Hornsea Offshore Wind Farm
Project One – Environmental Statement

Volume 1
Chapter 5 – Environmental Impact Assessment Methodology

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Document release and authorisation record

<table>
<thead>
<tr>
<th>PINS Document Reference</th>
<th>7.1.5</th>
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<tbody>
<tr>
<td>Report number</td>
<td>UK04-060700-REP-0005</td>
</tr>
<tr>
<td>Date</td>
<td>July 2013</td>
</tr>
<tr>
<td>Client name</td>
<td>SMart Wind Limited</td>
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5 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

5.1 Introduction

5.1.1 This chapter describes the principles of Environmental Impact Assessment (EIA) and the approach being taken to identify and evaluate potential impacts associated with Project One. It outlines the methodologies for cumulative and inter-related impact assessments, including any transboundary issues.

5.1.2 This EIA uses a systematic, evidence-based approach in order to evaluate and interpret the potential impacts and subsequent effects of Project One activities on sensitive physical, biological and human receptors. This document has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations), which require that a developer provides a “description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development.”

5.2 Basis of the Assessment

5.2.1 The impact assessment methodology employed in this Environmental Statement follows EIA principles and also draws upon a number of guidance documents and legislation, including:

- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations), which require that a developer provides a “description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development.”
- Overarching National Policy Statement for Energy (NPS EN-1; DECC, 2011a);
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3; DECC, 2011b);
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5; DECC, 2011c);
- The Design Manual for Roads and Bridges (DMRB) Volume 11: Environmental Assessment (and updates) (Highways Agency et al., 2008);
- Best practice guidance on how to address cumulative impacts with respect to birds and wind farms published by COWRIE (King et al., 2009);
- A Review of Assessment Methodologies for Offshore Wind farms (COWRIE METH-08-08) (Maclean et al., 2009);
- Offshore Wind farms: Guidance Note for Environmental Impact Assessment in Respect of Food and Environment Protection Act 1985 and Coastal Protection Act 1949 requirements (CEFAS, 2004);
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (CEFAS, 2012);
- Guidelines for Environmental Impact Assessment (IEEMA, 2004);
- Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM, 2006);
- Guidelines for Ecological Impact Assessment in Britain and Ireland - Marine and Coastal (IEEM, 2010); and

5.2.2 Further details on the legislative context of the assessments undertaken in this Environmental Statement are provided in Chapter 2: Policy and Legislation. Where topic specific guidance and legislation exists, this is discussed within the relevant Environmental Statement Chapters.

5.3 Approach

5.3.1 The assessment of each environmental topic (e.g., marine mammals, traffic and transport, shipping and navigation etc.) forms a separate chapter of this Environmental Statement. For each environmental topic in this Environmental Statement, the following are addressed:

- Identification of the study area for the topic specific assessments;
- A description of the planning policy context;
- Summary of consultation undertaken to date;
- Description of the environmental baseline conditions;
- Presentation of impact assessment, which includes:
  - Identification of the worst case project design parameters (Design Envelope) for each impact assessment;
  - A description of the measures adopted as part of the project, including mitigation and design measures that form part of the project;
  - Identification of likely impacts and assessment of the significance of identified effects, taking into account any measures designed to reduce or
avoid environmental effects which form part of the project and to which the
developer is committed;
- Identification of any further mitigation measures (in addition to those
  measures that form part of the project) which have yet to be confirmed;
- Identification of any future monitoring required;
- Assessment of any cumulative effects with other developments planned in
  the area; and
- Assessment of any transboundary effects.

5.3.2 Inter-relationship effects are assessed in a separate chapter in both the offshore
volume (Volume 2, Chapter 14) and the onshore volume (Volume 3, Chapter 11).

5.3.3 The approach to the impact assessment is described in further detail in the sections
below.

The Design Envelope

5.3.4 This assessment has employed the Design Envelope approach, also known as the
Rochdale Envelope approach. This approach allows for a project to be assessed on
the basis of project design parameters that are not specific at the time of writing, but
are indicated with a range of potential values. Each impact assessment therefore,
identifies the maximum adverse scenario from within the range of potential options for
each development parameter. Further details on the legislative context of this
approach are included in Chapter 2: Policy and Legislative Context.

5.3.5 Chapter 3: Project Description sets out the Project One Design Envelope and
identifies the range of potential project design values. Within each of the assessment
chapters (Volume 2: Chapters 1 to 13 and Volume 3: Chapters 1 to 10) and for each
of the impacts assessed, the Design Envelope considered would give rise to the
greatest potential effect. For example, if one or more of several foundation types
remain possible, then the assessment of the project has been based on the
foundation layout known to have the greatest impact. For instance, this may be the
largest footprint of offshore turbines, the tallest turbine offshore, the largest area of
land required during construction, or the tallest design for the onshore High Voltage
Direct Current (HVDC) converter/High Voltage Alternating Current (HVAC)
substation, depending on the topic under consideration. If this assessment shows
that no significant effect is anticipated, it can be assumed that any project built within
this ‘envelope’ will have environmental effects of the same level or less and will
therefore, also have no significant effect on the topic under consideration.

5.3.6 For large and complex projects with detailed procurement chains such as an offshore
wind farm, this approach allows for flexibility in design and placement of the wind
farm within certain maximum extents and ranges that are fully assessed in the
Environmental Statement.

Measures Adopted as Part of the Project

5.3.7 Schedule 4 of the EIA Regulations requires that where significant effects are
identified, "a description of the measures envisaged to prevent, reduce and where
possible offset any significant adverse effects on the environment" should be
included in the Environmental Statement.

5.3.8 SMart Wind has elected to undertake the Project One assessment using an iterative
approach. This approach has been employed in order to demonstrate commitment to
appropriate mitigation of project-related impacts. The process of EIA has therefore,
been used as a means of informing the Project One design.

5.3.9 The iterative approach to EIA employed in this Environmental Statement, as outlined
in Figure 5.1, involves a feedback loop during the impact assessment process. A
specific impact is initially assessed for its significance of effect, and if this is deemed
to be significant adverse in EIA terms, changes are made to relevant project
parameters in order to reduce the magnitude of the impact. The assessment is then
repeated and the process continues until the EIA practitioner is satisfied that:
i) The effect has been reduced to a level that is not significant in EIA terms; or
ii) No further changes may be made to project parameters in order to reduce the
magnitude of impact (and hence significance of effect). In such cases an overall
effect that is still significant in EIA terms may be presented.

5.3.10 By employing this method, the significance of effect presented for each identified
impact may be presumed to be representative of the maximum residual effect that the
development will have, should it be approved and constructed.

5.3.11 Agreed mitigation will ultimately form part of the requirements included in the
development consent order or the conditions within the deemed marine licence.
5.3.12 Project One has the potential to create a range of 'impacts' and 'effects' with regard to the physical, biological and human environment. The definitions of impact and effect used in this assessment are drawn from the Design Manual for Roads and Bridges (Highways Agency et al., 2008).

5.3.13 For this assessment the term 'impact' is used to define a change that is caused by an action. For example, piling of turbine foundations (action) during construction which results in increased levels of subsea noise (impact).

5.3.14 Impacts can be classified as direct, indirect, secondary, cumulative and inter-related. They can be either positive or negative, although the relationship between them is not always straightforward. Definitions for each of these terms are provided in Table 5.1.

Table 5.1 Definition of direct, indirect, secondary, cumulative, inter-related, positive and negative impacts. Definitions derived from IEEM (2006).

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Direct impact</td>
<td>Occurs as a result of activities undertaken in direct connection to the project.</td>
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<tr>
<td>Indirect impact</td>
<td>Occurs as a consequence of a direct impact (sometimes as part of a chain of events) and may be experienced at a point in space or time that is removed from the direct impact.</td>
</tr>
<tr>
<td>Secondary impact</td>
<td>Socioeconomic and cultural changes which may be experienced at a point in space or time that is removed from both direct and indirect impacts.</td>
</tr>
<tr>
<td>Cumulative impact</td>
<td>Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project.</td>
</tr>
<tr>
<td>Inter-related impacts</td>
<td>The impacts resulting from the inter-relationship of different topic-specific impacts upon the same receptor (e.g., where the impacts from noise and impacts from air quality affect a single receptor such as fauna).</td>
</tr>
<tr>
<td>Positive or negative impacts</td>
<td>Impacts can be either negative or positive. Positive impacts merit just as much consideration as negative ones, as international, national and local policies increasingly press for projects to deliver positive biodiversity outcomes. Positive impacts can be considered for all the definitions above.</td>
</tr>
</tbody>
</table>

5.3.15 For certain impacts, the reversibility of an impact is relevant to its overall effect. An irreversible (permanent) impact may occur when recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. By contrast, a reversible (temporary) impact is one where spontaneous recovery is possible naturally, or where mitigation measures can be effective at reversing the impact. It is possible for the same activity to cause both irreversible and reversible impacts.

5.3.16 The term 'effect' is used in this assessment to express the consequence of an impact. This is expressed in this document as the 'significance of effect' and is determined by considering the magnitude of the impact alongside the importance, or sensitivity, of the receptor or resource, in accordance with defined significance criteria. For example, in the offshore environment the piling of turbine foundations (activity) results in increased levels of subsea noise (impact), and potential disturbance to marine mammals (effect) or in the onshore environment, the installation of cables using horizontal directional drilling to cross under a road or stream (activity) results in increased levels of noise (impact), and potential disturbance to noise sensitive receptors (i.e., people or ecological receptors (effect)).
Defining magnitude of impact and sensitivity of receptor

Magnitude of impact

5.3.17 For all impacts assessed in this Environmental Statement a magnitude has been assigned. In doing so the spatial extent, duration, frequency and reversibility of the impact have been considered where applicable.

5.3.18 The specific magnitude of impact has been defined in each chapter of this Environmental Statement in a manner that is relevant to that particular assessment. This draws upon relevant external guidance and other material, including specialist knowledge, relevant to that topic. In some chapters, reversibility has not been included as it is not relevant. This is outlined where appropriate.

5.3.19 Each topic will categorise magnitude of impact according to the following scale:

- No change;
- Negligible;
- Low;
- Medium; and
- High.

Sensitivity of receptor

5.3.20 For this assessment receptors are defined as the physical or biological resource or user group that would be affected by the project impacts. This is informed by baseline studies that have been completed in the preparation of this Environmental Statement. In defining sensitivity within each chapter the factors outlined in Table 5.2 have been considered.

5.3.21 The above terms are used on a basis appropriate to each chapter. Where these considerations are not included in the assessment this is outlined within the relevant chapter.

5.3.22 Sensitivity will be defined within each topic according to the following scale:

- Negligible;
- Low;
- Medium;
- High; and
- Very high.

Evaluation of significance of effect

5.3.23 The overall significance of an effect is determined by the consideration of the magnitude of impact alongside the sensitivity of receptor. In order to ensure a consistent approach to this evaluation, throughout the Environmental Statement a matrix approach has been adopted.

5.3.24 An example of the matrix used to inform the topic-specific methodologies in each topic is set out in Table 5.3 below.

Table 5.2 Definition of the vulnerability, recoverability and value/importance when defining the sensitivity of a receptor (IPCC, 2001; MarLIN, 2012; IEEM, 2010).

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Vulnerability of the receptor</td>
<td>The degree to which a receptor is susceptible to injury, damage, or harm from an activity.</td>
</tr>
<tr>
<td>Recoverability of the receptor</td>
<td>The ability of a receptor to be able to return to a state close to that which existed before an activity or event caused damage.</td>
</tr>
<tr>
<td>Value/importance of the receptor</td>
<td>The importance of the receptor in terms of ecological, social/community and/or economic value.</td>
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Table 5.3 Matrix used for assessment of significance showing the combinations of receptor sensitivity and the magnitude of effect.

<table>
<thead>
<tr>
<th>Sensitivity of receptor</th>
<th>Magnitude of Impact</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>No Change</td>
</tr>
<tr>
<td>Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td>Low</td>
<td>Negligible</td>
</tr>
<tr>
<td>Medium</td>
<td>Negligible</td>
</tr>
<tr>
<td>High</td>
<td>Negligible</td>
</tr>
<tr>
<td>Very high</td>
<td>Negligible</td>
</tr>
</tbody>
</table>
5.3.25 The result of the matrix approach adopted here is the assignment of a significance of effect for all project impacts. The significance may be one, or a range of, negligible, minor, moderate, major or substantial.

5.3.26 The definitions for each of the significance levels shown in Table 5.3 are shown in Table 5.4 below.

Table 5.4 Definition of significance levels.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Negligible significance</td>
<td>No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.</td>
</tr>
<tr>
<td>Minor significance</td>
<td>These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision making process, but are important in enhancing the subsequent design of the project.</td>
</tr>
<tr>
<td>Moderate significance</td>
<td>These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor.</td>
</tr>
<tr>
<td>Major significance</td>
<td>These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.</td>
</tr>
<tr>
<td>Substantial significance</td>
<td>Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category. Effects upon human receptors may also be attributed this level of significance.</td>
</tr>
</tbody>
</table>

5.3.27 In general, a significance of effect of moderate or greater is considered 'significant' in EIA terms and will normally trigger additional analysis and consultation in order to discuss and possibly further mitigate impacts where possible. Where further mitigation is not possible a residual effect may remain.

Additional Mitigation Measures

5.3.28 In select cases, additional mitigation measures have been outlined within the topic chapters. This includes mitigation measures where:

- The threshold of significance of effect has been reached (i.e., where an issue is significant in EIA terms) when including designed in mitigation measures, but there are additional mitigation measures available to reduce the level of effect; or
- Mitigation has been proposed but has not yet been confirmed (i.e., awaiting sign-off from regulators, stakeholders etc.) as agreed mitigation.

5.3.29 In such cases these mitigation measures have been outlined after the assessment of significance in the relevant chapters.

Cumulative Impact Assessment

5.3.30 The cumulative impact assessment for each chapter has been undertaken on the basis of the consultation undertaken to date. This draws upon relevant external guidance and other material, including specialist knowledge, relevant to that topic.

5.3.31 The cumulative impact assessment follows the advice given in PINS Advice Note Nine: Rochdale Envelope (PINS, 2012a) for Nationally Significant Infrastructure Projects (NSIPs). The advice is as follows:

"The potential cumulative impacts with other major developments will also need to be carefully identified such that the likely significant impacts can be shown to have been identified and assessed against the baseline position (which would include built and operational development). In assessing cumulative impacts, other major development should be identified through consultation with the local planning authorities and other relevant authorities on the basis of those that are:

- Under construction;
- Permitted application(s), but not yet implemented;
- Submitted application(s) not yet determined;
- Projects on the Planning Inspectorate’s Programme of Projects;
- Identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited; and
- Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward."
5.3.32 Within the cumulative impact assessments, built and operational projects are included within the cumulative assessment where they have not been included within the baseline. For instance, commercial fishing activity has historically operated throughout Project One and the surrounding area. The baseline survey for fish ecology has therefore, included the impact of commercial fishing on this receptor group. However, a new development, such as Greater Gabbard which only became operational in 2012, was not captured in some baseline surveys and therefore, has been included within the cumulative assessment.

5.3.33 The offshore cumulative impact assessment for Project One has been undertaken on the basis of the Cumulative, Transboundary and Inter-relationships Discussion Document prepared in advance of the EIA (See Volume 4, Annex 4.5.1). This document outlines the principles employed within the offshore elements of this Environmental Statement and provides an initial screening of projects to be included. This document also takes into account the guidance provided in the Planning Inspectorate’s (PINS) Advice Note Nine (PINS, 2012a), as well as consultation undertaken on the discussion document throughout the EIA process for Project One.

5.3.34 The offshore cumulative impact assessment for Project One considers other Round 1, 2 and 3 offshore wind farms in the southern and central North Sea, as well as other activities in the region, including, but not limited to, marine aggregate extraction, oil and gas development, shipping, commercial fisheries and recreational activities.

5.3.35 In assessing the cumulative impact for Project One it is important to bear in mind that other projects/plans under consideration will have differing potential for proceeding to an operational stage and hence a differing potential to ultimately contribute to a cumulative impact with Project One. For example, relevant projects/plans that are already under construction are likely to contribute to cumulative impact with Project One (providing effect or spatial pathways exist), whereas projects/plans not yet approved or not yet submitted are less certain to contribute to such an impact, as some may not achieve approval or may not ultimately be built due to other factors. For this reason all relevant projects/plans considered cumulatively alongside Project One have been allocated into ‘tiers’, reflecting their current stage within the planning and development process. This allows the cumulative impact assessment to present several future development scenarios, each with a differing potential for being ultimately built out. Appropriate weight may therefore be given to each scenario (tier) in the decision making process when considering the potential cumulative impact associated with Project One (e.g., it may be considered that greater weight can be placed on the Tier 1 assessment relative to Tiers 2 and 3). An explanation of each tier is included below:

- **Tier 1**: Project One with projects under construction (projects falling into this tier in this chapter had a high data confidence and therefore could be included within the cumulative impact assessment);
- **Tier 2**: All projects included in Tier 1 plus other projects/plans consented but not yet implemented or submitted applications not yet determined. This includes the first project within the East Anglia Zone (East Anglia One) which was submitted in November 2012 and Dogger Bank (Creyke Beck A & B) which will be submitted at a similar time to Project One. Projects/plans falling into this tier in this chapter had a medium data confidence and therefore could be included within the cumulative impact assessment; and
- **Tier 3**: The projects included in Tier 1 and Tier 2 plus projects/plans on relevant plans and programmes that are likely to come forward (the PINS Programme of Projects being the source most relevant for this assessment). This includes Hornsea Project Two, Dogger (Teesside A & B, and C & D) and East Anglia (Three and Four). Data confidence for most of the projects falling within this tier for this chapter was low. After consideration of the available information it was considered that the data confidence (i.e., information available in the public domain) for the projects having low data confidence was insufficient to allow a meaningful cumulative impact assessment. However, for Hornsea Project Two, the Project One EIA team is able to access more robust data for Project Two, and data confidence for this project is therefore assessed as medium.

5.3.36 At the time of writing, the development of Projects Three and Four within the Hornsea Zone is not sufficiently mature to allow any significant degree of confidence in their development parameters. These projects have therefore been excluded from the cumulative impact assessment on the basis that the information available would not allow for a full and robust assessment.

**Offshore**

5.3.37 The onshore cumulative impact assessment considers major projects which fall into the categories set out in PINS Advice Note Nine (see paragraph 5.3.31). These have been identified through consultation with the local planning authorities and other relevant authorities.

5.3.38 The locations of the schemes assessed in the onshore cumulative impact assessment are shown on Figure 5.2 and Figure 5.3. Schemes within 1 km of the onshore HVDC converter/HVAC substation and cable route corridor area are included in the cumulative impact assessments in Volume 3, Chapters 1 to 9.

In preparing such information, it should not be forgotten that the purpose of an EIA is to inform the examination, and decision making process. The EIA should be clear and practical.” (PINS, 2012a)
Figure 5.2 Onshore cumulative schemes (1 of 2).
Figure 5.3 Onshore cumulative schemes (2 of 2).
Several topics have extended cumulative study areas due to the nature of the topic. The study area for cumulative landscape and visual assessment and historic setting is extended to 15 km from the onshore HVDC converter/HVAC substation. For ecological cumulative effects the study area is extended to consider potential cumulative effects on bats and birds 4 km from the cable route corridor and onshore HVDC converter/HVAC substation and 5 km from the landfall.

The onshore cumulative impact assessment also assesses Project One and Project Two together using one of four possible scenarios:
- Project One and Project Two commence construction simultaneously;
- Project One and Project Two commence construction in a staggered manner;
- Project One complete and operational at the time that construction of Project Two commences; and
- No change (Project Two does not get constructed).

Each onshore chapter assesses the worst cumulative case for that particular topic by selecting the particular scenario above that represents the worst case in that chapter.

The onshore assessment for Project One will not consider Project Three or Four, as cable routes for these projects will differ to the Project One route and are not yet known.

The socio-economic cumulative impact assessment (Volume 3, Chapter 10: Socio-economics) identifies developments based on the extent to which these developments' supply chains might draw on companies in similar sectors and the extent to which the skills requirements of the labour markets may overlap. These include offshore and onshore developments and therefore differ from the list above. Relevant developments and the areas of overlap with Project One are outlined in Volume 3, Chapter 10: Socio-economics at Section 10.7.

Transboundary Assessment

Transboundary issues are stipulated in Regulation 24 of the EIA Regulations. The Regulations put in place procedures to address situations where a development is likely to have a significant effect on the environment or interests of another European Economic Area (EEA) State.

The Convention on Environmental Impact Assessment in a Transboundary Context (‘Espoo Convention’) was adopted by The United Nations Economic Commission for Europe (UNECE) on 25 February 1991 and entered into force on 10 September 1997 (and later modified in 2001 and 2004). This convention stipulates the obligation of signatories to assess the environmental impact of certain activities that are likely to cause transboundary environmental impacts at an early stage of planning.

The EIA Directive implements requirements for transboundary consultation and requires that all significant transboundary issues set out in the Directive be addressed through the EIA process. All affected parties must have the opportunity to comment and all subsequent comments must be addressed in the EIA.

PINS Advice Note Twelve sets out the procedures for consultation to be undertaken in relation to an application for development consent, where such development has significant transboundary impacts (PINS, 2012b).

Identification and screening of transboundary effects has been undertaken and consulted on with relevant EEA States during November 2012. The screening document is presented in Volume 4, Annex 4.5.2: Transboundary Effects Technical Note. Furthermore, the Planning Inspectorate has provided a Transboundary Screening Report for Project One on 14 March 2013.

The screening exercise identified that the following receptors may experience transboundary effects from the proposed Project One:
- Fish and shellfish (Volume 2, Chapter 3);
- Marine mammals (Volume 2, Chapter 4);
- Ornithology (Volume 2, Chapter 5);
- Commercial fisheries (Volume 2, Chapter 7);
- Commercial shipping (Volume 2, Chapter 8);
- Infrastructure and other users (Volume 2, Chapter 12);
- Terrestrial ecology (Volume 3, Chapter 3); and
- Socio-economics of other European Economic Community (EEC) member states (Volume 3, Chapter 10).

A full assessment on these receptors has been undertaken and is provided in the relevant chapters of the Environmental Statement.

Inter-Related Effects

The EIA process for Project One has examined the potential for inter-related effects occurring as a result of Project One. Inter-related effects are multiple effects upon the same receptor arising. These occur either where a single effect acts upon a receptor over time to produce a potential additive effect or where a number of separate effects, such as noise and visual change, affect a single receptor, for example, local residents.

The inter-related effects assessment approach has been developed with specific regard to the following text (footnote 11, page 7) from PINS Advice Note 9 (PINS, 2012): “Inter-relationships consider impacts of the proposals on the same receptor. These occur where a number of separate impacts, e.g. noise and air quality, affect a single receptor such as fauna.”
5.3.53 The approach also serves to accommodate the IPC advice within the IPC Project One Scoping Opinion and subsequent PINS Advice Note Nine and Second Scoping Opinion regarding the need to consider the assessment as a whole and not as a series of unconnected specialist reports.

5.3.54 The assessment of potential inter-related effects has been carried out concurrently but considering two types of potential inter-related effects. These are:

- **Project lifetime effects:** Assessment of the scope for effects that occur throughout more than one phase of the project, (construction, operational and decommissioning) to interact to potentially create a potentially greater effect on a receptor than if just assessed in isolation in these three key project stages (e.g., subsea noise effects from piling, operational turbines, vessels and decommissioning offshore or onshore construction phase noise, operational noise and noise during decommissioning and dismantling at the onshore HVAC converter / HVDC substation site); and

- **Receptor-led effects:** Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on a given receptor such as benthic habitats - direct habitat loss or disturbance, sediment plumes, scour, jack-up vessel use etc. may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Onshore inter-related impacts such as construction dust and noise, increased traffic and visual change may affect local residents. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

5.3.55 The approach for Project One is to use a series of tables to list individual effects on key receptors at the three project stages (construction, operation and decommissioning). The significance of these individual effects, as defined in the topic specific chapters, is also presented (all effect significances defined in the topic chapters assume successful implementation of mitigation measures where appropriate). A descriptive assessment of the scope for these individual effects to interact to create a greater effect is then undertaken. The assignment of actual significance to any such inter-related effect is not undertaken, rather, any additional inter-related effects that may be of greater significance than the individual effects acting in isolation on a given receptor are identified.

5.3.56 It is important to note that the inter-related effects assessment considers only effects produced by the Project One development and not from other projects which are considered via the cumulative assessment sections within each topic chapter. In summary, the approach to assessing inter-related effects within this chapter has involved following the discrete steps outlined below in Table 5.5.

5.3.57 The assessment of inter-related effects is included within Volume 2: Chapter 14 and Volume 3: Chapter 11 of this Environmental Statement.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Assessment of effects sections undertaken for individual Environmental Impact Assessment (EIA) topic areas.</td>
</tr>
<tr>
<td>2</td>
<td>Review of assessment sections undertaken to identify &quot;receptor groups&quot; requiring assessment.</td>
</tr>
<tr>
<td>3</td>
<td>Potential effects on these receptor groups identified via review of assessment sections across a range of topics.</td>
</tr>
<tr>
<td>4</td>
<td>Development of tables that list all potential effects on selected receptor in construction, operational and decommissioning phases.</td>
</tr>
<tr>
<td>5</td>
<td>Qualitative assessment on how individual effects may combine to create inter-related effects.</td>
</tr>
</tbody>
</table>
REFERENCES


