIA Addendum Report and a subsequent GBBG Report as a feature of East Caithness Cliffs SPA.

27.5.3 RSPB Scotland provided a further consultation response on 2 April 2019, in response to the GBBG Report submitted by the Company. RSPB Scotland stated that the assessment did not account for uncertainty particularly in collision risk modelling. The GBBG Report provides information on the various assumptions and refinements suggested by the Company, these along with the general precaution in assessment mean that uncertainty is taken into account. The Company was not requested to use a stochastic collision risk model[55] that became available between the initial application and the subsequent GBBG Report. RSPB Scotland also queried the manner in which the PVA was performed for GBBG as a feature of East Caithness Cliffs SPA, specifically querying how productivity (number of fledged young) was modelled. In the MSS Advice on GBBG Report, MSS advised that the PVA modelling did appear to follow appropriate methods. MSS noted that productivity rates were modelled using values taken from Horswill, and

[55] McGregor, R.M., King, S., Donovan, C.R., Caneco, B., and Webb, A. 2018. A Stochastic Collision Risk Model for Seabirds in Flight. Available online: https://www2.gov.scot/Topics/marine/marineenergy/mre/current/StochasticCRM .

Robinson,[56] and the expanded generic population model (in Annex B to the GBBG Report) indicated that productivity rates were applied prior to modelling survival between age classes.

27.6 Herring gull as qualifying feature of East Caithness Cliffs SPA and Troup, Pennan and Lions' Heads SPA

27.6.1 In the RSPB Scotland Consultation Response, RSPB Scotland emphasised the importance of contextual information in interpreting the significance of assessed impacts. RSPB Scotland noted that the status of herring gull as a feature of the two SPAs is either unfavourable or unfavourable declining and cited the most recent population count for East Caithness Cliffs SPA which indicated a continuing decline.

27.6.2 Herring gull has been considered in this AA as a qualifying feature of three SPAs, in addition to Buchan Ness to Collieston Coast SPA, together with the contextual information provided by RSPB Scotland.

27.7 Auk species (razorbill, common guillemot, and puffin)

27.7.1 The RSPB Scotland Consultation Response stated that it disagreed with the tests used in the RIAA for assessing whether impacts were likely to have adverse effects on integrity of auks as qualifying features of relevant SPAs. Further assessment was made for auks as features of some SPAs in the subsequent EIA Addendum Report. The RSPB Response to EIA Addendum Report noted that there remained considerable uncertainty in the assessment and that the extent of this had not been quantified.

27.7.2 Scottish Ministers have, in this AA, considered the RIAA, the EIA Addendum Report, the consultation responses and other contextual data (e.g. SPA status) in relation to the auk species and are satisfied that the Development will not, in isolation, or in-combination, adversely affect the integrity of any SPA with regards to razorbill, guillemot or puffin. This was also the advice provided by SNH.

27.8 Collision risk models

27.8.1 **Nocturnal activity scores:** The RSPB Scotland Consultation Response stated that there was no peer reviewed evidence for a change in the nocturnal activity factor to use for kittiwake or large gulls. For the species and features of greatest concern in this AA the assessment has been made

[56] Horswill, C. & Robinson, R.A. (2015). Review of seabird demographic rates and density dependence. JNCC Report No. 552. Joint Nature Conservation Committee, Peterborough.

without using the refinements suggested by the Company for nocturnal flight activity scores, this in accordance with SNH advice.

27.8.2 **Flight height data:** The RSPB Scotland Consultation Response noted that the Skov et al (2018)[57] study obtained flight height data that suggested that some species may fly higher than indicated by the generic flight height data currently used for options 2 and 3 of the Band 2012 CRM. Scottish Ministers acknowledge that flight height distribution is a source of uncertainty in collision risk modelling. However, at the time of this assessment the Johnston et al (2014)[58] generic flight height distributions are still generally agreed to be the best available evidence.

[57] Skov, H., Heinanen, S., Norman, T., Ward, R.M., Mendez-Roldan, S. & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final report – April 2018. The Carbon Trust. United Kingdom. 247 pp. Available at: https://www.carbontrust.com/resources/reports/technology/bird-collision-avoidance/

[58] Johnston, A., Cook, A. S., Wright, L. J., Humphreys, E. M., & Burton, N. H. 2014. Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. Journal of Applied Ecology, 51(1), 31-41.