

## Contents

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<b>List of Tables</b> .....	<b>ii</b>
<b>Abbreviations and Acronyms</b> .....	<b>iii</b>
<b>1 Introduction</b> .....	<b>1</b>
1.1 Background to the Development .....	1
<b>2 HRA Report</b> .....	<b>3</b>
2.1 HRA Process.....	3
2.2 European Sites Potentially affected by the Development .....	3
2.3 Likely Significant Effect (LSE) Assessment .....	4
<b>3 Summary of the Findings of the EIA Report</b> .....	<b>6</b>
<b>4 Shadow Appropriate Assessment (shadow AA)</b> .....	<b>10</b>
<b>References</b> .....	<b>18</b>

## List of Tables

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Table 2.1: Natura 2000 sites (SACs which include marine mammals as qualifying species) considered relevant to HRA.....	4
Table 4.1: Summary of the findings of the EIA for SAC species – Development alone .....	8
Table 5.1: Berwickshire and North Northumberland Coast SAC (qualifying species is grey seal) .....	10
Table 5.2: Firth of Tay and Eden Estuary SAC (qualifying species is harbour seal).....	12
Table 5.3: Isle of May SAC (qualifying species is grey seal) .....	14
Table 5.4: Moray Firth SAC (qualifying species is bottlenose dolphin).....	16

## Abbreviations and Acronyms

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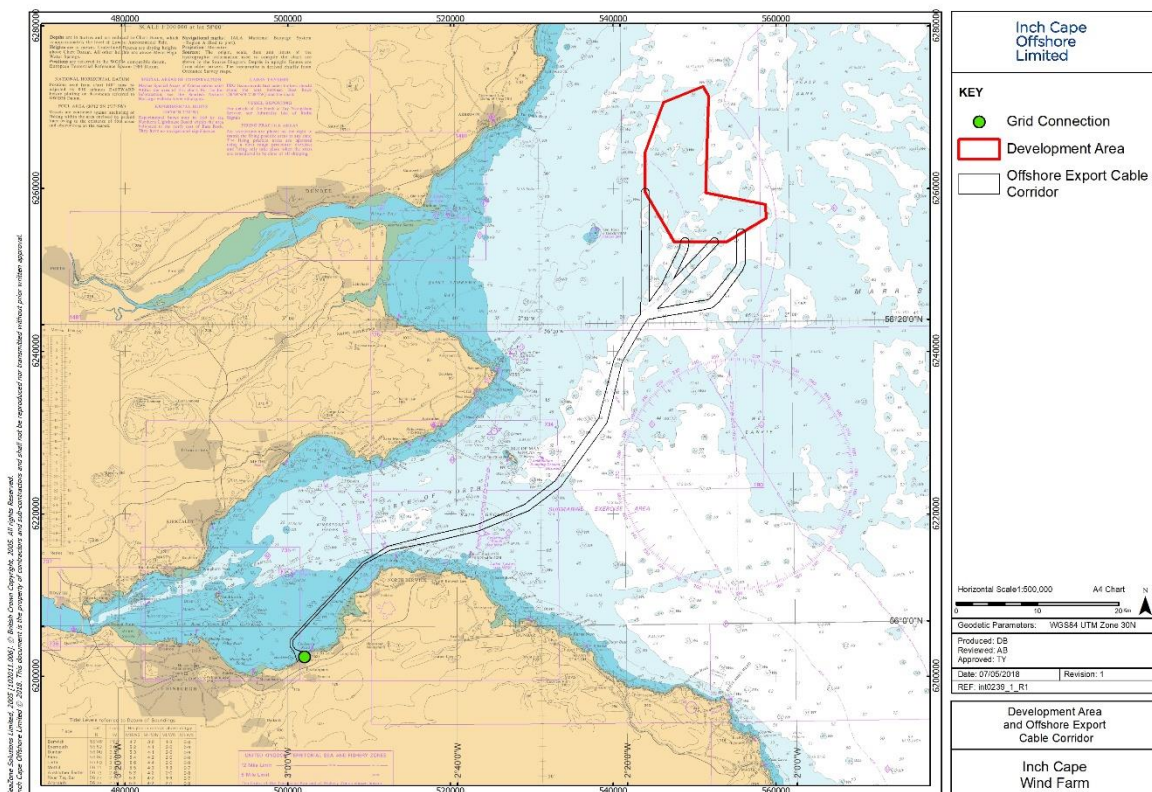
CA	Competent Authority
EIA	Environmental Impact Assessment
ES	Environmental Statement
HRA	Habitats Regulations Appraisal
ICOL	Inch Cape Offshore Limited
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
ML	Most Likely
MS LOT	Marine Scotland Licensing Operations Team
OfTW	Offshore Transmission Works
OnTW	Onshore Transmission Works
PTS	permanent threshold shift
SAC	Special Area of Conservation
WC	Worst Case
WTG	Wind Turbine Generators

# 1 Introduction

## 1.1 Background to the Development

- 1 Inch Cape Offshore Limited (ICOL) is promoting the development of the Inch Cape Wind Farm and associated Transmission Works. The Wind Farm and Offshore Transmission Works (OfTW), the Development, is in the North Sea, off the east coast of Angus in Scotland. It will be comprised of an offshore array of Wind Turbine Generators (WTGs), connected to one another by subsea inter-array cables, which will in turn connect the WTGs to one or two Offshore Substation Platform(s) (OSPs), where power generated by the WTGs is transformed and subsequently carried to an onshore landfall location via Offshore Export Cables (*Figure 1.1*).
- 2 In order to transmit the generated electricity from the Wind Farm to the National Grid, a connection will be made through the OfTW and the Onshore Transmission Works (OnTW).
- 3 The OnTW includes underground electricity cables and an onshore substation which receives power from the Offshore Export Cables and processes it for transmission to the existing grid network. The Landfall for Export Cables will be near Cockenzie (*Figure 1.1*). The OnTW lies within the vicinity of the former Cockenzie Power Station.

**Figure 1.1: Development Area and Offshore Export Cable Corridor**



- 4 The Development will comprise of an offshore generating station, the Wind Farm, with a capacity of more than one megawatt (MW) which therefore requires Scottish Ministers' consent under Section 36 of the *Electricity Act* (Section 36 *Consent*) to allow its construction and operation. Under the *Marine (Scotland) Act 2010*, the Development will also require marine licences granted by the Scottish Ministers to allow for the construction and deposition of substances and structures in the sea and on the seabed. The OnTW is subject to a separate application to East Lothian Council (ICOL, 2018a).
- 5 The Environmental Impact Assessment (EIA) process provides an understanding of, among other things, the biological processes operating in (and in the vicinity of) the Development Area and Offshore Export Cable Corridor and those that may be impacted by the proposed Development. These processes are fully assessed in the EIA Report for the Development and readers are guided there for further details (ICOL, 2018b).
- 6 The impacts identified through the EIA process have shown potential for impacts on European designated sites (Natura 2000 sites) and features. As such ICOL has produced this Habitats Regulations Appraisal (HRA) report to inform the planning process and to assist the Competent Authority (CA) in carrying out an Appropriate Assessment (AA) for the Wind Farm and associated Transmission Works.
- 7 The purpose of this document is to provide sufficient information to enable the CA (in this case Marine Scotland Licensing Operations Team (MS LOT) acting on behalf of the Scottish Ministers) to conclude that there will not be an adverse effect on the integrity of any European sites (for marine mammals this is Special Areas of Conservation (SACs)) which include marine mammals as notified interest features as a result of the Development.

## 2 HRA Report

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### 2.1 HRA Process

- 8 The HRA process derives from the requirements of specific European Directives that implement their requirements into UK and Scottish law. Thus, the HRA process covers features designated under the *Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora* (the 'Habitats Directive') as implemented by the *Conservation of Habitats and Species Regulations 2010* (the Habitats Regulations) and the *Conservation of Offshore Marine Habitats and Species Regulations 2017*
- 9 The Habitats Regulations require that wherever a project (that is not directly connected with or necessary to the management of a European (Natura 2000) site) has the potential to have a Likely Significant Effect (LSE) on the Conservation Objectives of the site (alone or in-combination with other plans or projects) then an AA must be undertaken by the CA. The AA must be carried out before consent can be given for the project.
- 10 An HRA is a four-stage process which can be summarised as:
- HRA Stage 1 – Screening: Screening for no LSE (alone or in-combination with other projects or plans);
  - HRA Stage 2 – AA: Assessment of implications of identified LSEs on the Conservation Objectives of a Natura 2000 site to ascertain that the proposal will not adversely affect its integrity;
  - HRA Stage 3 – Assessment of Alternatives: Where it cannot be ascertained that the proposal will not adversely affect the integrity of a Natura 2000 site, alternative solutions must be considered; and
  - HRA Stage 4 – Assessment of Imperative Reasons of Overriding Public Interest (IROPI; where no alternatives are identified.)
- 11 All four stages work in sequence, consecutively, and are referred to simply as the HRA process, although if it is possible to reach a conclusion of no adverse effects on site integrity (with mitigation, if appropriate) then Stages 3 and 4 are not required. This clearly distinguishes the whole HRA process from the one step within it that is referred to simply as the AA.

### 2.2 European Sites Potentially affected by the Development

- 12 Before the HRA process can begin, there must be an exercise to identify those European sites which are potentially affected by the project to consider in the HRA.
- 13 As per the Inch Cape Wind Farm Scoping Report (ICOL, 2017), four European sites which include marine mammals as qualifying species, and for which there is potential connectivity with an impact from the construction and decommissioning activities associated with the Wind Farm and OfTW (Development), are considered relevant to the HRA; see *Table 2.1*.

**Table 2.1: Natura 2000 sites (SACs which include marine mammals as qualifying species) considered relevant to HRA**

Site	Qualifying species	Latest assessed condition <sup>1</sup>
Berwickshire and North Northumberland Coast SAC	Grey seal ( <i>Halichoerus grypus</i> )	Favourable Maintained
Firth of Tay and Eden Estuary SAC	Harbour seal <sup>2</sup> ( <i>Phoca vitulina</i> )	Unfavourable Declining
Isle of May SAC	Grey seal ( <i>Halichoerus grypus</i> )	Favourable Maintained
Moray Firth SAC	Bottlenose dolphin ( <i>Tursiops truncatus</i> )	Favourable Recovered

14 The conservation objectives (for the qualifying species) for each of the four sites are as follows:

- 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 maintained in the long term<sup>3</sup>:
  - 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; and
  - No significant disturbance of the species.

### 2.3 Likely Significant Effect (LSE) Assessment

15 Screening for potential LSE was undertaken (for each of the four relevant Natura sites which include marine mammals as qualifying species) in the Inch Cape Wind Farm Scoping Report (ICOL, 2017).

16 The following key potential effects were considered:

- Displacement/permanent threshold shift (PTS) from piling; and
- Disturbance from increased noise from geophysical survey systems.

<sup>1</sup> Information taken from <https://gateway.snh.gov.uk/sitelink/>. [Accessed 08/05/2018]

<sup>2</sup> Also known as common seal.

<sup>3</sup> For the Moray Firth SAC, this sentence reads 'To ensure for the qualifying species that the following are established then maintained in the long term'.

- 17 It was not possible to conclude no LSE for either potential effect at this stage therefore all four Natura sites were taken forward to the next stage (AA).



### 3 Summary of the Findings of the EIA Report

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18 Some of the information which is used to assess whether an effect is significant for the purposes of the EIA Report prepared by ICOL (ICOL, 2018b) is also relevant to the distinct Habitats Regulations Appraisal to be undertaken by MS-LOT on behalf of the Scottish Ministers. That information is summarised here with full details presented in *Chapter 10: Marine Mammals* of the EIA Report:

- **PTS from piling:** The residual effects of PTS on all marine mammal species from piling at the Development are predicted to be of minor significance (see *Table 3.1*). This is because they are predicted to be medium term in duration (construction years) and low in magnitude (with mitigation less than ten per cent of the species' reference populations will be affected). In addition, the residual effects of PTS from piling at the Development are predicted to be less than those which were assessed as not significant in the 2013 Inch Cape Environmental Statement (ES) (ICOL, 2013) and deemed acceptable for the 2014 Inch Cape Consent.
- **Displacement from piling:** The residual effects of displacement on all marine mammal species from piling at the Development are predicted to be of minor significance (see *Table 3.1*). This is because they are predicted to be medium term in duration (construction years) and low in magnitude (with mitigation less than ten per cent of the species' reference populations will be affected). In addition, the residual effects of displacement from piling at the Development are predicted to be less than those which were assessed as not significant in the 2013 Inch Cape ES (ICOL, 2013) and deemed acceptable for the 2014 Inch Cape Consent.
- **Population level modelling:** Displacement from pile driving at Inch Cape is unlikely to affect the size or growth of the bottlenose dolphin population off the east coast of Scotland (see *Chapter 10, Section 10.8.1*). While displacement from pile driving/ blasting at the cumulative projects may affect the size and growth of the bottlenose dolphin population off the east coast of Scotland, the outputs from iPCoD suggest that the size of this effect is likely to be small (see *Chapter 10, Section 10.11.1*). The precision of estimates from the current monitoring programme for this population (and other similar populations) suggest that an effect of this size is unlikely to be detectable.
- **PTS from increased noise from geophysical survey systems:** The residual effects of PTS on all marine mammal species from use of geophysical survey systems at the Development are predicted to be of minor significance (see *Table 3.1*). This is because they are predicted to be medium term in duration (construction years) and low in magnitude (with mitigation no animals, i.e. less than ten per cent of the species' reference populations, will be affected).
- **Disturbance from increased noise from geophysical survey systems:** The residual effects of disturbance on all marine mammal species from use of geophysical survey systems at the Development are predicted to be of minor significance (see *Table 3.1*). This is because they are predicted to be medium term in duration (construction years) and low in magnitude (less than ten per cent of the species' reference populations will be affected).

In terms of mitigation, current best practice will be used; at the moment this is adoption of the Joint Nature Conservation Committee (JNCC) guidelines for minimising the risk of injury to marine mammals from geophysical surveys (JNCC, 2017) i.e. the use of soft starts where possible (i.e. if equipment specifications allow).

- 19 The geophysical and geotechnical survey campaigns that have been conducted across the site have enabled the Inch Cape engineers to develop a ground model of the sediments present. This ground model has been utilised in a study into the blow energies that are likely to be required to drive pin piles into the sediment to the required depth to secure the foundations. The study has revealed that up to 20 per cent of the site may require higher blow energies to drive the pin piles to the required depth than within the remaining 80 per cent. Thus, the most likely (ML) blow energy profile represents the soft start and ramp up to full power required to pile drive the pins into the sediment across 80 per cent of the site, while the worst case (WC) represents the increased blow energy required to pile drive the pins across the remaining 20 per cent of the site.
- 20 The assessment for the Development has been undertaken upon the worst case scenario, with the caveat that this situation across the whole site is not credible. The assessment therefore also provides the impact assessment for the most likely scenario with which to contextualise the more likely scale of effects from piling driving to secure the foundation structures.
- 21 The difference between the most likely and worst case scenarios is principally one of maximum blow energy, with the worst case scenario potentially utilising a maximum blow energy in the order of twice that of the most likely piling scenarios for both pin piles and monopiles. The full details of the piling strategy are provided in *Section 10.5.1 of Chapter 10* in the EIA Report.

Table 3.1: Summary of the findings of the EIA for SAC species – Development alone

Potential impact		Project	Pile type	Criteria	Number of bottlenose dolphins with the potential to be impacted				Number of grey seals with the potential to be impacted				Number of harbour seals with the potential to be impacted			
					One vessel		Two vessels		One vessel		Two vessels		One vessel		Two vessels	
					ML <sup>4</sup>	WC	ML	WC	ML	WC	ML	WC	ML	WC	ML	WC
Displacement/ PTS from piling	PTS	2013 Inch Cape ES	Pin piles	Southall <i>et al.</i>	1.2	1.7	1.9	2.9	478	613	647	822	47	59	65	78
			Significance		Minor				Minor to moderate				Minor to moderate			
		Development	Pin piles	Southall <i>et al.</i>	0	0	0	0	0	0	0.8	12.1	0	0	<0.1	0.6
				NOAA	0	0	0	0	0	0	0	0	0	0	0	0
			Monopiles	Southall <i>et al.</i>	0	0	0	0	0	0.4	3.2	47	0	<0.1	0.2	1.5
				NOAA	0	0	0	0	0	0	0	0	0	0	0	0
	Significance		Minor				Minor				Minor					
	Displacement	2013 Inch Cape ES	Pin piles		15		19		3058		3212		322		340	
			Significance		Moderate				Major				Major			
		Development	Pin piles		4	5	4	6	431	675	533	810	9	12	14	17
Monopiles			5	7	6	8	692	1058	830	1236	12	15	17	20		

<sup>4</sup> Key parameters for the ML and WC scenarios relevant to the marine mammal impact assessment (i.e. for pile driving and use of geophysical survey systems) are detailed in Table 10.4 and Table 10.5 of the EIA Report.

			Significance	Minor	Minor	Minor
Disturbance from increased noise from geophysical survey systems	PTS	2013 Inch Cape ES		Not assessed		
		Development		Minor		
	Disturbance	2013 Inch Cape ES		Not assessed		
		Development		Minor		

## 4 Shadow Appropriate Assessment (shadow AA)

- 22 The purpose of this section is to assess the implications of identified LSEs from the Development (displacement/ PTS from piling and disturbance from increased noise from geophysical survey systems) on the conservation objectives of the four relevant European sites (see *Table 2.1* above) to ascertain whether the Development has the potential to adversely affect site integrity, thereby providing sufficient information to enable MS LOT to undertake an Appropriate Assessment (AA).
- 23 The following tables (*Table 4.1* to *Table 4.4*) summarise the effects the Development is predicted to have on the conservation objectives of the four relevant SACs for marine mammals (detailed in *Table 2.1*) either alone or in combination with other plans/ projects.

**Table 4.1: Berwickshire and North Northumberland Coast SAC (qualifying species is grey seal)**

Conservation Objective	Assessment
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	<p>The potential effects of displacement/PTS from piling and disturbance from increased noise from geophysical survey systems on grey seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/ projects (see <i>Section 3</i>).</p> <p>The shadow AA for the 2013 Inch Cape ES (ICOL, 2013) assumed that 25 per cent of the animals predicted to develop PTS (478-822 individuals; see <i>Table 3.1</i>) were lost from the population or 'harvested'. This equated to removal of between 120 and 206 individuals, which is equivalent to between 14 to 23 per cent of 2018's East Scotland Management Unit Potential Biological Removal (PBR; 882 grey seals; Thompson <i>et al.</i>, 2017). Current estimates of the number of grey seals which have the potential to be exposed to noise levels sufficient to induce the onset of PTS from the Development vary between zero and 47 individuals (see <i>Table 3.1</i>). Using the same assumptions as made for the assessment to inform the 2013 Inch Cape ES (ICOL, 2013) with respect to assumed mortality consequences from PTS (that 25 per cent of the animals predicted to develop PTS were lost from the population or 'harvested'), this would equate to between zero and 12 individuals, and represent up to two per cent of the 2018 East Scotland Management Unit PBR.</p> <p>Grey seals travel extensively and use a wide range of habitats including multiple foraging areas and haul out sites. Displacement is therefore not expected to have the same effect on grey seals as it might have on a species which does not travel so extensively. It is considered unlikely that temporary displacement will have a long-term impact at the population level.</p> <p>The general trend in grey seal pup production at the Berwickshire and North Northumberland Coast SAC (and at other colonies in the North Sea; see <i>Chapter 10, Section 10.6.7</i>) is increasing (SCOS, 2017).</p>

Conservation Objective	Assessment
	It is therefore considered that the long-term viability of the grey seal population using the Berwickshire and North Northumberland Coast SAC is unlikely to be adversely affected by the Development.
Distribution of the species within site	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on grey seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/projects.</p> <p>The most likely response (to increased noise) will be temporary behavioural avoidance (there is evidence that short-term disturbance caused by a commercial two-dimensional seismic survey does not lead to long-term displacement of harbour porpoises (Thompson <i>et al.</i>, 2013) and harbour seals were distributed as per the non-piling scenario within two hours of cessation of pile driving within the Wash (Russell <i>et al.</i>, 2016)).</p> <p>While some individuals may be temporarily displaced from preferred foraging areas and transit routes, it is likely that they will find suitable alternative foraging habitat.</p> <p>Therefore any changes to the distribution of the species within the site are likely to be short-term.</p>
Distribution and extent of habitats supporting the species	No change anticipated as a result of increased underwater noise.
Structure, function and supporting processes of habitats supporting the species	No change anticipated as a result of increased underwater noise.
No significant disturbance of the species	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on grey seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/ projects. Although classed as medium-term (i.e. during the construction year), the most likely response (to increased noise) will be temporary behavioural avoidance i.e. animals are likely to be displaced during piling but not during construction as a whole (as per Russell <i>et al.</i> (2016) who found that harbour seals were distributed as per the non-piling scenario within two hours of cessation of pile driving). Grey and harbour seals are both phocid (true) seals whose generalised hearing range is 50 Hz to 86 kHz (Southall <i>et al.</i>, 2007; NOAA, 2016). Although individual species' hearing ranges are typically not as broad as the generalised range for the functional hearing group, there is no reason to assume that grey seals will respond to noise from pile driving differently compared to harbour seals.</p> <p>Therefore, no significant disturbance of the species is anticipated.</p>

- 24 It is predicted that the Development, either alone or in combination with other plans/ projects, will not cause deterioration of the habitats of the qualifying species (grey seal) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site (Berwickshire and North Northumberland Coast SAC) is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features in the long term.

**Table 4.2: Firth of Tay and Eden Estuary SAC (qualifying species is harbour seal)**

Conservation Objective	Assessment
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	<p>As can be seen from <i>Table 2.1</i>, the population of harbour seals is not currently a viable component of the site (latest assessed condition<sup>5</sup> = unfavourable declining). Harbour seal abundance in the Firth of Tay and Eden Estuary SAC has been decreasing for the last fifteen years (see <i>Chapter 10, Section 10.6.7</i>), and the 2016 count represents a 90 per cent decrease from the mean counts recorded between 1990 and 2002 (SCOS, 2017). The cause of the decline is unknown (Loneragan and Thompson, 2012) but potential causes are thought to include infectious/ non-infectious disease, biotoxin exposure, nutritional stress, shooting, spatial and ecological overlap with other marine mammals, human disturbance, trauma/predation and fisheries interactions (Hall and Kershaw, 2012).</p> <p>The potential effects of displacement/ PTS from piling and disturbance from increased noise from geophysical survey systems on harbour seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/ projects.</p> <p>The estimated number of individuals which had the potential to be affected was less for the Development than for the assessment to inform the 2013 Inch Cape ES (ICOL, 2013) for all four construction scenarios for both PTS and displacement (see <i>Table 3.1</i>). Population modelling undertaken to inform the 2013 Inch Cape ES indicated little difference between the baseline and construction scenarios (ICOL, 2013). Therefore, given that the estimated number of individuals which had the potential to be affected was less for the Development than for the assessment to inform the 2013 Inch Cape ES (ICOL, 2013), it is also likely that there will be no discernible population level effects of piling activity on the size of the East Scotland Management Unit harbour seal population.</p> <p>The factors causing the decline of the harbour seal population which uses the Firth of Tay and Eden Estuary SAC (see <i>Chapter 10, Section 10.6.7</i>) are unknown but are considered to be unrelated to potential impacts from existing underwater noise.</p> <p>It is therefore considered that the long-term viability of the harbour seal population using the Firth of Tay and Eden Estuary SAC is unlikely to be adversely affected by the Development.</p>

<sup>5</sup> Information taken from <https://gateway.snh.gov.uk/sitelink/> (last accessed 24/04/2018).

Conservation Objective	Assessment
Distribution of the species within site	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on harbour seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/projects.</p> <p>The most likely response (to increased noise) will be temporary behavioural avoidance (Russell <i>et al.</i> (2016a) found that harbour seals were distributed as per the non-piling scenario within two hours of cessation of pile driving within the Wash).</p> <p>While some individuals may be temporarily displaced from preferred foraging areas and transit routes, it is likely that they will find suitable alternative foraging habitat within the Forth and Tay area.</p> <p>Therefore, any changes to the distribution of the species within the site are likely to be short-term and not broad scale.</p>
Distribution and extent of habitats supporting the species	No change anticipated as a result of increased underwater noise.
Structure, function and supporting processes of habitats supporting the species	No change anticipated as a result of increased underwater noise.
No significant disturbance of the species	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on harbour seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/projects. Although classed as medium-term (i.e. during the construction year), the most likely response (to increased noise) will be temporary behavioural avoidance i.e. animals are likely to be displaced during piling but not during construction as a whole (as per Russell <i>et al.</i> (2016) who found that harbour seals were distributed as per the non-piling scenario within two hours of cessation of pile driving).</p> <p>Therefore, no significant disturbance of the species is anticipated.</p>

- 25 It is predicted that the Development, either alone or in combination with other plans/projects, will not cause deterioration of the habitats of the qualifying species (harbour seal) or significant disturbance to the qualifying species. The Development (alone or in combination with other plans/projects) will not therefore adversely affect the integrity of the site (Firth of Tay and Eden Estuary SAC). Whilst it is unlikely that the site will achieve favourable conservation status for harbour seals in the long term, the impacts associated with (construction of) the Development are not predicted to have a bearing on this outcome.



**Table 4.3: Isle of May SAC (qualifying species is grey seal)**

Conservation Objective	Assessment
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	<p>The potential effects of displacement/ PTS from piling and disturbance from increased noise from geophysical survey systems on grey seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/ projects.</p> <p>The shadow AA for the 2013 Inch Cape ES (ICOL, 2013) assumed that 25 per cent of the animals predicted to develop PTS (478-822 individuals; see <i>Table 3.1</i>) were lost from the population or ‘harvested’. This equated to removal of between 120 and 206 individuals, which is equivalent to between 14 to 23 per cent of 2018’s East Scotland Management Unit PBR (882 grey seals; Thompson <i>et al.</i>, 2017). Current estimates of the number of grey seals which have the potential to be exposed to noise levels sufficient to induce the onset of PTS from the Development vary between zero and 47 individuals (see <i>Table 3.1</i>). Using the same assumptions as made for the assessment to inform the 2013 Inch Cape ES (ICOL, 2013) with respect to assumed mortality consequences from PTS (that 25 per cent of the animals predicted to develop PTS were lost from the population or ‘harvested’), this would equate to between zero and 12 individuals, and represent up to 2 per cent of the 2018 East Scotland Management Unit PBR.</p> <p>Grey seals travel extensively and use a wide range of habitats including multiple foraging areas and haul out sites. Displacement is therefore not expected to have the same effect on grey seals as it might have on a species which does not travel so extensively. It is considered unlikely that temporary displacement will have a long-term impact at the population level.</p> <p>The general trend in grey seal pup production at the Isle of May SAC (and at other colonies in the North Sea; see <i>Chapter 10, Section 10.6.7</i>) is increasing (Duck and Morris, 2016).</p> <p>It is therefore considered that the long-term viability of the grey seal population using the Isle of May SAC is unlikely to be adversely affected by the Development.</p>
Distribution of the species within site	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on grey seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/ projects.</p> <p>The most likely response (to increased noise) will be temporary behavioural avoidance (there is evidence that short-term disturbance caused by a commercial two-dimensional seismic survey does not lead to long-term displacement of harbour porpoises (Thompson <i>et al.</i>, 2013) and harbour seals were distributed as per the non-piling scenario within two hours of cessation of pile driving within the Wash (Russell <i>et al.</i>, 2016)).</p> <p>While some individuals may be temporarily displaced from preferred foraging areas and transit routes, it is likely that they will find suitable alternative foraging habitat.</p> <p>Therefore, any changes to the distribution of the species within the site are likely to be short-term.</p>

Conservation Objective	Assessment
Distribution and extent of habitats supporting the species	No change anticipated as a result of increased underwater noise.
Structure, function and supporting processes of habitats supporting the species	No change anticipated as a result of increased underwater noise.
No significant disturbance of the species	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on grey seals were predicted to be of minor significance for the Development, both alone and in combination with other plans/ projects. Although classed as medium-term (i.e. during the construction year), the most likely response (to increased noise) will be temporary behavioural avoidance i.e. animals are likely to be displaced during piling but not during construction as a whole (as per Russell <i>et al.</i> (2016) who found that harbour seals were distributed as per the non-piling scenario within two hours of cessation of pile driving). Grey and harbour seals are both phocid (true) seals whose generalised hearing range is 50 Hz to 86 kHz (Southall <i>et al.</i>, 2007; NOAA, 2016). Although individual species' hearing ranges are typically not as broad as the generalised range for the functional hearing group, there is no reason to assume that grey seals will respond to noise from pile driving differently compared to harbour seals.</p> <p>Therefore, no significant disturbance of the species is anticipated.</p>

- 26 It is predicted that the Development, either alone or in combination with other plans/ projects, will not cause deterioration of the habitats of the qualifying species (grey seal) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site (Isle of May SAC) is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features in the long term.

**Table 4.4: Moray Firth SAC (qualifying species is bottlenose dolphin)**

Conservation Objective	Assessment
	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	<p>The potential effects of displacement/PTS from piling and disturbance from increased noise from geophysical survey systems on bottlenose dolphins were predicted to be of minor significance for the Development, both alone and in combination with other plans/projects.</p> <p>The estimated number of individuals which had the potential to be affected was less for the Development than for the assessment to inform the 2013 Inch Cape ES (ICOL, 2013) for all four construction scenarios for both PTS and displacement (see <i>Table 3.1</i>).</p> <p>Population level modelling indicated that displacement<sup>6</sup> from pile driving is unlikely to affect the size or growth of the bottlenose dolphin population off the east coast of Scotland (for any of the six Inch Cape only or cumulative scenarios; see <i>Section 3</i>).</p> <p>It is therefore considered that the long-term viability of the bottlenose dolphin population using the Moray Firth SAC is unlikely to be adversely affected by the Development, either alone or in combination with other plans/projects.</p>
Distribution of the species within site	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on bottlenose dolphins were predicted to be of minor significance for the Development, both alone and in combination with other plans/projects (see <i>Section 3</i>).</p> <p>The most likely response (to increased noise) will be temporary behavioural avoidance (as per Graham <i>et al.</i> (2017)'s study).</p> <p>While some individuals may be temporarily displaced, it is likely that they will increase their use of alternative habitat relatively locally (as they did in Graham <i>et al.</i> (2017)'s study which was conducted in the Moray Firth).</p> <p>Therefore, any changes to the distribution of the species within the site are likely to be short-term.</p>
Distribution and extent of habitats supporting the species	No change anticipated as a result of increased underwater noise.
Structure, function and supporting processes of habitats supporting the species	No change anticipated as a result of increased underwater noise.

<sup>6</sup> The number of bottlenose dolphins estimated to be affected by PTS was zero (see *Table 3.1*).

Conservation Objective	Assessment
No significant disturbance of the species	<p>The potential effects of displacement from piling and disturbance from increased noise from geophysical survey systems on bottlenose dolphins were predicted to be of minor significance for the Development, both alone and in combination with other plans/projects. Although classed as medium-term (i.e. during the construction year), the most likely response (to increased noise) will be temporary behavioural avoidance (as per Graham <i>et al.</i> (2017)'s study). While some individuals may be temporarily displaced, it is likely that they will increase their use of alternative habitat relatively locally (as they did in Graham <i>et al.</i> (2017)'s study which was conducted in the Moray Firth).</p> <p>Therefore, no significant disturbance of the species is anticipated.</p>

- 27 It is predicted that the Development, either alone or in combination with other plans/projects, will not cause deterioration of the habitats of the qualifying species (bottlenose dolphin) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site (Moray Firth SAC) is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features in the long term.

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