

# **Pentland floating offshore wind farm**

## Volume 3: Appendix A.6.1

### Cumulative Projects Approach

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## 1 FOREWORD

*HWL submitted this document for consultation to MS-LOT on 30th March 2022. Since that consultation took place, the Pentland Floating Offshore Wind Farm (PFOWF) Array Area and Offshore Export Cable Corridor for the Project have been refined in line with comments received during consultation and engagement exercises with stakeholders and the general public. To avoid confusion these details have been updated within this note, however, the approach to the cumulative assessment and the projects included within the cumulative project list remain the same and as consulted upon.*

## 2 INTRODUCTION

Highland Wind Limited (HWL) is proposing to demonstrate a floating offshore wind farm with an anticipated installed capacity of up to 100 megawatts (MW), approximately 7.5 km off the coast of Dounreay, Caithness, referred to as the Pentland Floating Offshore Wind Farm (PFOWF) or ‘the Project’. The Project is in the same location as the Dounreay Tri Floating Demonstrator Project (the Dounreay Tri Project) which was granted key consents and a marine licence in 2017. Highland Wind Limited was assigned the Section 36 Consent and Marine Licences awarded to Dounreay Tri Limited (in administration) for the Dounreay Tri Project on the 3rd March 2021.

HWLs aim for the PFOWF is to test and demonstrate a technology solution for floating offshore wind in Scotland. The proposed Array Area for the PFOWF (the area where the WTGs will be located) covers the same area as the Dounreay Tri marine licence, however with consideration of comments received during consultation the southern boundary has been set back from the coast of the mainland by an additional 1 km and the size of the Array Area has been reduced by 50% (see Figure 1-1).

The PFOWF will comprise an offshore array of up to seven floating Wind Turbine Generators (WTGs) connected to one another by subsea inter-array cables supported by floating structures. Up to two offshore export cables will carry the power generated by the PFOWF to a landfall location at the Dounreay coast. A buried onshore cable will then transmit the power inland to a new onshore substation, where it will connect to the transmission network. The proposed Project is shown in Figure 2-1.

### 2.1 Purpose of this Document

HWL are currently progressing the Environmental Impact Assessment (EIA) and Habitats Regulations Appraisal (HRA) for the Project. The EIA Regulations<sup>1</sup> specify that in addition to the impacts from the Project alone, cumulative effects with other projects, plans and activities (‘other developments’) should also be assessed. Similarly, the Habitats Regulations<sup>2</sup> state that Likely Significant Effects (LSEs) or adverse effects on the integrity of a European Site should be determined for the Project alone or in-combination with other developments.

Cumulative or in-combination effects may arise during construction, operation or decommissioning of the Project and occur when the effects from the Project interact with the effects of other developments. This document presents the list of other developments which have been identified as having the potential act cumulatively with the Project and considers each receptor separately.

It should be noted that a separate document has been prepared to inform the cumulative impact assessment for ornithological interests which was previously shared with MS-LOT and NatureScot (Pentland Floating Offshore Wind Farm (PFOWF) Cumulative Impact Assessment for Ornithological Interests. 2022). For completeness, the cumulative projects list presented in this document includes those identified as being relevant for offshore ornithology.

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<sup>1</sup> *The Marine Works (Environmental Impact Assessment) Regulations 2017 and The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.*

<sup>2</sup> *The Conservation of Habitats and Species Regulations 2017, The Conservation (Natural Habitats, &c.) Regulations 1994 and The Conservation of Offshore Marine Habitats and Species Regulations 2017.*

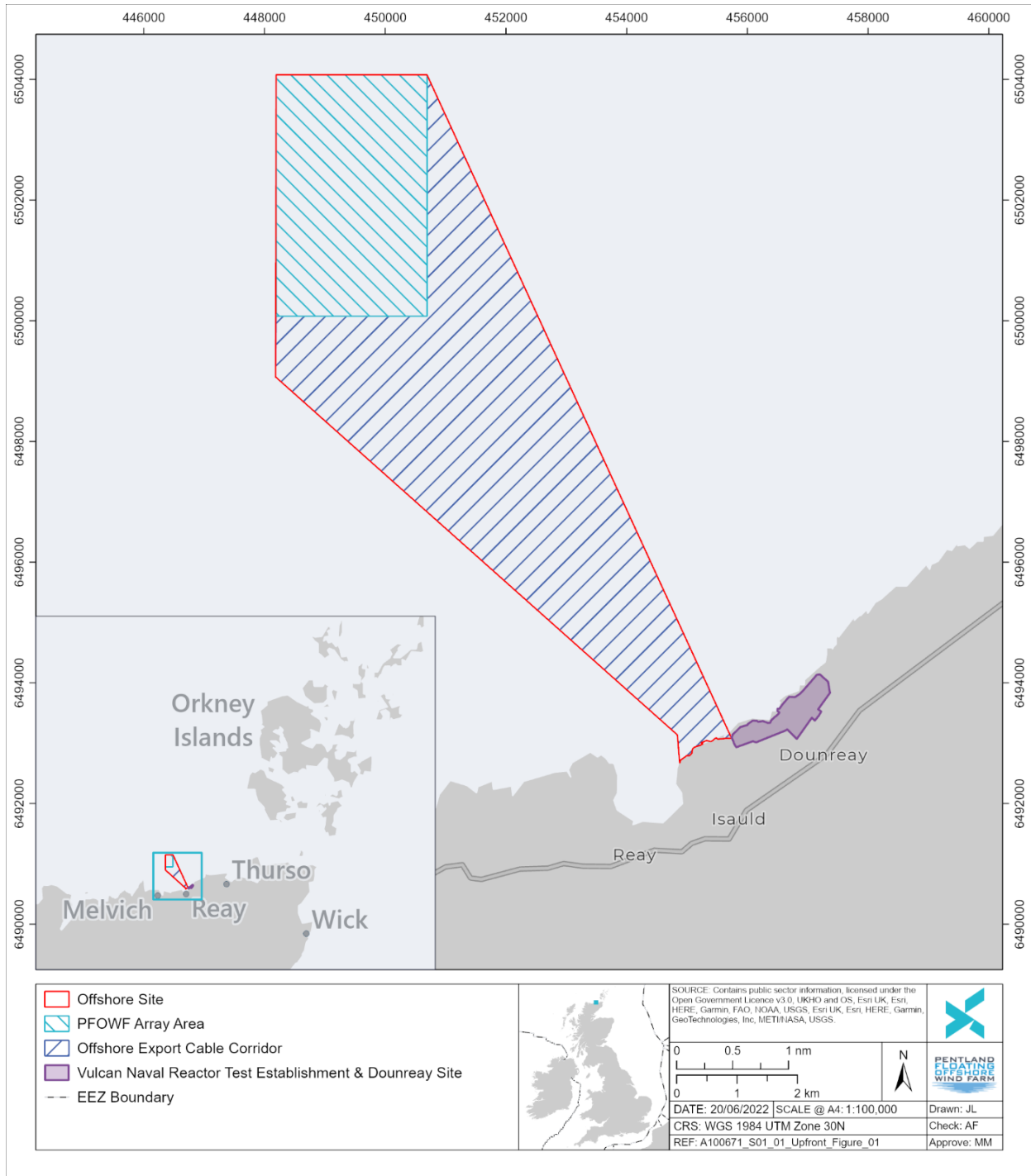


Figure 2-1 Location of the Project, Array Area and Export Cable Corridor

## 3 METHODOLOGY

### 3.1 Approach

A staged approach has been taken to identify relevant developments to be considered within the EIA and HRA cumulative assessment. Initially a long list of potential cumulative projects was compiled. This provides a list of the projects which have the potential to act cumulatively with the Project, with consideration of the potential Zone of Influence (Zoi) for each receptor and the potential for an interaction between the impacts from the Project and impacts from other Developments to arise.

Any developments identified within the cumulative project long list that have the potential to interact with the Offshore Development (the area encompassing the Array Area and the Offshore Export Cable Corridor up to Mean High Water Springs (MHWS) have been taken forwards into a cumulative short list. The short list of developments is presented within this report for feedback from Marine Scotland Licensing Operations Team (MS-LOT), to ensure the list of projects to be assessed is comprehensive.

The cumulative project short list will be used as a basis for the topic-specific cumulative impact assessments, and therefore, the list is broken down by receptor. In undertaking the topic-specific cumulative assessments, each technical chapter will review the list of projects and plans to identify those that have the potential to result in cumulative impacts.

As agreed with MS-LOT, specific cut-off dates for the level of consideration of proposals at Scoping stage have been established for the Offshore Development; these are:

- > Quantitative assessment undertaken for any new projects submitted for Scoping up to six months prior to PFOWF application submission (subject to required data being readily available from scoping reports and/or provided by developers);
- > Qualitative assessment carried out on any new projects up to five months prior to PFOWF application submission;
- > Any new projects that are submitted for Scoping less than five and up to two months prior to PFOWF application submission will be acknowledged, but with no assessment; and
- > There will be no mention of any new relevant projects that submit Scoping Reports less than two months prior to PFOWF application submission.

HWL are targeting submission of the PFOWF application to MS-LOT at the end of July, and therefore, the six-month cut-off for quantitative assessment of projects within Scoping was end of January 2022. Developments that reached the Scoping phase beyond this date will not be considered quantitatively but will be considered qualitatively. Those developments that reached Scoping beyond February 2022 will not be considered quantitatively or qualitatively, but will be acknowledged. However, in the specific instance of West of Orkney Windfarm, which submitted its Scoping Report in March 2022, given this project is on the cusp of the cut-off for qualitative assessment it has been included in cumulative assessment, where requested by stakeholders.

#### 3.1.1 Developments considered

Other offshore wind developments in the vicinity of the Offshore Development are the most likely to result in a cumulative / in-combination effect with the Project. However, it is acknowledged that other developments may also act cumulatively with the Offshore Development, therefore, the following types of development were considered in the cumulative project long list:

- > Other offshore wind farms, other renewables and associated cabling and infrastructure;
- > Oil and gas installations (including any decommissioning plans);
- > Other forms of cables (i.e. telecommunications and interlinks) and pipelines;
- > Carbon Capture and Storage (CCS);

- > Seismic surveys (e.g. for oil and gas and CCS);
- > Coastal projects requiring an EIA (e.g. ports / harbours);
- > Onshore wind farms and associated infrastructure;
- > Aggregate extraction and dredging; and
- > Licenced disposal sites.

### 3.1.2 Search Areas

The ZOI for each receptor provides the maximum search areas for developments to be screened into the cumulative project long list. Prior to identifying other developments for inclusion, topic specialists were consulted to understand the nature and scale of the ZOI for individual topics and which types / phases of development have the potential to act cumulatively with the Project. This was considered on a receptor-by-receptor basis.

## 4 CUMULATIVE PROJECT SHORT LIST

Once established, the cumulative project long list was reviewed and screened to determine the potential pathways for cumulative effects, taking into consideration potential impact pathways and / or the potential for physical or temporal overlap of impacts from other development activities and those of the Offshore Development. Expert judgement was also used to ascertain whether the scale and nature of the other development was likely to interact with the Offshore Development. This was based on the following:

- > Potential impact-receptor pathways – i.e., the potential for the receptor to be impacted by the other development. For example – the operation of a subsea cable will not impact visual receptors;
- > Spatial interaction – i.e., the potential for the impact from the Project to interact spatially with that of another Development. For example, an overlap of piling noise contours; and
- > Temporal interaction – i.e., the potential for the impact of the Project to occur either at the same time or sequentially as the impact from the other development (e.g., overlapping piling noise).

Where cumulative impacts are only expected to arise during the construction phase, only those projects with overlapping construction periods with the Offshore Development were screened into the short list. In these instances, projects were screened into the short list if construction occurred in 2025 and / or 2026 in line with the anticipated project construction programme. Projects with construction planned in 2024 were also considered due to the potential commencement of limited works at the landfall (horizontal directional drilling) for the PFOWF. However, due to the minimal nature of these works within the marine environment no significant cumulative impacts were anticipated.

Operational projects were only screened into the long list if there was potential for an ongoing impact from that development type (e.g. bird collision risk). For the majority of receptors operational projects are considered to be part of the existing baseline and considered as part of the project-specific impact assessment.

If there was low confidence in the data gathered for the other development screened into the cumulative project long-list (e.g. no information was available on construction timelines or limited project details), the project was screened out of the cumulative project short list, as the limited information available does not allow for a meaningful cumulative assessment to be undertaken.

There are currently limited project details for offshore wind farms sites awarded Option Agreements within the ScotWind leasing round or for Offshore Wind Leasing Round 4 Projects in English waters. However, considering the scale of these developments they will be noted within the EIA and HRA and the potential for cumulative impacts to arise with the Project acknowledged. The cut-off date for a quantitative assessment of projects in the Scoping stage was January 2022, therefore, the ScotWind Projects and Offshore Wind Round 4 Projects will be acknowledged but no assessment will be conducted. Particular focus will be placed on the sites located within the north of Scotland, such as the West of Orkney Wind Farm (N1 PO), as well as the sites located within the N2, N3, N4, NE2, NE3 and NE4 PO areas.

In addition, potential cumulative impacts from fishing restrictions or closures within Marine Protected Areas (MPAs) will also be considered in the assessment of cumulative loss of access to fishing grounds and displacement. There is uncertainty around whether management measures will be implemented in relation to commercial fisheries across several MPAs, meaning there is low confidence in any future restrictions at designated sites. However, the KingFisher UK Fishing Restrictions Map<sup>3</sup> will be reviewed to identify those MPAs which may act cumulatively with the Offshore Development. This will focus on protected sites designated for benthic or habitat features.

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<sup>3</sup> <https://kingfisherrestrictions.org/>



## 4.1 Approach to the Topic-Specific Cumulative Assessments

The methodology for the cumulative assessments will be presented within each topic-specific chapter of the EIA Report. As set out above, for some receptors, the combined spatial or temporal impact from the Project with other developments will be considered quantitatively. For other receptors, a qualitative approach will be taken that will consider the potential interaction of the receptor with the other developments alongside the Project, with the significance of the impact being based on expert judgement and in accordance with Project's EIA methodology. Each topic's approach for the cumulative impact assessment (e.g. quantitative vs. qualitative) is largely driven by the approach for the project-specific impact assessment.

The cumulative project list presented within this report focusses on the developments that will be considered quantitatively within a topic chapter of the EIA Report, where this information is available to do so. Projects to be considered qualitatively are also included, but in some instances have been grouped into categories.

The list of cumulative projects to be considered within each chapter of the EIAR is provided in the sections below, along with information on the rationale for inclusion in the list and the relevant receptors. As part of the impact assessment process, each topic specialist will review the projects relevant to their receptor to further refine the lists of projects / plans and to understand the potential for a cumulative impact to arise and this will be presented within each technical chapter of the EIAR.

## 4.2 Physical Processes, Water and Sediment Quality and Benthic Ecology

The list of projects for consideration in the physical processes cumulative impact assessment are presented in Table 4-1.

Table 4-1 Physical Processes cumulative impact assessment projects

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Scrabster Extension dredge disposal site	Dredge disposal site	Open	Caithness (Scrabster)	This development is located within 20 km of the Offshore Development, with the potential for additive cumulative impacts for physical processes.
SHE Transmission Orkney-Caithness Interconnector Project	Interconnector	Consented	Pentland Firth (Caithness to Hoy)	Due to overlapping footprint, there is the potential for additive cumulative impacts for physical processes.

## 4.3 Fish and Shellfish Ecology

The list of projects for consideration in the fish and shellfish ecology cumulative impact assessment are listed in Table 4-2.

Table 4-2 Fish and shellfish ecology cumulative impact assessment projects

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
SHE Transmission Orkney-Caithness Interconnector Project	Interconnector	Consented	Pentland Firth (Caithness to Hoy)	Due to overlapping footprint, there is the potential for additive cumulative impacts for fish and shellfish.
Scottish Hydro Electric Power Distribution (SHEPD) Orkney to Hoy North Cable	Power distribution cable	Operational (awaiting replacement)	Orkney Islands (Mainland Orkney to Hoy)	The cable may potentially intersect migratory routes for migratory crab that are also intersected by the Offshore Development.
SHE Transmission Shetland HVDC Link	Interconnector	Under construction	Caithness (Wick) to Shetland	The cable may potentially intersect migratory routes for salmon and migratory crab that are also intersected by the Offshore Development.
BT telecommunications cables across Orkney	Telecommunications Cables	Pre-consent (application stage)	Orkney Islands	The cable may potentially intersect migratory routes for migratory crab that are also intersected by the Offshore Development.
Scrabster Extension dredge disposal site	Dredge disposal site	Open	Caithness (Scrabster)	This development is located within 20 km of the Offshore Development, with potential additive cumulative impacts for fish and shellfish ecology, from increased suspended sediments.
Scapa dredge disposal site	Dredge disposal site	Open	Orkney Islands (Scapa Flow)	The site is within 50 km of the Offshore Development with the potential for cumulative impacts on fish and shellfish.
Stromness B dredge disposal site	Dredge disposal site	Open	Orkney Islands (Stromness)	The site is within 50 km of the Offshore Development with the potential for cumulative impacts on fish and shellfish.
Stromness C dredge disposal site	Dredge disposal site	Open	Orkney Islands (Stromness)	The site is within 50 km of the Offshore Development with the potential for cumulative impacts on fish and shellfish as a result of increased suspended sediments

#### 4.4 Offshore Ornithology

As described in Section 1.1, cumulative impacts to birds are considered on a species-by-species and SPA-by-SPA basis and the details of this approach are provided in *Pentland Floating Offshore Wind Farm (PFOWF) Cumulative Impact Assessment for Ornithological Interests. 2022*. The cumulative projects for consideration for offshore ornithology are presented in Table 4-3.

Table 4-3 Offshore ornithology cumulative impact assessment projects

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Beatrice Offshore Wind Farm	Offshore wind farm	Operational	Moray Firth, Scotland	Potential impacts on offshore ornithology based on seabird foraging ranges.
Moray West Offshore Wind Farm	Offshore wind farm	Consented	Moray Firth, Scotland	Potential impacts on offshore ornithology based on seabird foraging ranges.
Moray East Offshore Wind Farm	Offshore wind farm	Under Construction	Moray Firth, Scotland	Potential impacts on offshore ornithology based on seabird foraging ranges.

#### 4.5 Marine Mammals and Megafauna

The list of projects for consideration in the marine mammals and megafauna cumulative impact assessment are listed in Table 4-4. Developments with construction periods that overlap with the Project will be considered quantitatively where there is sufficient information available to do so. This information may not be available for offshore windfarms in EU waters for which a 26 km Effective Deterrent Radius (EDR) will be assumed. Activities associated with oil and gas assets in the North Sea will be considered qualitatively, as the key noise source associated with these developments is vessel noise.

Table 4-4 Marine mammals and megafauna cumulative impact assessment projects

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Green Volt	Offshore wind farm	Pre-consent (Scoping)	Northeast Scotland	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Rampion 2	Offshore wind farm	Pre-consent (Preliminary Environmental Report (PEIR))	English Channel	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Erebus	Offshore wind farm	Pre-consent (application stage)	Celtic Sea	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Blyth Offshore Demonstrator – Phase 2	Offshore wind farm	Consented	Northeast coast of England (Blyth)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative
Dogger Bank C	Offshore wind farm	Consented	East coast of England (adjacent to UK Exclusive Economic Zone (EEZ) boundary)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Sofia	Offshore wind farm	Consented	East coast of England (adjacent to UK Exclusive Economic Zone (EEZ) boundary)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Hornsea Three	Offshore wind farm	Consented	East coast of England (Humber / the Wash)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Hornsea Four	Offshore wind farm	Pre-consent (application stage)	East coast of England (Humber / the Wash)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Norfolk Vanguard	Offshore wind farm	Consented	East coast of England (Norwich)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Norfolk boreas	Offshore wind farm	Consented	East coast of England (Norwich)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Dudgeon extension and Sheringham Shoal Extension Projects	Offshore wind farm	Pre-consent (PEIR)	East coast of England (Humber / the Wash)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
East Anglia ONE North	Offshore wind farm	Pre-consent (application stage)	East coast of England (Norwich)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
East Anglia Two	Offshore wind farm	Pre-consent (application stage)	East coast of England (Norwich)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
East Anglia Three	Offshore wind farm	Consented	East coast of England (Norwich)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Awel y Môr	Offshore wind farm	Pre-consent (PEIR)	North coast of Wales	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Offshore wind farms in EU waters	Offshore wind farm	Pre-consent and consented	Ireland, France, Germany, Denmark and Sweden	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Scotland England Green Link 1	Interconnector	Pre-consent (scoping)	East Lothian (Scotland) to County Durham (Northeast England)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Scotland England Green Link 2	Interconnector	Pre-consent (scoping)	Peterhead (Scotland) to North Yorkshire (Northeast England)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
NorthConnect	Interconnector	Pre-consent (consented in UK but not in Norway)	Peterhead to Norway	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Celtic Interconnector	Interconnector	Pre-consent (application stage)	North France (La Matrye) to South of Ireland (Ballyadam)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
French-Alderney-Britain (FAB) Link	Interconnector	Under Construction	East Devon (Southeast England) to Brittany (France)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Acorn	Carbon capture and storage	Pre-consent	Northeast Scotland	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Faray slipway extension and landing jetty	Jetty	Consented	Orkney Islands (Faray island)	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
North Sea oil and gas assets	Oil and gas field developments and decommissioning projects	Pre-consent, consented and decommissioning	Various locations throughout the North Sea	Potential for construction timelines of the Offshore Development to overlap with this development, meaning there is the potential for cumulative impacts from underwater noise emissions.
Seismic surveys for oil and gas and CCS developments	Seismic Surveys	Ongoing	N/A	Potential cumulative impact for marine mammals and fish and shellfish if underwater noise of seismic surveys overlaps with the construction period for the Offshore Development.

#### 4.6 Commercial Fisheries

The commercial fisheries chapter will consider projects from a qualitative perspective, in line with the project-specific impact assessment. Developments within 100 km of the Project are considered to have the potential to result in cumulative impacts for all fishing methods with the exception of scallops, that may be affected beyond this distance. The cumulative impact assessment will focus on the developments in the vicinity of the Project, as these have the greatest potential to impact local fisheries with smaller operational ranges that are generally more sensitive to the impacts from the Project. Developments beyond the distance will be considered qualitatively with regards to the potential to impact scallop dredgers, that have wide operational ranges. The developments that will be considered for the cumulative impact assessment are listed in Table 3-5.

Table 4-5 Developments for consideration in the commercial fisheries cumulative impact assessment

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Moray West Offshore Wind Farm	Offshore wind farm	Consented	Moray Firth, Scotland	Within 100 km of the Offshore Development with potential overlap with commercial fishing grounds (e.g. additive effects for restricted access to fishing grounds).
Moray East Offshore Wind Farm	Offshore wind farm	Under construction	Moray Firth, Scotland	Within 100 km of the Offshore Development with potential overlap with commercial fishing grounds (e.g. additive effects for restricted access to fishing grounds).
SHE Transmission Orkney-Caithness Interconnector Project	Interconnector	Consented	Pentland Firth (Caithness to Hoy)	Within 100 km of the Offshore Development with potential overlap with commercial fishing grounds (e.g. additive effects for restricted access to fishing grounds).
Offshore windfarms overlapping with scallop dredge grounds, including along the east coast of Scotland and England, in English Channel and in the Celtic or Irish Sea	Offshore wind farm	Pre-consent, consented and under construction	Various	Potential for impacts on commercial fisheries based on an overlap of this development with scallop grounds.
Cables overlapping with scallop dredge grounds with a concurrent construction period with the Project, including the Scotland England Green Link 1 and 2, NorthConnect and the Celtic Interconnector	Cables	Pre-consent, consented and under construction	Various	The cable overlaps with scallop fishing grounds with the potential for cumulative impacts with regards to temporary loss of access during construction.

#### 4.7 Shipping and Navigation

The developments that will be considered for the cumulative impact assessment are listed in Table 4-6.

Table 4-6 Developments for consideration in the shipping and navigation cumulative impact assessment

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
SHE Transmission Orkney-Caithness Interconnector Project	Interconnector	Consented	Pentland Firth (Caithness to Hoy)	This development lies within 50 km of the Offshore Development with potential for cumulative impacts on shipping and navigation.

#### 4.8 Military and Aviation

In terms of assessing aviation cumulative effects, the impact on any aviation receptor is generally treated as a standalone impact. Whilst other wind turbine developments may be located in close proximity, the impact on each receptor is considered on a case-by-case basis and any significant effect is sufficient to trigger an objection from the relevant aviation stakeholder. However, if one wind farm has an unacceptable effect on an aviation receptor, it will not impact on any other wind farm. In terms of mitigation, an agreement for one development through consultation with a relevant stakeholder may be of relevance to a neighbouring development, however, it is still necessary for negotiations and discussions with aviation stakeholders on these mitigation measures to be carried out under separate arrangements.

The predicted effects from the Project on military and aviation receptors are considered to be localised to within the footprint of the Project. Given that the Offshore Development's WTGs are not considered detectable by any radar system, the Project will not present any cumulative effect on radar systems. Furthermore, given the distance of the Project from known offshore and onshore developments, the Project is also not considered to present any cumulative effect on military low flying or SAR helicopter operations in the region.

There is no potential for the predicted impacts to interact with impacts from other projects and activities in the military and aviation study area that can lead to a cumulative effect on receptors. Consequently, no further assessment with respect to cumulative effects is required.

#### 4.9 Seascape, Landscape and Visual

Projects relevant to SLVIA include onshore wind farms within 50 km of the Project, the Scottish Hydro Electric (SHE) Transmission Dounreay West Substation, the Dounreay Nuclear Site and Vulcan Naval Reactor Test Establishment (NRTE) and the Sutherland Space Hub. The Highland Council has been consulted during the process of developing this list.

Table 4-7 Developments for consideration in the SLVIA cumulative assessment

Development	Type	Status	Location (Distance to the Offshore Development) (km)	Rationale for Including in Cumulative Project List
Onshore Energy Infrastructure	Decommissioning of Dounreay Nuclear Power Facility and Vulcan NRTE	Consented	7.4	Potential visual impact from projects within 50 km of the offshore development.
Onshore Energy Infrastructure	SHE Transmission Onshore Substation	Consented	7.5	Potential visual impact from projects within 50 km of the offshore development.
Space Tourism	Sutherland Space Hub	Consented	37.9	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Forss	Operational	7.7	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Forss III	Application	8.3	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Drum Hollistan 2	Application	10.2	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Baillie Hill	Operational	10.5	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Ackron (Resubmission)	Application	10.6	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Limekiln Resubmission	Application	12.3	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Limekiln Extension	Application	12.5	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Strathy North	Operational	17.3	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Strathy Wood	Application	18.8	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Bettyhill	Operational	21.0	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Strathy South	Consented	23.0	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Achlachan	Operational	29.3	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Achlachan 2	Consented	29.9	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Tormsdale	Application	29.9	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Causeymire	Operational	30.6	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Halsary	Operational	31.8	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Bad a Cheo	Operational	31.9	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Lochend Farm	Operational	33.0	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Hoy	Consented	38.3	Potential visual impact from projects within 50 km of the offshore development.
Onshore Wind Farm	Stroupster	Operational	38.6	Potential visual impact from projects within 50 km of the offshore development.

#### 4.10 Marine Archaeology

Onshore infrastructure within 30 km of the Project has been considered with respect to settings impacts on cultural heritage. As for SLVIA, this onshore list has been prepared with input from the Highland Council and also Historic Environment Scotland (HES). Developments within 30 km were considered to have the potential to result in a cumulative impact on marine archaeological features.

Table 4-8 Developments for consideration in the marine archaeology cumulative impact assessment

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Onshore infrastructure within 30 km of the Offshore Development (see Table 4-7)	Various	Pre-application, consented, under construction and operational	Caithness / Sutherland	These developments are located within 30 km of the Offshore Development with the potential for a cumulative impacts on the setting of cultural heritage assets.
SHE Transmission Orkney-Caithness Interconnector Project	Interconnector	Consented	Pentland Firth (Caithness to Hoy)	Due to overlapping footprint, there is the potential for additive effects as a result of seabed disturbance on marine archaeology features.

#### 4.11 Other Sea Users

The developments that will be considered for the cumulative impact assessment are listed in Table 3-9.

Table 4-9 Developments for consideration in the other sea users cumulative impact assessment

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
SHE Transmission Orkney-Caithness Interconnector Project	Interconnector	Consented	Pentland Firth (Caithness to Hoy)	This development lies overlaps with the Offshore Development with potential for cumulative impacts on other sea users.
Decommissioning and remediation activities of the Dounreay Nuclear Site and Vulcan Naval Reactor Test Establishment (NRTE)	Nuclear Site	Decommissioning	Pentland Firth (Sandside Bay)	Potential for ongoing decommissioning activities, including routine monitoring of radioactive particles at Sandside Bay, to act cumulatively with other sea users such as the proposed SHE Transmission Caithness – Orkney interconnector.

#### 4.12 Socio-Economics (supply chain)

There is potential for interactions with other developments such as: onshore windfarms, other offshore windfarms, oil & gas projects, other offshore pipe-laying and cable-laying projects which could result in increased competition for access to ports / harbours, offshore vessels, workers etc. The spatial area of relevance to the assessment of cumulative/in-combination effects for these receptors is defined as offshore projects within Scottish waters. These projects will be considered qualitatively in the cumulative impact assessment. Hence, it is not considered necessary to list these projects within this report.

#### 4.13 Socio-Economics (tourism and recreation)

The potential for onshore and offshore developments within 30 km of the Project are judged to be potentially capable of influencing Caithness as a destination for outdoor, coastal, and marine-based recreation activities, such as walking, cycling, nature-based activities, boating, recreational fishing, kayaking, surfing, etc. There are no offshore developments within 30 km (with the exception of the West of Orkney Windfarm) with the potential to act cumulatively with the Project.

Table 4-10 Developments for consideration in the socio-economics (tourism and recreation) cumulative impact assessment

Development	Type	Status	Location	Rationale for Including in Cumulative Project List
Onshore infrastructure within 30 km of the Offshore Development (see Table 4-7)	Various	Pre-application, consented, under construction and operational	Caithness / Sutherland	These developments are located within 30 km of the Offshore Development with the potential for a cumulative visual impacts on tourism and recreation.

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## 5 DATA SOURCES

A wide range of data sources and information have been used to inform the cumulative project long list:

- > 4C Offshore Wind Database (<https://www.4coffshore.com/windfarms/>);
- > The Crown Estate website (<https://www.thecrownestate.co.uk/en-gb/resources/maps-and-gis-data/>);
- > The Crown Estate Scotland website (<https://www.crownstatescotland.com/resources/map>);
- > Marine Scotland Information (<https://marine.gov.scot/marine-licence-applications>);
- > National Marine Planning Interactive (NMPi) (<https://marinescotland.atkinsgeospatial.com/nmpi/>);
- > Marine Management Organisation (MMO) Public Register ([https://marinelicensing.marinemangement.org.uk/mmofox5/fox/live/MMO\\_PUBLIC\\_REGISTER/](https://marinelicensing.marinemangement.org.uk/mmofox5/fox/live/MMO_PUBLIC_REGISTER/));
- > Planning Inspectorate National Infrastructure Planning Website (<https://infrastructure.planninginspectorate.gov.uk/>);
- > Developer / project websites;
- > Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) (<https://www.gov.uk/guidance/oil-and-gas-environmental-data> and <https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines>); and
- > European Marine Observation and Data Network (EMODnet) data (<https://www.emodnet-humanactivities.eu/view-data.php>).