Bellrock Offshore Wind Farm

Wind Farm Development Area

Environmental Impact Assessment Report - Volume IV

Appendix 9.4: Marine Mammals Cumulative Effects Assessment Screening

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Glossary of Terminology

Term	Definition
Commencement of construction	Commencement of construction to install the Wind Farm Infrastructure as authorised by the Wind Farm Development Area Section 36 Consent and Marine Licence (excluding site preparation works), being the earlier of: ▪ Intrusive pre-installation surveys; ▪ Placement on or installation in the seabed of anchors and associated scour protection, and mooring lines; ▪ Trench excavation for inter-array cables; or ▪ Trenching for, or laying of inter-array cables on or in the seabed
Development Area	For consenting purposes, the area for which separate consents and/or Marine Licences will be sought by the Applicant, comprising: ▪ Wind Farm Development Area; ▪ Offshore Transmission Development Area; and ▪ Onshore Transmission Development Area.
Floating offshore unit	The combined wind turbine generator and floating substructure.
Floating substructure	A floating structure which provides buoyancy and, in conjunction with the station keeping system, supports a superstructure (e.g. wind turbine generator or offshore substation), and maintaining its position within the structure's excursion limit.
Inter-array cable	Armoured cable containing electrical and fibre optic cores, which link the wind turbine generators to each other and to the subsea cable hubs and/or the offshore substations and include dynamic inter-array cable and static inter-array cable sections.
Landfall	The area from Mean Low Water Springs to a transition joint bay(s), where the offshore export cables come ashore and the transition joint bays are located.
Offshore substation	An offshore platform which houses electrical equipment such as transformers, switchgear, and protection and control systems, enabling the wind farm's renewable electricity to be received via inter-array cables and exported via the offshore export cables.
Offshore Transmission Development Area	The boundary within which the Offshore Transmission Infrastructure will be constructed, operated and maintained, and decommissioned (and includes the whole of the Wind Farm Development Area).
Offshore Transmission Infrastructure	Infrastructure located within the Offshore Transmission Development Area including fixed bottom and/or floating offshore substations, offshore reactive compensation station(s) and associated scour protection; interconnector cables and associated cable protection; and offshore export cables and associated cable protection (including activities associated with the Offshore Transmission Infrastructure construction, operation and maintenance, and decommissioning).
Onshore Transmission Development Area	The boundary within which the Onshore Transmission Infrastructure will be constructed, operated and maintained, and decommissioned.
Onshore Transmission Infrastructure	Infrastructure located within the Onshore Transmission Development Area including transition joint bay(s); onshore export cables; onshore substation; temporary construction compounds; temporary working areas; environmental mitigation areas; drainage/irrigation infrastructure; access works; and any other associated infrastructure (including activities associated with the Onshore Transmission Infrastructure construction, operation and maintenance, and decommissioning).

Term	Definition
Scour protection	Protective material positioned around anchors to avoid sediment being eroded as a result of the flow of water.
Station keeping system	The system (including mooring lines and anchors) used to hold a floating offshore unit within its excursion limit and maintain the intended orientation of the floating offshore unit.
Wind Farm Development Area	The boundary within which the Wind Farm Infrastructure will be constructed, operated and maintained, and decommissioned.
Wind Farm Infrastructure	Infrastructure located within the Wind Farm Development Area including wind turbine generators; floating substructures, station keeping systems and associated scour protection; inter-array cables and associated cable protection; and subsea cable hubs; and ancillary infrastructure including buoys (including activities associated with the Wind Farm Infrastructure construction, operation and maintenance, and decommissioning).
Wind turbine generator	A wind turbine generator converts wind energy into electrical energy. The main components include rotor assembly (composed of three blades and a hub); nacelle (containing the generator, shaft and gearbox, power electronic converter and transformer); and a tower (containing lifting equipment and switchgear).

Glossary of Abbreviations

Term	Definition
BND	Bottlenose dolphin
CCS	Carbon and capture and storage
CEA	Cumulative effects assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CES	Coastal East Scotland
CGNS	Celtic and Greater North Sea
EaS	East Scotland
ECC	Export cable corridor
EIA	Environmental impact assessment
EMEC	European Marine Energy Centre
EMF	Electromagnetic field
EMODnet	European Marine Observation and Data Network
FW	Fin whale
GNS	Greater North Sea
GS	Grey seal
HP	Harbour porpoise
HRA	Habitats Regulations Appraisal
HS	Harbour seal
HW	Humpback whale
IAMMWG	Inter-Agency Marine Mammal Working Group
INTOG	Innovation and Targeted Oil and Gas Decarbonisation
JNCC	Joint Nature Conservation Committee
KW	Killer whale
LOGGS	Lincolnshire Offshore Gas Gathering System
MBES	Multibeam echo sounder
MMO	Marine Management Organisation
MNR	Marine Noise Registry

Term	Definition
MRE	Marine renewable energy
MU	Management units
MW	Minke whale
NAMMCO	North Atlantic Marine Mammal Commission
NE	Northeast
NES	Northeast Scotland
NS	North Sea
NSTA	North Sea Transition Authority
O&G	Oil and gas
ODOW	Outer Dowsing Offshore Wind
OfTDA	Offshore Transmission Development Area
OWF	Offshore wind farm
PEIR	Preliminary Environmental Impact Report
PINS	Planning Inspectorate
PTS	Permanent threshold shift
RMS	Root-mean square
RoC	Review of Consents
SAC	Special Area of Conservation
SBP	Sub-bottom profiler
SCANS	Small Cetaceans in the European Atlantic and North Sea
SE	Southeast
SPL	Sound pressure level
SSS	Side scan sonar
TEOW	Thanet Extension Offshore Wind
TTS	Temporary threshold shift
UK	United Kingdom
UKCS	UK continental shelf
USBL	Ultra-short baseline

Term	Definition
UXO	Unexploded ordnance
WBD	White-beaked dolphin
WFDA	Wind Farm Development Area
WTG	Wind turbine generator
ZoI	Zone of influence

Glossary of Units

Term	Definition
µPa	Micropascal
µPs-m	Micropascal-seconds per metre
dB	Decibel
Hz	Hertz
kHz	Kilohertz
Km	Kilometre
Km^2	Square kilometre

1 Introduction

1. This Marine Mammals Cumulative Effects Assessment (CEA) Screening is an Appendix to **Chapter 9: Marine Mammals (Volume II)** of the Bellrock Wind Farm Development Area (WFDA) environmental impact assessment (EIA) Report.

2. This Appendix presents the screening process undertaken to identify both potential impact pathways associated with the Bellrock Wind Farm Infrastructure and the other plans and projects that may result in cumulative effects on marine mammal receptors during the construction, operations and maintenance (O&M), and decommissioning of the Bellrock Wind Farm Infrastructure (see **Chapter 4: Project Description (Volume II)**). The format of this Appendix is as follows:

   - **Section 2** sets out the approach taken for the marine mammals CEA. The screening process has been undertaken in line with the CEA methodology set out in **Chapter 5: EIA Methodology (Volume II)**;
   - **Section 3** sets out the impact screening, assessing whether each impact pathway could potentially have a cumulative effect, including the rationale for screening out certain impact pathways;
   - **Section 4** and **Section 4.2** provide the project screening, identifying which plans and projects should be considered for inclusion in the CEA. This includes additional information to support the screening out of certain industries and activities from the marine mammal CEA; and
   - **Section 5** summarises the outcomes of the screening process, showing which projects and impact pathways have been carried forward for inclusion in the CEA.

3. Section 9.9 of **Chapter 9: Marine Mammals (Volume II)** presents the results of the Marine Mammal CEA, considering the plans and projects screened into the CEA process as set out in this Appendix, and the relevant impact pathways that were identified as having potential for cumulative effects.

2 Approach to Cumulative Assessment Screening

2.1 Overview

4. The CEA considers the Bellrock Wind Farm Infrastructure together with other plans and projects.

5. The CEA screening is a two-part process in which an initial long list of potential projects is identified with the potential to interact with the Bellrock Wind Farm Infrastructure based on the mechanism of interaction and spatial extent of the reference population for each marine mammal species.

6. Following a tiered approach, this long list is then refined based on the level of information available, to determine those projects to be taken forward for further assessment.

7. The CEA Screening has been prepared in accordance with the methodology and guidance set out in **Chapter 5: EIA Methodology (Volume II)**:

   - **Tier 1 assessment:** The Bellrock WFDA plus plans/projects which are operational, under construction, those with consent or a consent application submitted but not yet determined, plus the Bellrock Offshore Transmission Development Area (OfTDA) and Bellrock Onshore Transmission Development Area (OnTDA);
   - **Tier 2 assessment:** The Bellrock WFDA plus all plans/projects assessed under Tier 1, plus projects with a Scoping Report and/or Scoping Opinion; and
   - **Tier 3 assessment:** The Bellrock WFDA plus all plans/projects assessed under Tier 1 and Tier 2, plus those projects likely to come forward where a Crown Estate Scotland Option to Lease Agreement or equivalent has been granted.

8. The assessment methodology has been developed to cover the CEA screening (including the screening of plans and projects, and potential pathways for effect) during all phases of the Bellrock Wind Farm Infrastructure (construction, O&M, and decommissioning).

9. The CEA screening follows the approach below:

   - Defining the screening area for each marine mammal species, within which other plans and projects may have a cumulative effect on the same population as individuals that may be affected by the Bellrock Wind Farm Infrastructure;
   - Defining a list of potential effect pathways as a result of other projects being undertaken at the same time as construction, O&M, and decommissioning of the Bellrock Wind Farm Infrastructure;
   - Developing a long-list of other plans and projects by tier;
   - Defining a list of other industries and activity type for consideration;

- Establishing a list of other projects within those other industries and activity types, that are (i) present within the relevant screening area for each marine mammal species, and (ii) may be undertaken over the same time frame as activities in the Bellrock WFDA (including those that were not in operation at the onset of baseline surveys but are now or will be operational before the construction of the Wind Farm Infrastructure but); and
- Defining the short-list (based on the points above) of other plans or projects taken forward for further assessment, based on the other projects that will be undertaken at the same time as activities at the Bellrock WFDA.

2.2 Project Screening Process

10. The CEA project screening involved the identification of an initial list of plans and projects with the potential to interact with activities at the Bellrock WFDA, based on the mechanism of interaction and spatial extent of the reference population for each marine mammal species (as outlined in Section 9.6 of **Chapter 9: Marine Mammals (Volume II)**). At a high level, the plans and projects that were included in the CEA were:

- Plans and projects within the agreed reference population boundary for the given receptor;
- Offshore projects and developments, if there was the potential for cumulative effects during the construction, O&M, or decommissioning phases of the proposed projects; and
- Offshore wind farm (OWF) developments, if the construction and /or piling period could overlap with the proposed construction and/or piling period of the Bellrock Wind Farm Infrastructure, based on best available information on when the OWF developments are likely to be constructed.

11. Marine Directorate Licence Operating Team were consulted during the screening process as part of ongoing consultation in the pre-application phase.

12. A wide range of data sources and information has been used for the CEA project screening, including, but not limited to:

- Developer websites;
- 4C Offshore Wind Farm Database (www.4coffshore.com/offshorewind);
- RenewableUK website (www.renewableuk.com);
- The Crown Estate website (www.thecrownestate.co.uk);
- Crown Estate Scotland website (www.crownestatescotland.com);
- Oil and gas United Kingdom (UK) licensing rounds website (www.gov.uk/guidance/oil-and-gas-licensing-rounds#past-licensing-rounds);
- The Scottish Government Marine Licence register (www.marine.gov.scot/marine-projects);

- Centre for Environment, Fisheries and Aquaculture Science (Cefas) (https://data.cefas.co.uk/view/407);
- Planning Inspectorate (PINS) National Infrastructure Planning website (www.gov.uk/government/organisations/planning-inspectorate);
- The Marine Management Organisation (MMO) public register (https://marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/MMO_PUBLIC_REGISTER);
- European Marine Observation and Data Network (EMODnet) data (https://emodnet.ec.europa.eu/en);
- Hydrogen UKs project map (https://projectmap.hydrogen-uk.org/); and
- North Sea Transition Authority (NSTA) Open Data (www.nstauthority.co.uk).

13. The initial project screening process has been based on the anticipated offshore construction dates for the Bellrock Wind Farm Infrastructure, with the earliest start of offshore construction in 2031 with construction (see Plate 4.8 in **Chapter 4: Project Description (Volume II)**) carried out over a seven-year period (ending in 2037) and one year of site preparation works undertaken before construction commences (i.e. in 2030). Any plans or projects that were operational prior to the start of the Bellrock WFDA baseline digital aerial surveys (i.e. before March 2022) have not been taken forward in the CEA, as they were considered to be part of the baseline environment at that time.

14. The list of initial projects was then refined based on the level of information available for the projects to enable further assessment and consideration of potential interactions of effects. The CEA considered plans and projects which had sufficient information available to undertake the assessment. Insufficient information would preclude a meaningful quantitative assessment, and it was not appropriate to make assumptions about the detail of future projects under such circumstances.

15. It is possible that new projects relevant to the assessment will arise throughout the Bellrock Wind Farm Infrastructure's pre-application period. In order to finalise the CEA for the EIA due to the type of assessments required, a cut-off period at six months prior to the submission of the EIA (after which no more plans or projects have been included) has been applied. This was presented in the Bellrock WFDA Scoping Workshop held on 30 October 2023 and was not challenged during the meeting or in NatureScot's response received on 20 December 2023.

16. For the marine mammal assessment, the different stages (or maturity) of a project, especially for other OWF projects have been taken into account within the CEA. In line with extant guidance on CEA for offshore wind (Parker et al. (2022)), the approach taken has been to categorise plans and projects within pre-defined Tiers of development as noted above in **Section 2.1**.

17. In assessing the potential for cumulative effects from the Bellrock Wind Farm Infrastructure, it is important to bear in mind that projects, predominantly those that are currently 'proposed', may or may not be taken forward to construction and operation. Therefore, there is a need to consider the certainty (or uncertainty) with respect to the potential impacts which might arise from such proposals. For example, projects which are already consented are more likely to contribute to cumulative effects than those development applications that are not yet submitted.

18. For these reasons, all the relevant short listed plans and projects have been allocated into 'Tiers', reflecting their current status within the planning and development process. This allows the CEA to present several scenarios, reflecting the varying levels of certainty of an activity proceeding and therefore the potential for impacts to arise that might act cumulatively with the impacts arising from the Bellrock Wind Farm Infrastructure. Appropriate weight may therefore be given to each scenario (Tier) in the decision-making process when considering the potential cumulative impacts associated with the Bellrock Wind Farm Infrastructure. For example, it may be considered that greater weight should be attributed to Tier 1 than Tier 2.

19. The following subsections (Tier 1 to Tier 3) adopt the Department for Environment Food and Rural Affairs (Defra) tier structure (Tier I to Tier VII) for the CEA. This structured approach is consistent with Defra's guidance on CEA for marine mammals (Sinclair, 2025).

2.2.1 Tier 1 Projects

20. Tier 1 projects include:

- The Bellrock OfTDA and OnTDA form essential components of the Bellrock Project and are therefore included within Tier 1. The Bellrock OfTDA is relevant to the marine mammal CEA. The OnTDA has no pathways for marine mammal effects and has been screened out of the CEA. At this stage, due to the early development stage of the Bellrock OfTDA, limited design information is available for the Bellrock OfTDA; therefore, where detailed parameters required for quantitative assessment are not yet available, a proportionate qualitative approach has been applied;
- **Tier I.**[1] Operational projects, which means there is no potential for any overlap in the construction of these projects with the construction of the Bellrock Wind Farm Infrastructure. Most Tier 1 projects are part of the baseline because they were fully operational in March 2022; and these were therefore not included in the CEA;
- **Tier II.** Marine infrastructure projects currently under construction, and which are due to be commissioned prior to the construction of the Bellrock Wind Farm Infrastructure;
- **Tier III.** Marine infrastructure projects which have been consented, but where construction has not yet commenced. Therefore, there was more certainty that these projects will be constructed compared to projects for which an application has not yet been submitted or determined. For consented OWF projects there was also more information on when construction was likely to be undertaken and an assessment of the potential impacts during construction activities has been provided, which allowed quantified assessment of the potential impacts of these projects in the CEA. However, there is still significant uncertainty associated with these projects, for example, in terms of the scale of the final development that will be constructed, construction programme dates and the likely final impacts. In particular, OWF projects aim to get consent for a maximum design scenario, based on the worst-case parameters, and then these parameters are generally refined and reduced prior to construction:
  - Consented OWFs could have possible cumulative construction impacts.

[1] Defra tier system as explained in **Section 2.2**.

- **Tier IV.** Marine infrastructure projects which have an application submitted to the appropriate regulatory body but that not yet been determined, or projects that are consented but on hold at the time of assessment due to judicial challenge or appeal process. There was increased uncertainty about these projects, especially where the projects are on-hold, as to when or if they could be constructed and what changes could be made to the scale of the developments:
  - OWFs which have an application submitted could have possible cumulative construction impacts if approved.
- **Tier V.** Relevant marine infrastructure projects in territorial waters, and which have produced a Preliminary Environmental Impact Report (PEIR) and have characterisation data within the public domain (i.e. a greater level of design and impact information than scoping stage projects). There was increased uncertainty about these projects as to when or if they would be constructed and what changes could be made to the scale of the developments:
  - OWFs which have an PEIR submitted could have possible cumulative construction impacts if approved.

2.2.2 Tier 2 Projects

21. Tier 2 projects include:

- **Tier VI.** Relevant marine infrastructure projects for which a Scoping Report has been submitted and/or a Scoping Opinion has been issued by the appropriate consenting authority. This includes projects progressing through the Scottish Marine Licensing or Section 36 process (via the Marine Directorate – Licensing Operations Team) and those progressing through the Nationally Significant Infrastructure Project regime administered by the Planning Inspectorate. For these projects, there was considerable uncertainty and not enough information to allow a robust assessment. However, following a precautionary approach, relevant projects have been considered in the CEA:
  - OWFs where a Scoping Report has been submitted could have possible cumulative construction impacts if approved.

2.2.3 Tier 3 Projects

22. Tier 3 projects include:

- **Tier VII.** Where a Crown Estate Scotland Option for Lease Agreement, Exclusivity Agreement or equivalent has been granted and consent not yet applied for (or similar, i.e. the equivalent The Crown Estate process in England and Wales), these projects are considered within Tier 3. Projects on the PINS Programme of Projects where a Scoping Report has not been submitted are also included within Tier 3. Projects that have identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the relevant proposals are also included within Tier 3. Tier 3 also includes projects identified in other plans and programmes (as appropriate) which set the framework for future development

consents/approvals, where such development was reasonably likely to come forward. Given the uncertainty of timescales and lack of maturity of project details,

- Tier 3 projects were typically screened out for further assessment.

2.2.4 Summary of Stages Considered in the CEA

23. The project categories and Tiers considered in the CEA for marine mammals are outlined in **Table 2.1** and the appropriate CEA screening provided. Given the distance from the Bellrock WFDA and other transboundary projects, all international projects have been screened out apart from 'Other OWFs'.

Table 2.1: Tiers in Relation to Project Category Screened Conclusions for the Cumulative Effects Assessment

Project Category	UK	Other
Other OWFs	Tier 1, 2, 3	Screened in
Other renewable developments (tidal and wave)	Tier 1, 2, 3	Screened out
Aggregate extraction and dredging	Tier 1, 2, 3	Screened in
Oil and gas installations and decommissioning	Tier 1, 2, 3	Screened out
Commercial Shipping	Tier 1	Screened out
Planned construction of subsea cables and pipelines	Tier 1, 2, 3	Screened in
Gas storage, offshore mines, and carbon capture projects	Tier 1, 2, 3	Screened out
Coastal developments	Tier 1, 2, 3	Screened out
Commercial fisheries	Tier 1	Screened out
Seismic and geophysical surveys	Tier 1, 2, 3	Screened out

24. A description of the project Tiers as they relate to each project stage considered in the CEA, along with their relevance to the CEA screening, is included in **Table 2.2**.

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Table 2.2: Description of Project Stages for Cumulative Effects Assessment Screening with Tiers (with Defra Criteria Shown for Reference)

Tier	Defra Tier	Project Stage	Relevance for CEA Screening	Types of Projects
N/A	I	Built and operational projects	All built and operational projects were considered to be part of the existing baseline environment if they were operational prior to the start of the baseline surveys in March 2022.	▪ Other OWFs; ▪ Marine Renewable Energy (MRE) developments (wave and tidal); ▪ Aggregate extraction and dredging; ▪ Licenced disposal sites; ▪ Oil and Gas (O&G) development, operation and decommissioning; ▪ Planned construction of subsea cables and pipelines; ▪ Gas storage; ▪ Offshore mining; ▪ Carbon Capture Storage (CCS) activities; and ▪ Licences for unexploded ordnance (UXO) clearance and seismic surveys.
1	II	Projects under construction	Projects under construction were likely to be commissioned prior to the construction of the Bellrock Wind Farm Infrastructure, and therefore there was no potential for any overlap in the construction of these projects with the construction and piling of the Bellrock Wind Farm Infrastructure.	
1	III	Projects that have been consented (but construction had not yet commenced)	Relevant marine infrastructure projects which have been consented, but for which construction has not yet commenced. Therefore, there was more certainty that these projects will be constructed compared to projects for which an application has not yet been determined. For these projects, there was also more information on when construction was likely to be undertaken and an assessment of the potential impacts during construction activities has been provided in the projects' EIA, which allows quantified assessment of the potential impacts of these projects in the CEA. However, there was still significant uncertainty associated with these projects, for example, in terms of the scale of the final development that will be constructed, construction programme dates and the likely final impacts. In particular, OWFs aim to get consent for a maximum design scenario, based on the worst-case parameters, and then these parameters are generally refined and reduced prior to construction. OWFs could have possible cumulative construction impacts if approved.	
1	IV	Projects that had an application submitted to the appropriate regulatory body, but that had not yet been determined	Relevant marine infrastructure projects which had an application submitted to the appropriate regulatory body but that had not yet been determined, or projects that were consented but currently on hold due to judicial challenge or appeal process. There was increased uncertainty about these projects, especially where the projects were currently on-hold, as to when or if they could be constructed and what changes could be made to the scale of the developments. OWFs could have possible cumulative construction impacts if approved.	▪ Other OWFs; ▪ MRE developments (wave and tidal); ▪ O&G development, operation and decommissioning; ▪ Planned construction of subsea cables and pipelines;

Tier	Defra Tier	Project Stage	Relevance for CEA Screening	Types of Projects
				▪ Gas Storage; ▪ Offshore Mining; ▪ CCS activities; and ▪ Applications for UXO clearance and seismic surveys.
1	V	English projects that had produced a PEIR and had characterisation data within the public domain	Relevant marine infrastructure projects which had submitted a PEIR to the appropriate regulatory body but that had not yet been determined, or projects that were consented but currently on hold due to judicial challenge or appeal process. There was increased uncertainty about these projects, especially where the projects were currently on hold, as to when or if they could be constructed and what changes could be made to the scale of the developments. OWFs could have possible cumulative construction impacts if approved.	▪ Other OWFs; ▪ MRE developments (wave and tidal); ▪ Planned construction of subsea cables and pipelines; ▪ Gas Storage; and ▪ CCS activities.
2	VI	Projects that the regulatory body is expecting an application to be submitted for (e.g. Scottish projects that have either submitted a Scoping Report or received a Scoping Opinion as well as projects outside of Scotland listed under the PINS programme of projects)	Relevant marine infrastructure projects that the regulatory body was expecting to be submitted for determination (e.g. projects listed under the PINS programme of projects). For these projects, there was a lot of uncertainty and not enough information to allow a robust assessment. However, as a very precautionary approach, the OWFs that we were aware of at the time of assessment have been considered in the CEA. OWFs could have possible cumulative construction impacts if approved.	▪ Other OWFs; ▪ MRE developments (wave and tidal); ▪ O&G development, operation and decommissioning; ▪ Planned construction of subsea cables and pipelines; ▪ Gas storage; ▪ Offshore mining; and ▪ CCS activities.
3	VII	Projects that had been identified in relevant strategic plans or programmes	Licence areas for future developments.	▪ Concept renewable projects; ▪ CCS licencing rounds; ▪ Potential seismic surveys; and ▪ Potential geophysical surveys.

2.3 Screening Areas Considered in the Cumulative Effect Assessment

25. The screening areas for marine mammals has been defined on the basis that marine mammals are highly mobile and transitory in nature. It is, therefore, necessary to examine species occurrence not only within the Bellrock WFDA, but also over the wider area.

26. For the marine mammal species in the assessments, the following screening areas have been defined, based on the relevant Management Units (MUs) (Inter-Agency Marine Mammal Working Group (IAMMWG), 2023; North Atlantic Marine Mammal Commission (NAMMCO), 2019) and current knowledge, and understanding of the biology of each species (further information is found in **Appendix 9.1: Marine Mammals Technical Report (Volume IV)**):

- Harbour porpoise (HP) *Phocoena phocoena*: North Sea (NS) MU;
- Bottlenose dolphin (BND) *Tursiops truncatus*: Greater North Sea (GNS) and Coastal East Scotland (CES) MUs;
- White-beaked dolphin (WBD) *Lagenorhynchus albirostris*: Celtic and Greater North Seas (CGNS) MU;
- Killer Whale (KW) *Orcinus orca*[2];
- Minke whale (MW) *Balaenoptera acutorostrata*: CGNS MU;
- Fin whale (FW) Balaenoptera physalus[3];
- Humpback whale (HW) *Megaptera novaeangliae*[3];
- Grey seal (GS) *Halichoerus grypus*: East Scotland (EaS), Moray Firth and Northeast Scotland (NES) MUs; and
- Harbour seal (HS) *Phoca vitulina*: EaS MU.

27. Due to the large size of the CGNS MU for common dolphin, WBD and MW (alongside as a reference area for KW, FW and HW), which extends to the North Sea, English Channel, and Celtic and Irish Seas, only plans and projects on the East coast of the UK or in the wider North Sea (i.e. those located within the HP NS MU) were considered in order to provide a more realistic, while still precautionary, list of projects that may have an impact on the same population as the Bellrock WFDA.

[2] Northeast Atlantic (NAMMCO, 2019) is a broad region where there is species information, however, the information is limited for this species, therefore the CGNS MU will be used.

[3] Eastern North Atlantic (NAMMCO, 2019) is a broad region where there is species information, however, the information is limited for this species, therefore the CGNS MU will be used.

2.4 Summary of Species Densities

28. Where a quantitative assessment has been possible, the potential magnitude of disturbance caused by projects has been based on the publicly available project-specific density estimates (i.e. those presented in published EIAs, or other relevant consenting documents).

29. For cetacean species and screened-in projects where project-specific densities were not available, a worst-case density was derived from either:

- Small Cetaceans in the European Atlantic and North Sea (SCANS)-IV relevant survey block;
- SCANS-III relevant survey block;
- Applying data from Waggitt et al. (2019) over the relevant SCANS block for those species where SCANS/site-specific survey data was missing in the relevant block; or
- The NAMMCO management areas.

30. For seal species, a density was derived from Carter et al. (2022), using the same method as outlined in **Appendix 9.1: Marine Mammals Technical Report (Volume IV)**.

31. The worst-case densities used to inform the assessment, are (further information on density and populations in **Appendix 9.1: Marine Mammals Technical Report (Volume IV)**):

- HP: 1.273/km^2 (based on the site-specific surveys);
- BND: 0.0298/km^2 (based on SCANS-III survey block R);
- Common dolphin: 0.026/km^2 (based on Waggitt et al. (2019) over SCANS-IV block NS-D);
- WBD: 0.243/km^2 (based on SCANS-III survey block R);
- MW: 0.00419/km^2 (based on SCANS-IV survey block NS-D);
- FW: 0.0009/km^2 (based on SCANS-IV survey block NS-D);
- GS: 0.024/km^2 (based on Carter et al. (2025) over the Moray Firth, East Scotland and NES MUs; and
- HS: <0.001/km^2 (based on Carter et al. (2022) over the East Scotland MU.

3 Identification of Potential Cumulative Effects

32. The first step in the CEA is the identification of the impacts assessed for the Bellrock Wind Farm Infrastructure that have the potential for a cumulative effect with other plans and projects (described as 'impact screening'). Initially the potential pathways for cumulative effects were considered for:

- Pathways scoped in:
  - Disturbance from underwater noise (**Section 3.1.1**);
  - Vessel disturbance and collision risk (**Section 3.1.2**);
  - Secondary entanglement with floating wind turbine generator (WTG) infrastructure (**Section 3.1.3)**;
  - Changes to prey availability (**Section 3.1.4**); and
  - Disturbance at seal haul-out sites **(Section 3.1.5**).
- Pathways scoped out:
  - Auditory injury (the risk of change in hearing sensitivity-permanent threshold shift (PTS)) from underwater noise (**Section 3.2.1**); and
  - Electromagnetic field (EMF) effects (**Section 3.2.2**).

3.1 Scoped In

3.1.1 Disturbance from Underwater Noise

33. Temporary threshold shift (TTS) is a short-term auditory change caused by noise exposure and typically resolves within hours to days after the exposure ends. Disturbance from underwater noise is likely to have greater impact ranges and areas than the modelled TTS, and the risk of TTS will be within the disturbance ranges for marine mammals. The impacts of either TTS or disturbance in marine mammals are temporary.

34. Therefore, the potential risk of TTS in marine mammals from cumulative effects has been screened out, as the assessment of temporary underwater noise impacts would be greater for that of disturbance than for TTS.

35. The potential for disturbance to marine mammals from underwater noise has been screened into the CEA. This impact includes both the construction and O&M phases of the plans and projects screened in.

3.1.2 Vessel Disturbance and Collision Risk

36. The potential for an increase in vessel disturbance and collision risk, due to an increase in vessels across cumulative projects, has been screened into the CEA. This is due to the result of the project alone assessment for the Bellrock Wind Farm Infrastructure (see **Section 9.8.1.6** of **Chapter 9: Marine Mammals (Volume II)**).

3.1.3 Secondary Entanglement

37. There is a risk of secondary entanglement from the Wind Farm Infrastructure, which occurs when marine mammals become ensnared in marine debris, such as lost or abandoned (ghost) fishing gear that has accumulated on mooring lines and cables (see diagram in **Chapter 4: Project Description (Volume II)**). The presence of ghost fishing gear wrapped around mooring lines and cables could extend the spatial impact range of the mooring lines and cables themselves, as ghost nets can span tens of metres, potentially leading to higher local bycatch rates.

38. Therefore, the potential of secondary entanglement has been screened into the CEA due to the result of the project alone assessment (see **Section 9.8.2.5** of **Chapter 9: Marine Mammals (Volume II)**).

3.1.4 Changes to Prey Availability

39. The potential for changes to prey availability has been screened into the CEA due to the result of the project alone assessment (see **Sections 9.8.1.9** and **9.8.2.8** in **Chapter 9: Marine Mammals (Volume II)**).

3.1.5 Disturbance at Seal Haul-Out Sites

40. Grey and harbour seals are sensitive to disturbance at haul-out sites. The nearest designated haul-out site is sufficiently distant from the Bellrock WFDA that disturbance from activities associated with the Bellrock Wind Farm Infrastructure would be limited to vessels movements transiting to and from the Bellrock WFDA. As vessel activity may also increase as a result of other projects, there is potential for cumulative interactions. On this basis, and reflecting the Bellrock WFDA alone assessment, disturbance at seal haul-out sites is screened into this CEA.

3.2 Scoped Out

3.2.1 Auditory Injury from Underwater Noise

41. Auditory injury (PTS) could occur as a result of pile driving during OWF and oil and gas platform installation, underwater explosives (used occasionally during the removal of underwater structures and unexploded ordnance (UXO) clearance) and seismic surveys (Joint Nature Conservation Committee (JNCC), 2010, 2017, 2025). However, if there is the potential for any PTS, from any project, suitable mitigation would be required to be put in place by the relevant OWF and oil and gas projects to reduce any risk to marine mammals. Other activities such as dredging, drilling, rock placement, vessel activity, operational OWFs, oil and gas installations or, wave and tidal sites will emit broadband noise in lower frequencies and PTS from these activities is very unlikely.

42. Therefore, the potential risk of PTS in marine mammals from cumulative effects has been screened out from further consideration in the CEA. It should be noted that PTS (due to OWF piling) has been included within the population modelling as standard for the relevant species, regardless of this screening conclusion (see **Appendix 9.5: Marine Mammals Information and Modelling Methods for Disturbance (Volume IV)**).

3.2.2 Electromagnetic Field Effects

43. The impact of EMF is expected to be localised to within a close vicinity of the respective projects and temporary in nature for marine mammals. Therefore, the assessment has screened out the impact given there are no projects within a representative 10 km buffer of the Bellrock WFDA, which is deemed a proportionate approach.

4 Screening of Certain Industries and Activities

44. The types of plans and projects initially considered in this CEA screening are:

- Other OWFs:
  - Construction:
    - Piling; and
    - Other construction activities, including vessel presence.
  - O&M:
    - Maintenance activities;
    - Underwater noise from operational WTGs;
    - Vessel presence; and
    - Secondary entanglement.
  - Decommissioning.
    - Underwater noise from decommissioning activities; and
    - Other decommissioning activities, including vessel presence.
- Marine renewable developments (wave and tidal);
- Geophysical surveys (such as those associated with OWFs);
- Oil and gas installations:
  - Construction; and
  - Decommissioning.
- Seismic surveys;
- Aggregate extraction and dredging;
- Licenced disposal sites;
- Subsea cables and pipelines;
- UXO clearance;
- Other industries-gas storage, offshore mines, and carbon capture projects;
- Coastal developments, such as ports and harbours;
- Commercial shipping; and
- Commercial fisheries.

4.1 Screening Out of Certain Industries and Activities

45. The noise levels associated with some activities at an industry level are such that there is no potential for cumulative effects and therefore these activities were screened out of the CEA. These activities are described in **Sections 4.1.1** to **4.1.4** below.

46. The remaining projects and activities further considered in the CEA project screening are set out in **Section 4.2**.

4.1.1 Underwater Noise from Offshore Wind Farm Decommissioning Activities

47. Given their age and expected operational lifetime, the decommissioning of UK and European OWFs built between 2005 and 2009 could overlap with the construction of the Bellrock Wind Farm Infrastructure. However, no information was available at the time of assessment on any OWFs that could be decommissioned during the construction of the Bellrock Wind Farm Infrastructure (i.e. no consent applications for decommissioning were registered on the MMO and the Marine Directorate registers at the time of writing). Decommissioning impacts of OWFs have therefore been screened out from further consideration within the CEA screening.

48. The potential for cumulative impacts during the decommissioning of the Bellrock Wind Farm Infrastructure were unknown at the time of the assessment. The potential impacts for the decommissioning of the Bellrock Wind Farm Infrastructure, including CEA, would be assessed prior to any decommissioning activities. Decommissioning impacts have therefore also been screened out from further consideration within this CEA screening.

4.1.2 Underwater Noise and Increase of Collision Risk due to Decommissioning of Oil and Gas Infrastructure

49. Based on currently available information, underwater noise during decommissioning of oil and gas installations would be less than levels for PTS to occur and any disturbance would be localised and not be significantly greater than that arising from vessels (Fernandez-Betelu et al. 2024). Therefore, potential cumulative effects from decommissioning activities, such as cutting equipment has been screened out from further consideration in the CEA.

50. The potential for cumulative effects from vessels associated with the decommissioning of oil and gas installations has also been screened out from further consideration in the CEA. As the potential effects of any vessels associated with the decommissioning of oil and gas installations is unlikely to be significantly greater than vessel activity at these sites during the operational phase of the oil and gas installations. Therefore, potential cumulative effects from vessels during decommissioning of oil and gas installations has been screened out from further consideration in the CEA.

4.1.3 Underwater Noise and Increase of Collision Risk due to Commercial Shipping

51. Shipping is considered to be part of the baseline environment. Accordingly, all shipping has been screened out from further consideration in the CEA.

52. This approach was in accordance with the PINS (2024) Advice on Cumulative Effects Assessment, which stated that:

"*Where other existing and, or approved developments are expected to be completed before construction of the proposed nationally significant infrastructure project and the effects are fully determined, effects arising from them should be considered as part of the baseline*".

4.1.4 Commercial Fishing

53. Commercial fishing has been screened out of the CEA, as it is an ongoing activity that is considered to be part of the baseline environment. Further detail on the reasoning for this screening decision is provided below.

54. Commercial fisheries within the North Sea and Scottish Waters have the potential to cause a cumulative impact on marine mammals directly, by accidentally catching marine mammals as by-catch in their fishing nets, and indirectly by reducing the fish available for marine mammals to eat. Furthermore, there are potential underwater noise disturbance impacts from fisheries vessel presence.

55. By-catch as a result of commercial fisheries is recognised as a historic and continuing cause of HP mortality (OSPAR, 2017) and has therefore been a factor in shaping the size of the latest NS MU population. The available prey resource for HP has also been influenced by historic and ongoing commercial fishing. Noise from fishing vessels has also been considered to be part of the baseline conditions.

56. This approach was in accordance with the PINS (2024) Advice on Cumulative Effects Assessment, as stated in **Section 4.1.3** above. The Review of Consents (RoC) Habitats Regulations Assessment (HRA) (Department for Energy Security and Net Zero, 2020) also suggested that by-catch had not affected a population considered to be in favourable conservation status.

57. The potential impacts from commercial fishing (including by-catch and loss of prey species) and from the underwater noise associated with vessels were therefore considered to be a part of the environmental baseline for marine mammals of the North Sea and East Scotland, including for HP, and have therefore been screened out of CEA.

4.2 Cumulative Effect Assessment Project Screening

4.2.1 Other Offshore Wind Farms

4.2.1.1 Construction

58. Where the construction phases of other OWFs could overlap with the construction phase of the Bellrock Wind Farm Infrastructure, and where sufficient information and certainty in project programmes allowed for a meaningful assessment, then these OWF projects have been considered for potential cumulative effects. This included consideration of projects for which consent applications were in preparation.

59. The Bellrock OfTDA is also included as a Tier 1 project for the purposes of this CEA. Because it is functionally integrated with the Bellrock Wind Farm Infrastructure, providing the Offshore Transmission Infrastructure, including offshore substations, required to connect the Bellrock Wind Farm Infrastructure to landfall and the subsequent Onshore Transmission Infrastructure, associated with the OnTDA. For this reason, the Bellrock OfTDA, as a project, is considered under the OWF category rather than within the Subsea Cables and Pipelines section (**Section 4.2.6**). The Bellrock Offshore Transmission Infrastructure's construction programme is inherently linked to that of the Bellrock Wind Farm Infrastructure, and potential cumulative interactions will be addressed accordingly.

60. Where possible, known dates of OWF construction were used to assess whether there was the potential for construction periods to overlap with activities in the Bellrock Wind Farm Infrastructure. Where construction dates were not known, it was assumed that there was no overlap with either Bellrock Wind Farm Infrastructure construction or operation as the information was too limited to make assumptions on the OWFs' timelines. For all OWF projects where the consent application had been submitted, the possible construction or piling windows assumed in the CEA were based on the best available information.

61. The initial screening process identified the OWF projects in Europe and UK as detailed in **Table 4.1**.

62. For floating OWF projects, there will be no driven monopiles for the WTGs, but the offshore substations have the potential to be on a driven monopile foundation. There is however the potential for pin piling for anchors for the mooring systems. Therefore, for any floating projects taken forward for assessment that have the potential for an overlap in construction programmes for the Bellrock Wind Farm Infrastructure, the potential for pin piling is considered to be worst-case.

63. Tier 1 (I) OWFs were considered part of the baseline if they were operational at the time when site-specific surveys for the Bellrock WFDA commenced (in March 2022). The remaining Tier 1 OWFs are considered further below.

64. The Tier 1 (II) projects are likely to have completed their piling programmes prior to piling activities at the Bellrock Wind Farm Infrastructure and would be operational by the time construction commences. However, operational impacts from a number of these are considered further below.

65. Of the Tier 1 OWFs, a number of projects have a potential for overlap in piling construction windows, and are therefore screened in for assessment against the Bellrock Wind Farm Infrastructure construction phase:

- Bellrock OfTDA, screened in for all species;
- Buchan, screened in for all species;
- Cenos, screened in for all species;
- Dogger Bank D, screened in for all cetacean species;
- Dogger Bank South (East and/or West), screened in for all cetacean species;
- Muir Mhor, screened in for all species;
- North Falls, screened in for all cetacean species;
- Ossian, screened in for all species;
- Sheringham Shoal Extension, screened in for all cetacean species; and
- West of Orkney, screened in for all cetacean species.

66. Aspen and Berwick Bank OWFs have overlapping construction windows, between 2030 to 2031 according to the piling programs presented for each project during the last year of their construction programme there will be no overlapping piling taking place. Seagreen Phase 1a has removed piled foundations from the project but will be constructing between 2029 to 2032. Therefore, Aspen Berwick Bank and Seagreen Phase 1a OWFs are assessed for other construction activities, but not as part of the piling assessment. The remaining Tier 1 OWFs have the potential for operational impacts and are considered further below.

67. Of the OWFs at concept and early planning stage (i.e. Tier 2), a number are floating projects. A small number of the Tier 2 projects were identified with the potential for an overlap in construction periods with the Bellrock Wind Farm Infrastructure construction period. However, while there is some information available on the construction programmes for these projects, they are at an early stage of their planning and consenting process, and therefore have a high level of uncertainty on:

- Their construction programmes and project designs; and
- Their potential to impact to marine mammal populations.

68. A number of Tier 2 OWFs are screened out as the construction programmes do not overlap with that of the Bellrock Wind Farm Infrastructure, those where the construction programmes overlap have been screened in. The remaining Tier 2 OWFs which do not provide construction programmes have been screened out due to a lack of programme information.

69. Site preparation works will take place within the Bellrock WFDA in 2030, before construction commences and therefore before piling begins in 2031 (with piling being the worst-case noise impact for marine mammals). Therefore, projects where the final year of construction is 2030 are only considered if they are located within 100 km of the Bellrock WFDA due to the reduced zone of influence (ZoI) from site preparation works and vessel movement. Of the 38 projects where their

construction phase overlaps with the Bellrock Wind Farm Infrastructure construction, 11 of these will finish their construction in 2030 and fall outside of the 100 km.

4.2.1.2 Operations and Maintenance

70. Since the baseline surveys in March 2022, a larger number of projects (within Tier 1) have either already become operational or would become operational during the construction phase of the Bellrock Wind Farm Infrastructure and are therefore considered further. A large number of these are EU projects and located at considerable distance from the Bellrock WFDA.

71. The noise levels associated with operational OWF turbines are relatively low, with recorded levels of between 141 and 146 dB re 1 µPs-m (root-mean square (RMS) sound pressure level (SPL)) at four UK OWFs (MMO, 2015; Cheesman et al. 2016), and levels of 106 and 126 dB re 1 µPa-m (RMS SPL) at three operational OWFs in Sweden and Denmark. The sound was not audible for HP at a distance of 70 m from a WTG (Tougaard et al. 2009). It has also been predicted that within a few hundred metres of a wind turbine, noise would be comparable to background noise levels (MMO, 2015).

72. While the WTGs at the Bellrock WFDA have the potential to be larger in size and in generation capacity than these studies, Bellman et al. (2023) found that noise levels from larger WTGs were no greater than that of existing and smaller turbines. A recent study by Risch et al. (2023) also noted that the noise from floating wind turbines during operation is similar to that of fixed foundations.

73. Due to the low noise levels associated with operational OWFs, the BEIS RoC HRA for the Southern North Sea Special Area of Conservation (SAC) concluded that there would no potential for significant effect from the operation of OWFs, alongside the construction of OWFs (BEIS, 2020).

74. However, even though it is expected to have no significant effect, there is still potential for disturbance from the operational OWFs. The potential to experience disturbance by marine mammal receptors would be expected to be localised to within the close vicinity of the respective projects and as such the assessment has focused only on projects within a 50 km buffer (ZoI) of the Bellrock Wind Farm Infrastructure as a conservative approach. Risch et al. (2023) highlighted the importance of considering the cumulative noise output of large floating OWFs, particularly where boundaries overlap, and therefore the wider 50 km buffer captures this wider spatial scale of impact. This reduced list of OWFs considered operation noise, maintenance activities, and vessel related cumulative effects.

75. Therefore, current or future operational OWFs are screened in for further consideration within the CEA screening, but only those that are operational and within 50 km of the Bellrock WFDA. The OWF projects within 50 km are noted in **Table 4.1** and the four projects screened in are:

- Bellrock OfTDA;
- Cedar OWF;
- Morven OWF; and
- Ossian OWF.

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Table 4.1: Cumulative Effects Assessment Screening for all UK and European Offshore Wind Farms Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Tier 1												
European Offshore Wind Deployment Centre (Aberdeen Offshore Wind Farm)	UK	Operational	Y	Y	N	Y	Y	Y	N/A	2018	No	No, part of baseline
Albatros	Germany	Operational	Y	Y	Y	N	N	N	N/A	2020	No	No, part of baseline
Alpha Ventus	Germany	Operational	Y	Y	Y	N	N	N	N/A	2009	No	No, part of baseline
Amrumbank West	Germany	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
Anholt	Denmark	Operational	N	Y	Y	N	N	N	-	2013	No	No, part of baseline
Aspen	UK	Planning (Application Submitted)	Y	Y	Y	N	Y	Y	2028 - 2031	2031	Yes	No, outside of ZoI
Avalon	UK	Dormant (did not receive an Innovation and Targeted Oil & Gas (INTOG) exclusivity agreement)	Y	Y	Y	N	Y	Y	Unknown	Unknown	Unknown	Unknown

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Awel Y Mor	UK	Consented/ Pre-construction	N	Y	N	N	N	N	2027 - 2030	2030	No, outside of ZoI	No, outside of ZoI
BARD Offshore 1	Germany	Operational	Y	Y	Y	N	N	N	N/A	2013	No	No, part of baseline
Beatrice	UK	Operational	Y	Y	N	Y	Y	N	N/A	2018	No	No, part of baseline
Bellrock OfTDA	UK	Pre-planning	Y	Y	Y	N	Y	Y	2031-2034	2034	Yes	Yes
Belwind Alstom Haliade Demonstration	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2014	No	No, part of baseline
Belwind I	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2010	No	No, part of baseline
Belwind II	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Berwick Bank	UK	Consented/ Pre-construction	Y	Y	Y	N	Y	Y	2028 - 2031	2031	Yes	Yes
Blyth Offshore Demonstrator – Phase 1	UK	Operational	Y	Y	Y	N	Y	N	N/A	2018	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Blyth Offshore Demonstrator – Phase 2	UK	Consented/ Pre-construction	Y	Y	Y	N	Y	N	N/A	2025	No	No, outside of ZoI
Blyth Offshore Demonstrator – Phase 3	UK	Pre-Planning							Unknown	Unknown	Unknown	Unknown
Borkum Riffgrund 1	Germany	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
Borkum Riffgrund 2	Germany	Operational	Y	Y	Y	N	N	N	N/A	2018	No	No, part of baseline
Borkum Riffgrund 3	Germany	Construction	Y	Y	Y	N	N	N	2023 - 2026	2026	No	No, outside of ZoI
Borssele 1 and 2	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2020	No	No, part of baseline
Borssele 3 and 4-Blauwwind	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2021	No	No, part of baseline
Borssele Site V-Leeghwater-Innovation Plot	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2021	No	No, part of baseline
Buchan Offshore Wind	UK	In Planning (Application submitted)	Y	Y	Y	N	N	N	2029 - 2032	2033	Yes	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Butendiek	Germany	Operational	Y	N	N	N	N	N	N/A	2014	No	No, part of baseline
Caledonia Offshore Wind	UK	In Planning (Application submitted)	Y	Y	Y	N	Y	N	2027 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Calvados	France	Construction	Y	Y	Y	N	N	N	2022 - 2027	2027	No	No, outside of ZoI
Cenos	UK	In Planning (Application submitted)	Y	Y	Y	N	Y	Y	2030 - 2034	2035	Yes	No, outside of ZoI
Culzean Floating Wind Pilot Project	UK	Operational	Y	Y	Y	Y	Y	Y	N/A	2024	No	No, outside of ZoI
Dan Tysk	Germany	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
Deutsche Bucht	Germany	Operational	Y	Y	Y	N	N	N	N/A	2020	No	No, part of baseline
Dieppe-Le Tréport	France	Construction	Y	Y	Y	N	N	N	2023 - 2026	2026	No	No, outside of ZoI
Dogger Bank A	UK	Operational	Y	Y	Y	N	N	N	2022 - 2023	2024	No	No, outside of ZoI
Dogger Bank B	UK	Construction	Y	Y	Y	N	N	N	2023 - 2024	2025	No	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Dogger Bank C	UK	Construction	Y	Y	Y	N	N	N	2024 - 2025	2026	No	No, outside of ZoI
Dogger Bank D	UK	In Planning (PEIR submitted)	Y	Y	Y	N	N	N	2029 - 2032	2033	Yes	No, outside of ZoI
Dogger Bank South (East and West)	UK	In Planning (Application submitted)	Y	Y	Y	N	N	N	2027 - 2032	2032	Yes	No, outside of ZoI
Dudgeon	UK	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Dudgeon Extension	UK	Consented/ Pre-construction	Y	Y	Y	N	N	N	2028 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Dunkerque	France	Planning (Application Submitted)	Y	Y	N	N	N	N	2026 - 2028	2028	No	No, outside of ZoI
East Anglia ONE	UK	Operational	Y	Y	Y	N	N	N	2018 - 2019	2020	No	No, part of baseline
East Anglia ONE North	UK	Consented/Pre-construction	Y	Y	Y	N	N	N	2028 - 2030	2030	No, outside of ZoI	No, outside of ZoI
East Anglia Three	UK	Construction	Y	Y	Y	N	N	N	2022 - 2026	2026	No	No, outside of ZoI
East Anglia TWO	UK	Consented/ Pre-construction	Y	Y	Y	N	N	N	2024 - 2027	2027	No	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Egmond aan Zee	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2007	No	No, part of baseline
EnBW He Dreiht	Germany	Construction	Y	Y	Y	N	N	N	2024 - 2026	2026	No	No, outside of ZoI
Eneco Luchterduinen	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
ENOVA Ems Emden	Germany	Operational	Y	Y	Y	N	N	N	-	2004	No	No, part of baseline
Erebus T and D	UK	Consented/ Pre-construction	N	Y	N	N	N	N	2028 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Fécamp	France	Operational	Y	Y	N	N	N	N	2020 - 2023	2023	No	No, outside of ZoI
Five Estuaries	UK	Planning (Application submitted)	Y	Y	Y	N	N	N	2028 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Forthwind	UK	Consented	Y	Y	N	Y	N	N	Unknown	Unknown	Unknown	Unknown
Frederikshavn Offshore Wind Demonstration Project - Phase 1	Denmark	Consented/ Pre-construction	N	Y	Y	N	N	N	2027 - 2030	2003	No	No, part of baseline
Galloper	UK	Operational	Y	Y	Y	N	N	N	N/A	2018	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Gemini	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Global Tech I	Germany	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
Gode Wind 1 and 2	Germany	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Gode Wind 3	Germany	Operational	Y	Y	Y	N	N	N	2023 - 2024	2024	No	No, outside of ZoI
Greater Gabbard	UK	Operational	Y	Y	Y	N	N	N	N/A	2012	No	No, part of baseline
Green Volt	UK	Consented/ Pre-construction	Y	Y	Y	N	N	N	2027 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Gunfleet Sands 1 and 2	UK	Operational	Y	Y	Y	N	N	N	N/A	2009	No	No, part of baseline
Gunfleet Sands 3	UK	Operational	Y	Y	Y	N	N	N	N/A	2013	No	No, part of baseline
Hohe See	Germany	Operational	Y	Y	Y	N	N	N	N/A	2019	No	No, part of baseline
Hollandse Kust Noord	Netherlands	Operational	Y	Y	Y	N	N	N	2022 - 2023	2023	No	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Hollandse Kust West VI	Netherlands	Construction	Y	Y	Y	N	N	N	2023 - 2026	2026	No	No, outside of ZoI
Hollandse Kust Zuid Holland I and II	Netherlands	Operational	Y	Y	Y	N	N	N	2022 - 2023	2023	No	No, outside of ZoI
Hollandse Kust Zuid Holland III and IV	Netherlands	Operational	Y	Y	Y	N	N	N	2022 - 2023	2023	No	No, outside of ZoI
Horns Rev 1	Denmark	Operational	Y	Y	Y	N	N	N	N/A	2002	No	No, part of baseline
Horns Rev 2	Denmark	Operational	Y	Y	Y	N	N	N	N/A	2009	No	No, part of baseline
Horns Rev 3	Denmark	Operational	Y	Y	Y	N	N	N	N/A	2019	No	No, part of baseline
Hornsea Project One	UK	Operational	Y	Y	Y	N	N	N	N/A	2019	No	No, part of baseline
Hornsea Project Three	UK	Construction	Y	Y	Y	N	N	N	2024 - 2027	2027	No	No, outside of ZoI
Hornsea Project Two	UK	Operational	Y	Y	Y	N	N	N	N/A	2022	No	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Hornsea Project Four	UK	Consented (discontinued in current form)	Y	Y	Y	N	N	N	Discontinued in current form			
Humber Gateway	UK	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
Hywind Scotland Pilot Park	UK	Operational	Y	Y	Y	Y	Y	Y	N/A	2017	No	No, part of baseline
Hywind Tampen	Norway	Operational	Y	Y	Y	N	N	N	N/A	2023	No	No, outside of ZoI
Inch Cape	UK	Construction	Y	Y	Y	Y	Y	Y	2023 - 2027	2027	No	No, outside of ZoI
Inner Dowsing	UK	Operational	Y	Y	Y	N	N	N	N/A	2009	No	No, part of baseline
Jammerland Bugt	Denmark	Consented/ Pre-construction	N	Y	Y	N	N	N	2027 - 2029	2029	No	No, outside of ZoI
Kaskasi	Germany	Operational	Y	Y	Y	N	N	N	N/A	2022	No	No, outside of ZoI
Kentish Flats	UK	Operational	Y	Y	Y	N	N	N	N/A	2005	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Kentish Flats Extension	UK	Operational	Y	Y	Y	N	N	N	N/A	2016	No	No, part of baseline
Kincardine	UK	Operational	Y	Y	N	Y	Y	Y	N/A	2021	No	No, part of baseline
Levenmouth Demonstration Turbine	UK	Operational	Y	Y	N	Y	Y	Y	N/A	2013	No	No, part of baseline
Lincs	UK	Operational	Y	Y	Y	N	N	N	N/A	2012	No	No, part of baseline
London Array	UK	Operational	Y	Y	Y	N	N	N	N/A	2012	No	No, part of baseline
Lynn	UK	Operational	Y	Y	Y	N	N	N	N/A	2009	No	No, part of baseline
Mareld Offshore Windfarm	Sweden	Consented/ Pre-construction	Y	Y	Y	N	N	N	2030 - 2032	2032	No, outside of ZoI	No, outside of ZoI
Meerwind Süd/Ost	Germany	Operational	Y	Y	Y	N	N	N	N/A	2014	No	No, part of baseline
Merkur	Germany	Operational	Y	Y	Y	N	N	N	N/A	2019	No	No, part of baseline
Metcentre-SeaTwirl S1	Sweden	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Metcentre-SeaTwirl S2	Norway	Consented (Awaiting funding)	Y	Y	Y	N	N	N	Unknown	Unknown	No	Unknown
Metcentre-TetraSpar Demo	Norway	Operational	Y	Y	Y	N	N	N	N/A	2021	No	No, part of baseline
Mona	UK	Consented/ Pre-construction	N	Y	N	N	N	N	2026-2030	2030	No, outside of ZoI	No, outside of ZoI
Moray East	UK	Operational	Y	Y	N	Y	Y	N	N/A	2022	No	No, outside of ZoI
Moray West	UK	Operational	Y	Y	N	Y	Y	N	2023 - 2025	2025	No	No, outside of ZoI
Morecambe	UK	Consented/ Pre-construction	N	Y	N	N	N	N	2028 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Muir Mhor	UK	Planning (Application submitted)	Y	Y	Y	N	Y	Y	2028 - 2031	2031	Yes	No, outside of ZoI
Neart na Gaoithe	UK	Operational	Y	Y	N	Y	Y	Y	2020 - 2024	2024	No	No, outside of ZoI
Nissum Bredning Vind	Denmark	Operational	Y	Y	Y	N	N	N	N/A	2018	No	No, part of baseline
Nobelwind	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Nordergründe	Germany	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Nordlicht I	Germany	Consented/ Pre-construction	Y	Y	Y	N	N	N	2024 - 2028	2028	No	No, outside of ZoI
Nordlicht II	Germany	Consented/ Pre-construction	Y	Y	Y	N	N	N	2027 - 2028	2028	No	No, outside of ZoI
Nordsee Cluster A-N-3.7	Germany	Construction	Y	Y	Y	N	N	N	2026	2027	No	No, outside of ZoI
Nordsee Cluster A-N-3.8	Germany	Construction	Y	Y	Y	N	N	N	2026	2027	No	No, outside of ZoI
Nordsee Cluster B-N-3.5	Germany	Consented/ Pre-construction	Y	Y	Y	N	N	N	2028 - 2029	2029	No	No, outside of ZoI
Nordsee Cluster B-N-3.6	Germany	Consented/ Pre-construction	Y	Y	Y	N	N	N	2028 - 2029	2029	No	No, outside of ZoI
Nordsee One	Germany	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Nordsee Ost	Germany	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Norfolk Boreas	UK	Construction	Y	Y	Y	N	N	N	finishing construction in 2028	Unknown	Unknown	Unknown
Norfolk Vanguard	UK	Construction	Y	Y	Y	N	N	N	2024 - 2028	2029	No	No, outside of ZoI
North Falls	UK	In Planning (Application submitted)	Y	Y	Y	N	N	N	2027 - 2032	2032	Yes	No, outside of ZoI
Norther	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2019	No	No, part of baseline
Northwester 2	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2020	No	No, outside of ZoI
Northwind	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2014	No	No, part of baseline
Ossian	UK	In Planning (Application submitted)	Y	Y	Y	N	Y	Y	2031 - 2038	2038	Yes	Yes
Outer Dowsing	UK	In Planning (Application submitted)	Y	Y	N	Y	N	N	2026 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Pentland	UK	In Planning (Application submitted)	Y	Y	N	Y	N	N	2027 - 2029	2029	No, outside of ZoI	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Prinses Amaliawindpark	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2008	No	No, part of baseline
Race Bank	UK	Operational	Y	Y	Y	N	N	N	N/A	2018	No	No, part of baseline
Rampion	UK	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Rampion 2	UK	Consented/ Pre-construction	Y	Y	Y	N	N	N	2026 - 2030	2030	No, outside of ZoI	No, outside of ZoI
Rentel	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2018	No	No, part of baseline
Riffgat	Germany	Operational	Y	Y	Y	N	N	N	N/A	2014	No	No, part of baseline
Rønland	Denmark	Operational	Y	Y	Y	N	N	N	N/A	2003	No	No, part of baseline
Saint-Brieuc	France	Operational	Y	Y	N	N	N	N	N/A	2024	No	No, outside of ZoI
Salamander	UK	Consented/ Pre-construction	Y	Y	Y	N	Y	Y	2028 - 2029	2029	No	No, outside of ZoI
SamsØ	Denmark	Operational	N	Y	Y	N	N	N	2002	2003	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Sandbank	Germany	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Scroby Sands	UK	Operational	Y	Y	Y	N	N	N	N/A	2003	No	No, part of baseline
Seagreen	UK	Operational	Y	Y	Y	N	Y	Y	N/A	2022	No	No, outside of ZoI
Seagreen Phase 1A	UK	Consented/ Pre-construction	Y	Y	Y	N	Y	Y	2030-2031	2031	Yes	No, outside of ZoI
Seamade (Mermaid)	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2021	No	No, part of baseline
Seamade (SeaStar)	Belgium	Operational	Y	Y	Y	N	N	N	Unknown	2020	No	No, part of baseline
Sheringham Shoal	UK	Operational	Y	Y	Y	N	N	N	N/A	2012	No	No, part of baseline
Sheringham Shoal Extension	UK	Consented/ Pre-construction	Y	Y	Y	N	N	N	2028 - 2032	2032	Yes	No, outside of ZoI
Sofia	UK	Construction	Y	Y	Y	N	N	N	2024 - 2026	2026	No	No, outside of ZoI
Teesside	UK	Operational	Y	Y	Y	N	N	N	N/A	2013	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Thanet	UK	Operational	Y	Y	Y	N	N	N	N/A	2010	No	No, part of baseline
Thor	Denmark	Construction	Y	Y	Y	N	N	N	2025 - 2026	2026	No	No, outside of ZoI
Thornton Bank-Phase I	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2009	No	No, part of baseline
Thornton Bank-Phase II	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2012	No	No, part of baseline
Thorton Bank-Phase III	Belgium	Operational	Y	Y	Y	N	N	N	N/A	2013	No	No, part of baseline
Trianel Windpark Borkum I	Germany	Operational	Y	Y	Y	N	N	N	N/A	2015	No	No, part of baseline
Trianel Windpark Borkum II	Germany	Operational	Y	Y	Y	N	N	N	N/A	2020	No	No, part of baseline
Triton Knoll	UK	Operational	Y	Y	Y	N	N	N	N/A	2022	No	No, outside of ZoI
TunØ Knob	Denmark	Operational	N	Y	Y	N	N	N	1995	1995	No	No, part of baseline

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
UNITECH Zefryos by Hywind Technology (Karmoy/Hywind)	Norway	Operational	Y	Y	Y	N	N	N	N/A	2012	No	No, part of baseline
Veja Mate	Germany	Operational	Y	Y	Y	N	N	N	N/A	2017	No	No, part of baseline
Vesterhav Nord/Syd	Denmark	Operational	Y	Y	Y	N	N	N	2022 - 2023	2023	No	No, outside of ZoI
Vindpark Falkenberg	Sweden	Consented (Awaiting Permit)	N	Y	Y	N	N	N	2023	2024	No	No, outside of ZoI
West Of Orkney	UK	Consented/ Pre-construction	Y	Y	Y	N	N	N	2028 - 2032	2032	Yes	No, outside of ZoI
Westermeerwind	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2016	No	No, part of baseline
Westermost Rough	UK	Operational	Y	Y	Y	N	N	N	N/A	2014	No	No, part of baseline
Windpark Fryslân	Netherlands	Operational	Y	Y	Y	N	N	N	N/A	2021	No	No, part of baseline
Windplanblauw	Netherlands	Operational	Y	Y	Y	N	N	N	2021 - 2023	2023	No	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
White Cross	UK	Consented/ Pre-construction	N	Y	N	N	N	N	2027 - 2031	2031	No, outside of ZoI	No, outside of ZoI
Tier 2												
Arven	UK	In Planning (Scoping submitted)	Y	Y	Y	N	Y	Y	2030 - 2035	2036	Yes	Yes
Ayre	UK	In Planning (Application submitted)	Y	Y	Y	Y	N	N	2030 - 2034	2032	Yes	No, outside of ZoI
Beech	UK	Pre-planning	Y	Y	Y	N	Y	Y	2029 - 2031	2031	No	No, outside of ZoI
Bowdun	UK	In Planning (Scoping submitted)	Y	Y	Y	N	Y	Y	2031 - 2032	2032	Yes	No, outside of ZoI
Broadshore hub (Sinclair and Scaraben too)	UK	In Planning (Scoping submitted)	Y	Y	Y	N	Y	N	2029 - 2031	2031	Yes	No, outside of ZoI
CampionWind	UK	In Planning (Scoping submitted)	Y	Y	Y	N	Y	Y	Unknown	Unknown	Unknown	Unknown
Havbredy	UK	Pre-planning (Scoping submitted)	N	Y	N	N	N	N	2032 - 2036	2036	Yes	No, outside of ZoI
MachairWind	UK	In Planning (Scoping submitted)	N	Y	N	N	N	N	2030 - 2032	2032	No, outside of ZoI	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
MarramWind	UK	In Planning (Scoping submitted)	Y	Y	Y	N	Y	N	Unknown	Unknown	No	Yes
Morven Offshore (North and South)	UK	Planning (Scoping report submitted)	Y	Y	Y	N	Y	Y	2028 - 2032	2033	Yes	Yes
Stoura	UK	In Planning (Scoping submitted)	Y	Y	Y	N	N	N	2030 - 2034	2034	Yes	No, outside of ZoI
Stromar	UK	In Planning (Scoping submitted)	Y	Y	Y	N	Y	N	2029 - 2033	2033	Yes	No, outside of ZoI
Tier 3												
Cedar	UK	Pre-planning	Y	Y	Y	N	Y	Y	2027 - 2029	2028	No	Yes
Dylan (floating)	UK	Pre-planning	N	Y	N	N	N	N	Unknown	2031	No, outside of ZoI	No, outside of ZoI
Flora	UK	Pre-planning	Y	Y	Y	N	Y	Y	Unknown	Unknown	Unknown	Unknown
Hollandse Kust West VII	Netherlands	Pre-planning	Y	Y	Y	N	N	N	Unknown	2027	Unknown	No, outside of ZoI
Judy	UK	Pre-planning	Y	Y	Y	N	Y	N	Unknown	Unknown	Unknown	Unknown
Dolphyn Project-Full Scale	UK	Pre-planning	Y	N	N	Y	Y	Y	N/A	Unknown	Unknown	No, outside of ZoI

Name of Project	Country	Status of Development	HP-NS MU[1]	CGNS MU[2]	BND[3]		Grey Seal	Harbour Seal	Construction/ Piling Window	Operational Since/ Anticipated Start or Operations	Potential for Overlap of OWF Construction with Bellrock WFDA Construction	Potential for Overlap of OWF Operation with Bellrock WFDA Construction[6]
					GNS MU[4]	CES MU[5]						
Dolphyn Project-Pre-Commercial	UK	Pre-planning	Y	N	N	Y	Y	Y	N/A	Unknown	Unknown	No, outside of ZoI
Normandie	France	Pre-planning	Y	Y	N	N	N	N	2030 - 2031	2031	Yes	No, outside of ZoI

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[3] BND = Bottlenose dolphin.

[4] GNS = Greater North Sea Management Unit.

[5] CES = Coastal East Scotland Management Unit.

[6] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

4.2.2 Marine Renewable Energy (Wave and Tidal)

76. Both UK and European marine renewable energy (MRE) schemes (e.g. wave and tidal) have been considered in the CEA screening. There is a lack of information on European MRE schemes and therefore they have not been assessed. Piling is highly unlikely to be used during the installation of wave and tidal projects. The installation of wave/tidal projects to date has typically been carried out using drilled pins or gravity bases. Given percussive piling is not anticipated to be used as an installation method for these projects, the noise impacts during construction would have a very limited impact range, especially compared to OWFs.

77. The construction of wave or tidal developments is highly unlikely to significantly contribute to the cumulative impacts of the disturbance of marine mammals from underwater noise sources at the Bellrock WFDA given the distance between any wave or tidal project. However, any projects within the CEA Screening Areas which have the potential for overlap in construction windows with that of the Bellrock Wind Farm Infrastructure have been screened in for further assessment.

78. MRE projects have also been considered for potential operational cumulative effects, if this phase could overlap with the proposed construction of the Bellrock Wind Farm Infrastructure, and if sufficient information was available to determine this. Including operational MREs is a precautionary approach as O&M activities are unlikely to contribute to the cumulative effects of the disturbance of marine mammals from underwater noise sources.

79. Potential impacts during the operation of tidal projects include collision risk. However, tidal projects would be required to have effective mitigation and monitoring in place to reduce the collision risk for marine mammals. Wave energy devices have fewer submerged moving parts, and are mostly located above the water surface, thus presenting a much lower risk to marine mammals (Greaves et al. 2016). Collision risk from tidal and wave devices have therefore been screened out of the CEA.

80. Where no information was known on the potential construction phases of the other MRE projects, it was assumed that all projects currently operational, under construction, or consented would have completed construction prior to the construction of the Bellrock Wind Farm Infrastructure.

81. Projects that had been cancelled or were inactive at the time of assessment were not screened into the CEA.

82. The European Marine Energy Centre (EMEC) in Orkney provides pre-consented, grid-connected test sites for testing smaller scale technologies, subsystems and components. These testing programmes are usually short-term (less than one year) and host a range of developers. Examples of past and current occupants at the EMEC are:

- Blue X @ EMEC Scapa Flow – started 2021 (6 months);
- Orbital 02 @ EMEC Fall of Warness – started 2021;
- Magallanes Renovables @ EMEC Fall of Warness – started 2021;
- Aquantis Lt. @ EMEC Shapinsay Sound – started 2023 (6 months); and
- Blue Horizon 250 @ Billia Croo – starting 2025.

83. Provided that the EMEC sites Billia Croo, Fall of Warness, Scapa Flow and Shapinsay Sound are pre-consented, and the testing windows are relatively short (approximately 6 months to 1 year) all new installations of tidal and wave at these four sites will be screened out from further consideration.

84. The MRE projects that have been operational since the commencement of the Bellrock WFDA baseline surveys (in March 2022) are considered part of the baseline and screened out from further consideration in the CEA.

85. All Tier 1 projects are consented, but some timelines are unknown, and construction has not yet begun. It is assumed that the construction of these MRE projects would be complete prior to the construction of the Bellrock Wind Farm Infrastructure, and all are therefore screened out of further assessment.

86. The remaining projects are Tier 2 and 3 and have been screened out of further assessment due to a lack of information on the construction window.

87. The results of the MRE project screening are presented in **Table 4.2**.

Table 4.2: Cumulative Effects Assessment Screening for all UK and European Marine Renewable Energy Projects Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Project Name	Project Type	Project Tier	HP-NS MU[1]	CGNS MU[2]	BND-GNS MU[3]	BND-CES MU[4]	Grey Seal	Harbour Seal	Offshore Construction Period	Operational Since/ Anticipated Start	Potential for Overlap of MRE Operation/ Construction with Bellrock WFDA Construction[5]
Blue Accelerator	Wave	1	Y	Y	Y	N	N	N	N/A	2020	No, part of baseline
Danish Wave Energy Center	Wave	1	Y	Y	Y	N	N	N	N/A	2015	No, part of baseline
DMEC-Marsdiep	Tidal	1	Y	Y	Y	N	N	N	N/A	2015	No, part of baseline
EMEC Aquantis	Tidal	1	Y	Y	Y	N	N	N	Unknown	Unknown	No, unknown construction date
EMEC AWS Waveswing	Wave	1	Y	Y	Y	N	N	N	N/A	2022	No, part of baseline
EMEC Billia Croo	Wave	1	Y	Y	Y	Y	N	N	N/A	2003	No, part of baseline
EMEC Blue Horizon	Wave	1	Y	Y	Y	Y	N	N	N/A	2021	No, part of baseline
EMEC Fall of Warness	Tidal	1	Y	Y	Y	Y	N	N	N/A	2005	No, part of baseline
EMEC Magallanes Renovables	Tidal	1	Y	Y	Y	Y	N	N	N/A	2019	No, part of baseline
EMEC Orbital O2.2	Tidal	1	Y	Y	Y	N	N	N	N/A	2021	No, part of baseline
EMEC Orbital Power O2	Tidal	1	Y	Y	Y	Y	N	N	N/A	2019	No, part of baseline
EMEC Scapa Flow	Wave	1	Y	Y	Y	Y	N	N	N/A	2011	No, part of baseline
EMEC Shapinsay Sound	Tidal	1	Y	Y	Y	Y	N	N	N/A	2011	No, part of baseline

Project Name	Project Type	Project Tier	HP-NS MU[1]	CGNS MU[2]	BND-GNS MU[3]	BND-CES MU[4]	Grey Seal	Harbour Seal	Offshore Construction Period	Operational Since/ Anticipated Start	Potential for Overlap of MRE Operation/ Construction with Bellrock WFDA Construction[5]
EMEC Stronay Firth	Tidal	1	Y	Y	Y	Y	N	N	N/A	2014	No, part of baseline
Islay Community Demonstration	Tidal	1	N	Y	N	N	N	N	N/A	N/A	No, unknown construction date
Lysekil	Wave	1	Y	Y	Y	Y	N	N	N/A	2006	No, part of baseline
MeyGen Inner Sound Phase 1	Tidal	1	Y	Y	Y	Y	N	N	N/A	2014	No, part of baseline
MeyGen Inner Sound Phase 2	Tidal	1	Y	Y	Y	Y	N	N	Unknown	2027	No, unknown construction date
MeyGen Inner Sound Phase 3	Tidal	1	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
Minesto Holyhead Deep	Tidal	1	N	Y	N	N	N	N	N/A	2019	No, part of baseline
Mocean Energy Deerness	Wave	1	Y	Y	N	Y	N	N	N/A	2023	No, part of baseline
Morlais	Tidal	1	N	Y	N	N	N	N	N/A	N/A	No, unknown construction date
Nissum Bredning Test Station	Wave	1	Y	Y	Y	Y	N	N	N/A	2000	No, part of baseline
Nova Innovation Shetland Tidal Array	Tidal	1	Y	Y	Y	Y	N	N	N/A	2016	No, part of baseline
Orbital Marine Power Deer Sound	Tidal	1	Y	Y	Y	Y	N	N	N/A	2021	No, part of baseline
Perpetuus Tidal Energy Centre (PTEC)	Tidal	1	Y	N	N	N	N	N	Unknown	Unknown	No, unknown construction date

Project Name	Project Type	Project Tier	HP-NS MU[1]	CGNS MU[2]	BND-GNS MU[3]	BND-CES MU[4]	Grey Seal	Harbour Seal	Offshore Construction Period	Operational Since/ Anticipated Start	Potential for Overlap of MRE Operation/ Construction with Bellrock WFDA Construction[5]
Redstack (NL)	Tidal	1	Y	Y	Y	N	N	N	N/A	2005	No, part of baseline
Runde Environmental Centre	Wave	1	Y	Y	Y	N	N	N	N/A	2008	No, part of baseline
SeaQurrent	Tidal	1	Y	Y	Y	N	N	N	N/A	N/A	No, unknown construction date
SEASTAR	Tidal	1	Y	Y	Y	Y	N	N	N/A	2023	No, part of baseline
mWave	Wave	2	N	Y	N	N	N	N	N/A	N/A	No, unknown construction date
Brims Tidal Array	Tidal	3	Y	Y	Y	N	N	N	N/A	N/A	No, unknown construction date
Mersey Tidal Power Project	Tidal	3	N	Y	N	N	N	N	N/A	N/A	No, unknown construction date
MeyGen Inner Sound Phase 4	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
Nova Innovation Yell Sound Array2	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
Orbital Marine Power Westray	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
Orbital Projects 6 Ness of Duncansby	Tidal	3	Y	Y	N	Y	N	N	Unknown	Unknown	No, unknown construction date

Project Name	Project Type	Project Tier	HP-NS MU[1]	CGNS MU[2]	BND-GNS MU[3]	BND-CES MU[4]	Grey Seal	Harbour Seal	Offshore Construction Period	Operational Since/ Anticipated Start	Potential for Overlap of MRE Operation/ Construction with Bellrock WFDA Construction[5]
Seagen Brough Ness	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
TTC-GD	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
TTC-GD (NL)	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date
Westray South Phase 1/2	Tidal	3	Y	Y	Y	Y	N	N	Unknown	Unknown	No, unknown construction date

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[3] BND GNS MU = Bottlenose dolphin Greater North Sea Management Unit.

[4] BNG CES MU = Bottlenose dolphin Coastal East Scotland Management Unit.

[5] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

4.2.3 Aggregate and Dredging

88. Aggregate extraction and dredging projects considered during the CEA screening included operational projects (production agreement areas) and those UK based projects expected to be used in the future (exploration and option areas) (see **Table 4.3**).

89. No European projects were screened into the CEA due to a lack of information on project locations, phases, and programmes. Furthermore, it was assumed that the impact ranges from such activities would only cause localised effects on short, perhaps medium-term behavioural reactions and masking of low-frequency calls in baleen whales and seals (Todd et al. 2015).

90. Dredging activities could cause local displacement as demonstrated in the study by Pirotta et al. (2013) on bottlenose dolphins in Aberdeen harbour. The study found that if dredging intensity increased, dolphins spent less time in the harbour, despite high baseline levels of disturbance and the presence of a qualitative foraging habitat. Indications that HP were displaced within 600 m of dredging operations was evident through more qualitative data (Diederichs et al. 2010).

91. When in transit, noise arising from dredging vessels is comparable with that from similar sized vessels and can therefore be considered as part of the baseline noise levels.

92. When undertaking dredging activities, higher levels of broadband noise at frequencies above 1 kHz are produced due to the impact or abrasion of aggregate material passing through the drag head, suction pipe and pump. The overall level of noise was found to be higher when extracting gravel compared to when extracting sand (Robinson et al. 2011).

93. Taking into account the small potential noise impact ranges and distances of the aggregate extraction and dredging projects from the Bellrock WFDA, the potential for contribution to cumulative impacts is very small. Therefore, risk of PTS or TTS for all marine mammal species from aggregate extraction and dredging has been screened out from further consideration in the CEA.

94. Given marine mammals have the potential to be disturbed from such activities, as a worst-case, dredging and extraction projects that have an overlap with the construction period of the Bellrock Wind Farm Infrastructure were screened in for disturbance impacts.

95. All aggregate extraction and dredging projects were considered to be part of the existing baseline environment if operational prior to the start of the baseline surveys for the Bellrock WFDA, in March 2022.

96. Out of the initial list of aggregate schemes within the CEA Screening Area, the majority were initially screened out as being operational prior to the baseline surveys in March 2022. A small number of Scottish projects were screened out as the dredging would be completed by the time the Bellrock Wind Farm Infrastructure construction begins.

97. The following three aggregate projects became operational shortly after the start of the baseline surveys and have been screened in for assessing disturbance in the CEA:

- Inner Dowsing 481/1-2 for cetacean species;
- West Bassurelle 458 for cetacean species; and
- West Bassurelle 464 for cetacean species.

98. The results of the screening of aggregate extraction and dredging projects are presented in **Table 4.3**.

Table 4.3: Cumulative Effects Assessment Screening for UK Aggregate and Dredging Projects Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
Area 1 South	478	Production Agreement Area	07/12/2012	15/04/2039	Y	Y	N	N	N	N	No, included in baseline
Colbart	530	Exploration and Option Area	01/08/2017	06/06/2039	Y	Y	N	N	N	N	No, included in baseline
Cross Sands	242 - 361	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
East Orford Ness	1809	Exploration and Option Area	01/09/2019	01/08/2024	Y	Y	Y	N	N	N	No, included in baseline
EEC 1 (former 503)	529	Exploration and Option Area	01/08/2017	31/08/2039	Y	Y	N	N	N	N	No, included in baseline
EEC 5 South	1806	Exploration and Option Area	01/09/2019	31/08/2025	Y	Y	N	N	N	N	No, included in baseline
EEC 5 South	1807	Exploration and Option Area	01/09/2019	31/08/2025	Y	Y	N	N	N	N	No, included in baseline
Greenwich Light East	473/1	Production Agreement Area	11/06/2021	11/05/2036	Y	Y	N	N	N	N	No, included in baseline
Greenwich Light East	473/2	Production Agreement Area	11/06/2021	11/05/2036	Y	Y	N	N	N	N	No, included in baseline

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
Hilbre Swash	393	Production Agreement Area	01/01/2015	31/12/2029	N	Y	N	N	N	N	No, included in baseline
Humber 1	514/1	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber 2	514/2	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber 3	514/3	Production Agreement Area	01/01/2016	31/12/2030	Y	Y	Y	N	N	N	No, included in baseline
Humber 3	484	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber 4	514/4	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber 4 and 7	506	Production Agreement Area	01/04/2017	31/03/2032	Y	Y	Y	N	N	N	No, included in baseline
Humber 5	483	Production Agreement Area	01/04/2018	31/03/2033	Y	Y	Y	N	N	N	No, included in baseline
Humber Estuary	106/1	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber Estuary	106/2	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
Humber Estuary	106/3	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber Estuary	400	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Humber Overfalls	493/1	Production Agreement Area	01/01/2017	31/12/2031	Y	Y	Y	N	N	N	No, included in baseline
Humber Overfalls	493/2	Production Agreement Area	01/01/2017	31/12/2031	Y	Y	Y	N	N	N	No, included in baseline
Inner Dowsing	1805	Exploration and Option Area	01/09/2019	31/08/2025	Y	Y	Y	N	N	N	No, included in baseline
Inner Dowsing	481/1	Production Agreement Area	08/07/2015	01/04/2038	Y	Y	Y	N	N	N	No, included in baseline
Inner Dowsing	481/2	Production Agreement Area	03/01/2023	02/01/2038	Y	Y	Y	N	N	N	Yes
Inner Owers	396/1	Production Agreement Area	01/04/2017	07/07/2030	Y	Y	Y	N	N	N	No, included in baseline
Inner Owers	435/1	Production Agreement Area	007/08/2015	07/07/2030	Y	Y	Y	N	N	N	No, included in baseline
Inner Owers	435/2	Production Agreement Area	07/08/2015	07/07/2030	Y	Y	Y	N	N	N	No, included in baseline

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
Inner Owers North	488	Production Agreement Area	04/01/2017	07/07/2030	Y	Y	Y	N	N	N	No, included in baseline
Liverpool Bay	457	Production Agreement Area	12/07/2012	13/07/2025	N	Y	N	N	N	N	No, included in baseline
Longsand	508	Production Agreement Area	01/04/2014	31/03/2029	Y	Y	Y	N	N	N	No, included in baseline
Longsand	509/1-3	Production Agreement Area	22/06/2015	21/06/2030	Y	Y	Y	N	N	N	No, included in baseline
Longsand	510/1-2	Production Agreement Area	01/07/2015	30/06/2030	Y	Y	Y	N	N	N	No, included in baseline
Lowestoft	511, 512, 513/1&2	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Lowestoft Extension	1804/1-2	Exploration and Option Area	01/09/2019	31/08/2025	Y	Y	Y	N	N	N	No, included in baseline
Median Deep	461	Production Agreement Area	06/09/2021	05/09/2036	Y	Y	N	N	N	N	No, included in baseline
Needles Isle of Wight	137	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	N	N	N	N	No, included in baseline
North Cross Sands	494	Production Agreement Area	01/01/2017	31/12/2031	Y	Y	Y	N	N	N	No, included in baseline

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
North Falls East	501	Production Agreement Area	01/07/2017	30/06/2032	Y	Y	Y	N	N	N	No, included in baseline
North Inner Gabbard	498	Production Agreement Area	30/01/2015	29/01/2030	Y	Y	Y	N	N	N	No, included in baseline
Off Great Yarmouth	254	Production Agreement Area	01/10/2018	30/09/2033	Y	Y	Y	N	N	N	No, included in baseline
Off Great Yarmouth	228	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Off Great Yarmouth Extension	240	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Off Saltfleet	197	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Off Selsey Bill	395/1-2	Production Agreement Area	06/03/2013	05/03/2028	Y	Y	N	N	N	N	No, included in baseline
Outer Dowsing	515/1-2	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline
Owers Extension	453	Production Agreement Area	01/04/2017	31/03/2032	Y	Y	N	N	N	N	No, included in baseline
Shipwash	507/1-6	Production Agreement Area	01/10/2016	30/09/2031	Y	Y	Y	N	N	N	No, included in baseline

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
South East Isle of Wight	340	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	N	N	N	N	No, included in baseline
South East Isle of Wight	351	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	N	N	N	N	No, included in baseline
South Hastings	460	Production Agreement Area	09/01/2013	08/01/2028	Y	Y	N	N	N	N	No, included in baseline
South of Needles Channel	500/3	Production Agreement Area	01/04/2017	31/03/2032	Y	Y	N	N	N	N	No, included in baseline
South West Isle of Wight	500/4	Production Agreement Area	01/04/2017	31/03/2032	Y	Y	N	N	N	N	No, included in baseline
South West Isle of Wight	500/2	Production Agreement Area	01/04/2017	31/03/2032	Y	Y	N	N	N	N	No, included in baseline
South West Isle of Wight	127	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	N	N	N	N	No, included in baseline
South Wight	500/1	Production Agreement Area	01/04/2017	31/03/2032	Y	Y	N	N	N	N	No, included in baseline
Southwold East	430	Production Agreement Area	07/12/2012	16/11/2025	Y	Y	Y	N	N	N	No, included in baseline
St Catherine's	407	Production Agreement Area	24/03/2013	23/03/2028	Y	Y	N	N	N	N	No, included in baseline

Project Name	Area No.	Project Tier	Licence Start Date	Licence End Date	HP NS MU[1]	Other species CGNS MU[2]	BND GNS MU[3]	BND CES MU[4]	Grey Seal	Harbour Seal	Potential for Overlap of Aggregate Extraction with Bellrock WFDA Construction[5]
St Catherine's	451	Production Agreement Area	01/04/2013	31/03/2028	Y	Y	N	N	N	N	No, included in baseline
Thames D	524	Production Agreement Area	01/01/2022	31/12/2036	Y	Y	Y	N	N	N	No, included in baseline
West Bassurelle	458 & 464	Production Agreement Area	18/09/2022	17/09/2037	Y	Y	N	N	N	N	Yes
West Bassurelle Extension	1803	Exploration and Option Area	01/09/2019	31/08/2025	Y	Y	Y	N	N	N	No, included in baseline
West Isle of Wight	2106	Exploration and Option Area	07/01/2024	30/06/2030	Y	Y	N	N	N	N	No, exploration licence expired before construction
West Wight	522/1-2	Production Agreement Area	28/09/2021	27/09/2036	Y	Y	N	N	N	N	No, included in baseline
Yarmouth	401/2A	Production Agreement Area	01/01/2015	31/12/2029	Y	Y	Y	N	N	N	No, included in baseline

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit.

[3] BND GNS MU = Bottlenose dolphin Greater North Sea Management Unit (Common dolphin, White-beaked dolphin).

[4] BND CES = Coastal East Scotland Management Unit.

[5] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

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4.2.4 Licensed Disposal Sites

99. The licenced marine disposal sites that have been screened cover the whole of the UK, which includes data from England, Wales, Scotland, Northern Ireland as well as Jersey, Guernsey and Isle of Man (Cefas, 2022). No European projects were screened in due to a lack of information and range of impact.

100. Of the licensed disposal sites identified in the NS MU, approximately half were closed or not for waste disposal. A small proportion are considered 'disused', indicating that there were no disposals made in more than 5 years and were therefore screened out.

101. Of the 'open' sites, many disposal sites were considered to be part of the existing baseline environment, as they were all operational prior to the start of the Bellrock WFDA baseline surveys in March 2022 and have been screened out from further assessment.

102. Of the 'open' disposal sites, the majority had no information listed regarding dates when the sites became first operational. Due to a lack of information, consideration of pathways and the assumption that many would have been operational prior to the 2022 surveys, these sites have not been considered further in the assessment. The following 'open' disposal sites were opened after 2022:

- Brighton B WI021;
- Dogger Bank A DG031;
- Dogger Bank B DG032;
- Emerald Quay, R Adur WI029;
- Erebus OWF Cable Site 1 LU167;
- Erebus OWF Cable Site 2 LU166;
- Erebus OWF Cable Site 3 LU165;
- Erebus OWF Cable Site 4 LU164;
- Erebus OWF Cable Site 5 LU163;
- Five Estuaries export cable corridor (ECC) TH019;
- Five Estuaries N Array TH017;
- Five Estuaries S Array TH018;
- Gridlink East Site TH156;
- Gridlink West Site TH157;
- Grimsby New Cut Drain HU076;
- Hornsea 4 Array Area HU226
- Hornsea 4 ECC HU225;
- Island Marina WI068;
- Milford-on-Sea Beach WI083;
- Oldfleet Drain HU075;
- Putney Embankment TH096;
- River Winster ETW IS186;
- River Winster WTW IS185;
- Shotley Marina TH231;
- Tanybwlch beach IS012;
- Tilbury Tunnel outfall TH099;
- West Beach PO016; and
- West Cliff Beach PO015.

103. The construction for Gridlink, an electricity interconnector between Dunkerque and Kent, is expected to end by early 2030 The GridLink Marine Environmental Report states that the impact on water quality was not assessed for marine mammals. The sediment samples identified no significances in siltation rate changes, including smothering, changes in suspended solids,

transitional elements and organo-metal contamination. There were no adverse effects identified for fish and shellfish species (Intertek, 2020). Thus, the disposal sites are screened out from the CEA.

104. The project at Milford-on-Sea requires the deposition of 9,000 tonnes of material in the beach recharge area each year (for five years) for storm protection. As per information in the Marine Licence (MLA/2022/00064) the disposal site is the beach recharge area and will therefore not affect marine mammals. Thus, the disposal site is screened out from the CEA.

105. Taking into account the small potential impact ranges and the distances of the disposal sites from the Bellrock WFDA, the potential for contribution to cumulative effects is very small. Therefore, no disposal sites were screened into the CEA. The results of the screening of the 'open' licenced disposal sites are presented in **Table 4.4**.

Table 4.4: 'Open' Licences Disposal Sites Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Infrastructure Construction (2030 – 2037)

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Aberdeen	CR110	N/A	Y	Y	Y	Y	Y	Y	Unknown
Aberystwyth South Beach	IS013	N/A	N	Y	N	N	N	N	Unknown
Anstruther	FO101	N/A	Y	Y	Y	Y	Y	Y	Unknown
Aquind Cable Site B	WI049	N/A	Y	Y	N	N	N	N	Unknown
Arbroath	FO020	N/A	Y	Y	Y	Y	Y	Y	Unknown
Avonmouth (Inner)	LU080	<1982	N	Y	N	N	N	N	Yes
Awel y Mor	IS067	N/A	N	Y	N	N	N	N	Unknown
Ayr Bay	MA050	N/A	N	Y	N	N	N	N	Unknown
Balnapaling	CR170	N/A	Y	Y	Y	Y	Y	Y	Unknown
Barrow D	IS205	N/A	N	Y	N	N	N	N	Unknown
Belfast Dredgings C	IS591	N/A	N	Y	N	N	N	N	Unknown
Birdham Pool Marina	WI042	2016	N	Y	N	N	N	N	Yes
Blyth A + B	TY042	<1982	Y	Y	Y	N	Y	N	Yes
Blyth Owf Demo	TY043	2014	Y	Y	Y	N	Y	N	Yes

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Boiler Marsh	WI086	N/A	Y	Y	N	N	N	N	Unknown
Bo'ness	FO044	N/A	Y	Y	Y	Y	Y	Y	Unknown
Boston 7	HU170	N/A	Y	Y	Y	N	N	N	Unknown
Bridlington A	HU015	<1982	Y	Y	Y	N	N	N	Yes
Brighton B	WI021	2025	Y	Y	N	N	N	N	No
Brighton/Rottingdean	WI020	<1982	Y	Y	N	N	N	N	Yes
Broughton	IS099	2010	N	Y	N	N	N	N	Yes
Burbo Bank Extension OWF	IS135	2019	Y	Y	N	N	N	N	Yes
Burgh Castle Yacht Station	HU208	N/A	N	Y	N	N	N	N	Unknown
Buckie	CR040	N/A	Y	Y	Y	Y	Y	N	Unknown
Burghead	CR030	N/A	Y	Y	Y	Y	Y	N	Unknown
Canning Half Tide	IS126	2017	N	Y	N	N	N	N	Yes
Cardiff Grounds	LU110	<1982	N	Y	N	N	N	N	Yes
Cei Bach Beach A	IS019	N/A	N	Y	N	N	N	N	Unknown
Cei Bach Beach B	IS022	N/A	N	Y	N	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Chapel Rock Landing Access	PL111	N/A	N	Y	N	N	N	N	Unknown
Clevedon Lake	LU068	2019	N	Y	N	N	N	N	Yes
Cleveland Potash Outfall	TY181	N/A	Y	Y	Y	N	Y	N	Unknown
Cloch Point	MA021	N/A	Y	Y	Y	Y	Y	N	Unknown
Conwy Beneficial Use	IS065	N/A	N	Y	N	N	N	N	Unknown
Conwy Beneficial Use	IS066	2020	N	Y	N	N	N	N	Yes
Copperas	TH216	N/A	N	Y	N	N	N	N	Unknown
Copperas Bay 3	TH233	N/A	N	Y	N	N	N	N	Unknown
Coquet Island	TY025	N/A	Y	Y	Y	N	Y	N	Unknown
Deep Water Relocation	PO111	2019	Y	Y	N	N	N	N	Yes
Deganwy Beneficial Use	IS035	N/A	N	Y	N	N	N	N	Unknown
Dogger Bank A	DG031	2022	Y	Y	Y	N	N	N	No
Dogger Bank B	DG032	2022	Y	Y	Y	N	N	N	No
Dogger Bank South Cable A	DG033	N/A	Y	Y	Y	N	N	N	Unknown
Dogger Bank South Cable B	DG034	N/A	Y	Y	Y	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Dogger Bank South East	DG036	N/A	Y	Y	Y	N	N	N	Unknown
Dogger Bank South West	DG035	N/A	Y	Y	Y	N	N	N	Unknown
Dogger Bank Teeside B	DG025	N/A	Y	Y	Y	N	N	N	Unknown
Dolau Beach	IS014	2021	N	Y	N	N	N	N	Yes
Douglas (Isle of Man)	IS400	N/A	N	Y	N	N	N	N	Unknown
Douglas Harbour (Isle of Man)	IS445	N/A	N	Y	N	N	N	N	Unknown
Dover	DV010	<1982	Y	Y	Y	N	N	N	Yes
Dover-Emergency Site	DV011	N/A	Y	Y	Y	N	N	N	Unknown
East Anglia ONE Route Ec-1	TH220	2018	Y	Y	Y	N	N	N	Yes
East Anglia ONE Route Ec-2	TH221	2018	Y	Y	Y	N	N	N	Yes
East Anglia ONE Route Ec-3	TH222	2018	Y	Y	Y	N	N	N	Yes
East Anglia ONE Route Ec-4	TH223	2018	Y	Y	Y	N	N	N	Yes
East Anglia ONE Route Ec-5	TH224	2018	Y	Y	Y	N	N	N	Yes
East Anglia ONE & 2N ECC	TH087	N/A	Y	Y	Y	N	N	N	Unknown
East Anglia ONE North Array	TH083	N/A	Y	Y	Y	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
East Anglia ONE North ECC	TH082	N/A	Y	Y	Y	N	N	N	Unknown
EA2N Array North	TH084	N/A	Y	Y	Y	N	N	N	Unknown
EA2N Array South	TH085	N/A	Y	Y	Y	N	N	N	Unknown
EA2N ECC	TH086	N/A	Y	Y	Y	N	N	N	Unknown
East Anglia THREE	HU212	N/A	Y	Y	Y	N	N	N	Unknown
East Anglia ONE	TH023	2018	Y	Y	Y	N	N	N	Yes
East Lytham	IS163	N/A	x	Y	N	N	N	N	Unknown
Eastbourne	DV040	<1982	Y	Y	N	N	N	N	Yes
Eastbourne Frontage	DV046	N/A	Y	Y	N	N	N	N	Unknown
Emerald Quay, R Adur	WI029	2022	N	Y	N	N	N	N	No
Erebus OWF Cable Site 1	LU167	2023	N	Y	N	N	N	N	No
Erebus OWF Cable Site 2	LU166	2023	N	Y	N	N	N	N	No
Erebus OWF Cable Site 3	LU165	2023	N	Y	N	N	N	N	No
Erebus OWF Cable Site 4	LU164	2023	N	Y	N	N	N	N	No
Erebus OWF Cable Site 5	LU163	2023	N	Y	N	N	N	N	No

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Erwarton Track	TH217	N/A	N	Y	N	N	N	N	Unknown
Eyemouth	FO080	N/A	Y	Y	Y	N	Y	Y	Unknown
Falmouth Bay (B)	PL075	N/A	N	Y	N	N	N	N	Unknown
Five Estuaries ECC	TH019	2025	Y	Y	Y	N	N	N	No
Five Estuaries N Array	TH017	2025	Y	Y	Y	N	N	N	No
Five Estuaries S Array	TH018	2025	Y	Y	Y	N	N	N	No
Foul Ground	JE001	N/A	N	Y	N	N	N	N	Unknown
Foula	FI100	N/A	Y	Y	Y	N	Y	Y	Unknown
Girvan	MA025	N/A	N	Y	N	N	N	N	Unknown
Goole Reach	HU041	N/A	Y	Y	Y	N	N	N	Unknown
Granton	FO054	N/A	Y	Y	Y	Y	Y	Y	Unknown
Great Yarmouth	HU150	<1982	Y	Y	Y	N	N	N	Yes
Greve dâ€™Azette	PO504	N/A	N	Y	N	N	N	N	Unknown
Gridlink East Site	TH156	2022	Y	Y	Y	N	N	N	No
Gridlink West Site	TH157	2022	Y	Y	Y	N	N	N	No

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Grimsby New Cut Drain	HU076	2025	Y	Y	Y	N	N	N	No
Grouville Bay	JE002	N/A	N	Y	N	N	N	N	Unknown
Harwich Haven	TH027	2014	Y	Y	Y	N	N	N	Yes
Hill Head	WI072	2016	Y	Y	N	N	N	N	Yes
Holme Channel Deep	HU056	N/A	Y	Y	Y	N	N	N	Unknown
Holyhead North	IS043	2017	N	Y	N	N	N	N	Yes
Hornsea 4 Array Area	HU226	2024	Y	Y	Y	N	N	N	No
Hornsea 4 ECC	HU225	2024	Y	Y	Y	N	N	N	No
Hornsea Disposal Area 1	HU205	2019	Y	Y	Y	N	N	N	Yes
Horsey	TH230	2020	Y	Y	Y	N	N	N	Yes
Hove Beach Nourishment Site	WI032	N/A	N	Y	N	N	N	N	Unknown
Humber 1a	HU080	<1982	Y	Y	Y	N	N	N	Yes
Humber 2	HU090	<1982	Y	Y	Y	N	N	N	Yes
Humber 3A	HU060	<1982	Y	Y	Y	N	N	N	Yes
Humber 4	HU030	<1982	Y	Y	Y	N	N	N	Yes

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Humber 4B/HOOK	HU020	<1982	Y	Y	Y	N	N	N	Yes
Humber 4B/Hook Extension	HU021	N/A	Y	Y	Y	N	N	N	Unknown
Hurst Fort	WI080	<1982	Y	Y	Y	N	N	N	Yes
Iceni Disposal 1	HU218	2020	Y	Y	Y	N	N	N	Yes
Iceni Disposal 2	HU219	2020	Y	Y	Y	N	N	N	Yes
Iceni Disposal 3	HU220	N/A	Y	Y	Y	N	N	N	Unknown
Iceni Disposal 4	HU221	N/A	Y	Y	Y	N	N	N	Unknown
Iceni Disposal 5	HU222	N/A	Y	Y	Y	N	N	N	Unknown
Inner Gabbard	TH052	N/A	Y	Y	Y	N	N	N	Unknown
Inner Gabbard East	TH056	N/A	Y	Y	Y	N	N	N	Unknown
Island Marina	WI068	2022	N	Y	N	N	N	N	No
Kilkeel	IS650	N/A	N	Y	N	N	N	N	Unknown
Kirkcudbright	MA012	N/A	N	Y	N	N	N	N	Unknown
Langstone Harbour	WI063	2021	Y	Y	N	N	N	N	Yes
Lantic Bay	PL060	N/A	N	Y	N	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Levington Creek	TH232	N/A	Y	Y	Y	N	N	N	Unknown
Levington Site 1	TH225	2019	Y	Y	Y	N	N	N	Yes
Levington Site 2	TH226	2019	Y	Y	Y	N	N	N	Yes
Levington Site 3	TH227	2019	Y	Y	Y	N	N	N	Yes
Levington Site 4	TH228	2019	Y	Y	Y	N	N	N	Yes
Loders Cut Island 2	TH028	N/A	Y	Y	Y	N	N	N	Unknown
Lossiemouth	MA090	N/A	Y	Y	Y	Y	Y	N	Unknown
Lossiemouth Harbour	CR034	N/A	Y	Y	Y	Y	Y	N	Unknown
Lowestoft Circular North	TH005	N/A	Y	Y	Y	N	N	N	Unknown
Lowestoft Marina Temporary Disposal Site	TH011	N/A	N	Y	N	N	N	N	Unknown
Lune River B	IS192	2021	N	Y	N	N	N	N	Yes
Lydd Ranges	DV031	2021	Y	Y	N	N	N	N	Yes
Lyme Bay 2	PO050	2020	N	Y	N	N	N	N	Yes
Macduff	CR050	N/A	Y	Y	Y	Y	Y	N	Unknown
Maldon Saltings 3	TH064	N/A	Y	Y	Y	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Marchwood Shiplift Disposal Area	WI076	N/A	N	Y	N	N	N	N	Unknown
Mercator Disposal	TH081	N/A	N	Y	N	N	N	N	Unknown
Merker Buoy	LU115	N/A	N	Y	N	N	N	N	Unknown
Mersey (Garston Site)	IS110	N/A	N	Y	N	N	N	N	Unknown
Mersey (Liverpool Marina)	IS129	2020	N	Y	N	N	N	N	Yes
Mersey (Mid-river Site)	IS120	N/A	N	Y	N	N	N	N	Unknown
Methil	FO048	N/A	Y	Y	Y	Y	Y	Y	Unknown
Middle Bank (Tay)	FO028	N/A	Y	Y	Y	N	N	N	Unknown
Milford Haven Three	LU169	1998	N	Y	N	N	N	N	Yes
Milford Haven Two	LU168	N/A	N	Y	N	N	N	N	Unknown
Milford-On-Sea Beach	WI083	2022	Y	Y	N	N	N	N	No
Montrose	FO010	<1982	Y	Y	Y	Y	Y	Y	Yes
Morecambe Bay B	IS200	<1982	N	Y	N	N	N	N	Yes
Morecambe Bay: Lune Deep	IS170	<1982	N	Y	N	N	N	N	Yes
Morgan and Morecambe OWFs	IS156	2025	N	Y	N	N	N	N	Yes

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Mostyn Breakwater	IS103	2020	N	Y	N	N	N	N	Yes
Mostyn Deep (Maintenance)	IS102	N/A	N	Y	N	N	N	N	Unknown
Mounts Bay	PL100	<1982	N	Y	N	N	N	N	Yes
Nab Tower	WI060	<1982	Y	Y	N	N	N	N	Yes
Narrow Deep B	FO038	N/A	Y	Y	Y	Y	Y	Y	Unknown
Needles	WI090	<1982	Y	Y	N	N	N	N	Yes
Nemo Disposal Site A	TH150	N/A	Y	Y	N	N	N	N	Unknown
Nemo Disposal Site B	TH151	N/A	Y	Y	N	N	N	N	Unknown
Neuconnect Disposal Site 1	TH059	N/A	Y	Y	Y	N	N	N	Unknown
Neuconnect Disposal Site 2	TH067	N/A	Y	Y	Y	N	N	N	Unknown
Neuconnect Disposal Site 3	TH074	N/A	Y	Y	Y	N	N	N	Unknown
Neuconnect Lower Mid Site	TH069	N/A	Y	Y	Y	N	N	N	Unknown
Neuconnect North Site	HU224	N/A	Y	Y	Y	N	N	N	Unknown
Neuconnect South Site	TH068	N/A	Y	Y	Y	N	N	N	Unknown
Neuconnect Upper Mid Site	TH074	N/A	Y	Y	Y	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
New Quay Track	IS015	N/A	N	Y	N	N	N	N	Unknown
New South Beach	IS021	N/A	N	Y	N	N	N	N	Unknown
Newhaven	WI010	N/A	N	Y	N	N	N	N	Unknown
Newport	LU140	<1982	N	Y	N	N	N	N	Yes
Newtown Harbour	WI069	2021	Y	Y	N	N	N	N	Yes
Neyland (Off Milford Haven)	LU190	<1982	N	Y	N	N	N	N	Yes
Norfolk Boreas Array	HU217	N/A	Y	Y	Y	N	N	N	Unknown
Norfolk Vanguard East	HU215	N/A	Y	Y	Y	N	N	N	Unknown
Norfolk Vanguard ECC 1	HU213	N/A	Y	Y	Y	N	N	N	Unknown
Norfolk Vanguard ECC 2	HU214	N/A	Y	Y	Y	N	N	N	Unknown
Norfolk Vanguard West	HU216	N/A	Y	Y	Y	N	N	N	Unknown
North Buchan Ness	CR080	N/A	Y	Y	Y	Y	Y	Y	Unknown
North Tyne	TY070	<1982	Y	Y	Y	N	Y	N	Yes
Northey Island	TH058	2019	Y	Y	Y	N	N	N	Yes
Noses Point	TY130	<1982	Y	Y	Y	N	Y	N	Yes

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Outer Dowsing Offshore Wind (ODOW) Array Area	HU230	N/A	Y	Y	Y	N	N	N	Unknown
ODOW Transmission 1	HU227	N/A	Y	Y	Y	N	N	N	Unknown
ODOW Transmission 2	HU228	N/A	Y	Y	Y	N	N	N	Unknown
ODOW Transmission 3	HU229	N/A	Y	Y	Y	N	N	N	Unknown
Oldfleet Drain	HU075	2024	Y	Y	Y	N	N	N	No
Orwell East Track	TH219	N/A	Y	Y	Y	N	N	N	Unknown
Orwell West Track	TH218	N/A	Y	Y	Y	N	N	N	Unknown
Orwell Yacht Club	TH032	2018	Y	Y	Y	N	N	N	Yes
Oxcars Ext A	FO042	N/A	Y	Y	Y	Y	Y	Y	Unknown
Oxcars Ext B	FO043	N/A	Y	Y	Y	Y	Y	Y	Unknown
Oxcars Main	FO041	N/A	Y	Y	Y	Y	Y	Y	Unknown
Padstow Bay	LU010	<1982	N	Y	N	N	N	N	Yes
Peel (Isle of Man)	IS420	N/A	N	Y	N	N	N	N	Unknown
Pegwell Bay	TH140	<1982	Y	Y	N	N	N	N	Yes
Peterhead Harbour	CR071	N/A	Y	Y	Y	Y	Y	Y	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Plymouth Deep	PL035	2017	N	Y	N	N	N	N	Yes
Port Ellen	MA030	N/A	N	Y	N	N	N	N	Unknown
Portavogie	IS620	N/A	N	Y	N	N	N	N	Unknown
Portishead	LU070	<1982	N	Y	N	N	N	N	Yes
Portland Harbour Deep Water Relocation	PO112	N/A	N	Y	N	N	N	N	Unknown
Putney Embankment	TH096	2022	Y	Y	Y	N	N	N	No
Rame Head South	PL031	N/A	N	Y	N	N	N	N	Unknown
Rampion 2 Array	WI118	N/A	N	Y	N	N	N	N	Unknown
Rampion 2 Export Corridor	WI120	N/A	N	Y	N	N	N	N	Unknown
Reedham Marina	HU159	2014	Y	Y	Y	N	N	N	Yes
River Carron	FO053	N/A	Y	Y	Y	Y	Y	Y	Unknown
River Dee	MA110	N/A	N	Y	N	N	N	N	Unknown
River Hamble Site 1	WI073	2021	N	Y	N	N	N	N	Yes
River Hamble Site 2	WI074	2021	N	Y	N	N	N	N	Yes
River Orwell (Associated British Ports)	TH034	N/A	Y	Y	Y	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
River Winster ETW	IS186	2025	N	Y	N	N	N	N	No
River Winster WTW	IS185	2025	N	Y	N	N	N	N	No
Rothesay Bay	MA016	N/A	N	Y	N	N	N	N	Unknown
Royal Edward Entrance	LU085	N/A	N	Y	N	N	N	N	Unknown
Royal Portbury Pier	LU084	N/A	N	Y	N	N	N	N	Unknown
Ryde Harbour	WI071	N/A	N	Y	N	N	N	N	Unknown
Scarborough Rock	TY190	<1982	N	Y	Y	N	Y	N	Yes
Seaton	PO026	2019	N	Y	Y	N	N	N	Yes
Shell Lagoon, Llanbedr	IS018	N/A	N	Y	N	N	N	N	Unknown
Shoreham	WI031	N/A	N	Y	N	N	N	N	Unknown
Shotley Marina	TH231	2024	N	Y	Y	N	N	N	No
Silloth B	IS251	N/A	N	Y	N	N	N	N	Unknown
Site Y	IS150	<1982	N	Y	N	N	N	N	Yes
Site Z	IS140	N/A	N	Y	N	N	N	N	Unknown
Solway Firth	IS240	<1982	N	Y	N	N	N	N	Yes

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Souter Point (Outer)	TY081	<1982	Y	Y	Y	N	N	N	Yes
South Falls	TH070	<1982	Y	Y	Y	N	N	N	Yes
Spending Harbour	IS016	N/A	N	Y	N	N	N	N	Unknown
Sprey Point	PO070	<1982	N	Y	N	N	N	N	Yes
St Bredlades Bay	PO503	N/A	N	Y	N	N	N	N	Unknown
St.Aubins	PO501	N/A	N	Y	N	N	N	N	Unknown
Sunderland	TY090	<1982	Y	Y	Y	N	Y	N	Yes
Sutors	CR019	<1982	Y	Y	Y	Y	Y	N	Yes
Swanage Bay	WI110	<1982	Y	Y	N	N	N	N	Yes
Swansea Bay (Outer)	LU130	<1982	N	Y	N	N	N	N	Yes
Tanybwlch beach	IS012	2025	N	Y	N	N	N	N	No
Tees Bay A	TY160	<1982	Y	Y	Y	N	Y	N	Yes
Tees Bay C	TY150	<1982	Y	Y	Y	N	Y	N	Yes
Tees Upriver	TY157	2021	Y	Y	Y	N	Y	N	Yes
Teesport dock and Tees Container Terminal	TY158	2021	Y	Y	Y	N	Y	N	Yes

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
Thanet Extension Offshore Wind (TEOW) Disposal Site 1	TH153	N/A	Y	Y	N	N	N	N	Unknown
TEOW Disposal Site 2	TH154	N/A	Y	Y	N	N	N	N	Unknown
TEOW Disposal Site 3	TH155	N/A	Y	Y	N	N	N	N	Unknown
Tilbury Tunnel outfall	TH099	2022	Y	Y	Y	N	N	N	No
Traeth Crugan 1	IS023	N/A	Y	Y	Y	N	N	N	Unknown
Traeth Crugan 2	IS024	N/A	Y	Y	Y	N	N	N	Unknown
Treloar Hole	WI046	N/A	N	Y	N	N	N	N	Unknown
Truro	PL069	N/A	N	Y	N	N	N	N	Unknown
Ventnor Harbour	WI087	2016	N	Y	N	N	N	N	Yes
Warrenpoint B	IS671	N/A	N	Y	N	N	N	N	Unknown
Well Beneficial Use Site2	HU156	N/A	Y	Y	Y	N	N	N	Unknown
Wells Outer Harbour B1	HU157	N/A	Y	Y	Y	N	N	N	Unknown
Wells Outer Harbour Site A	HU152	N/A	Y	Y	Y	N	N	N	Unknown
Wells Outer Harbour Site C	HU154	N/A	Y	Y	Y	N	N	N	Unknown
Werrar Marsh	WI119	N/A	N	Y	N	N	N	N	Unknown

Name of Project	Reference	Opened	HP-NS MU[1]	CGNS MU[2]	GNS MU[3]	CES MU[4]	GS MUs[5]	HS MUs[6]	Operational Prior to Baseline Surveys in 2022
West Balnapaling	IS320	N/A	N	Y	N	N	N	N	Unknown
West Beach	PO016	2022	N	Y	N	N	N	N	No
West Cliff Beach	PO015	2022	N	Y	N	N	N	N	No
West Stones	HU143	N/A	Y	Y	Y	N	N	N	Unknown
Weston Foreshore 3	LU193	N/A	N	Y	N	N	N	N	Unknown
Whitby	TY180	<1982	Y	Y	Y	N	Y	N	Yes
Whitgift Bight (River Ouse)	HU040	<1982	Y	Y	Y	N	Y	N	Yes
Whitstable C	TH073	N/A	Y	Y	Y	N	N	N	Unknown
Workington Anchorage	IS241	N/A	N	Y	N	N	N	N	Unknown
Wrabness Beach	TH213	2020	Y	Y	Y	N	N	N	Yes
Wrabness Beach East	TH229	2020	Y	Y	Y	N	N	N	Yes

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[3] BND GNS MU = Bottlenose dolphin Greater North Sea Management Unit.

[4] BND CES MU = Bottlenose dolphin Coastal East Scotland Management Unit.

[5] GS MU = Grey seal Management Unit.

[6] HS MUs = Harbour seal Management Unit.

4.2.5 Oil and Gas

106. Existing oil and gas projects were considered to be part of the baseline, noting that O&M activities would be of minimal magnitude, spatially confined and temporary. Oil and gas construction and decommissioning projects could have the potential for cumulative impacts during the construction at the Bellrock Wind Farm Infrastructure. UK plans or projects considered during the CEA screening were either operational or those with either construction or decommissioning currently underway, consented, or with an application submitted.

107. No European projects were assessed, due to a lack of information on project locations, phases, and programme. Projects were initially considered for potential cumulative impacts if those projects could temporally overlap with the construction at the Bellrock Wind Farm Infrastructure.

108. There was limited information on the level of noise arising from cutting equipment. However, one published study measured the level of noise from a diamond wire cutter at an offshore gas platform (Pangerc et al. 2016). The results indicated that increases in noise of between 4 dB and 15 dB at frequencies predominantly above 5 kHz could be attributed to the cutting equipment. There was no increase in sound above that from the associated vessels detected at lower frequencies.

109. A more recent paper by Fernandez- Betelu et al. (2024) investigated HP responses, using echolocation detectors (C-PODs), during the decommissioning of the Jacky Wellhead oil and gas platform and the Beatrice Bravo oil and gas platform. The mean daily SPL increased by 30-40 dB (in the frequency range from 100 Hz to 48 kHz) during decommissioning compared to the five days before. During decommissioning activities, small levels of HP was displaced less than 2 km but returned immediately after vessel departure.

110. Based on information available at the time of assessment, underwater noise during decommissioning of oil and gas infrastructure would be less than levels for PTS to occur (e.g. a 5-day average of 108.3 dB re 1 µPa before decommissioning activities to 141.0 dB re 1 µPa during decommissioning activities; Fernandez- Betelu et al. 2024), and any disturbance to marine mammals would be localised and not be significantly greater than that arising from vessels. Therefore, potential cumulative impacts from oil and gas decommissioning activities, such as cutting equipment have been screened out from further consideration in the CEA.

111. The potential impacts of vessels associated with the decommissioning of oil and gas infrastructure are unlikely to be significantly greater than vessel activity during the operational phase. Therefore, potential cumulative impacts from vessels during decommissioning of oil and gas installations have been screened out from further consideration in the CEA.

112. Of the oil and gas projects considered, the majority are decommissioning schemes that were active prior to the March 2022 baseline surveys. A small number do not have construction dates that overlap with the Bellrock Wind Farm Infrastructure construction window. These projects were therefore screened out. Of the remaining decommissioning schemes, only a small number have expected activities that potentially fall within the construction time window at the Bellrock Wind Farm Infrastructure. However, as noted above, it is not expected that there would be any cumulative effect pathways from decommissioning projects, and these have therefore not been considered further. The results of the oil and gas project screening are presented in **Table 4.5**.

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Table 4.5: Cumulative Effects Assessment Screening for Oil and Gas Schemes (Both Decommissioning and Production Schemes are Included) Within Relevant Spatial Areas and with the Potential to Overlap with the Projects Construction (2030 – 2037)

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU[6]	HS MU[7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Tier 1										
Alma & Galia	Decommissioning	Underway	Y	Y	Y	N	Y	N	2021 - 2027	No, included in baseline
Amethyst A1D, A2D, B1D & C1D Topsides	Decommissioning	Underway	Y	Y	Y	N	N	N	2021 - 2026	No, included in baseline
Anglia Field	Decommissioning	Underway	Y	Y	Y	N	N	N	2020 - 2022	No, included in baseline
Ann and Alison	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2020 - 2023	No, included in baseline
Audrey	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2019 - 2023	No, included in baseline
Balmoral	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2021 - 2027	No, included in baseline
Brae Bravo Topsides, Flare Bridge, Flare Tower and Flare Jacket and Substructure	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	2019 - 2020	No, included in baseline
Brenda	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2021 - 2027	No, included in baseline
Brent Alpha Jacket	Decommissioning	Underway	Y	Y	Y	N	N	N	2018 - 2025	No, included in baseline
Brent Alpha, Bravo and Charlie Topsides	Decommissioning	Underway	Y	Y	Y	N	N	N	2018 - 2024	No, included in baseline
Brent Field	Decommissioning	Underway	Y	Y	Y	N	N	N	2020 - 2024	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Brynhild	Decommissioning	Underway/ completed	Y	Y	N	N	N	N	2019 - 2021	No, included in baseline
Buchan & Hannay	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2019 - 2025	No, included in baseline
Caister	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2022	No, included in baseline
Cavendish	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2022	No, included in baseline
Conrie, Don SW, W Don and Ythan Decommissioning Programmes	Decommissioning	Underway	Y	Y	Y	N	N	N	2021 - 2029	No, included in baseline
Cormorant Alpha Derrick Structure Removal & MDR Installation	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	2020 - 2021	No, included in baseline
Curlew B&D and Curlew C	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2019 - 2023	No, included in baseline
Devenick	Decommissioning	Underway	Y	Y	Y	N	N	N	2024 - 2030	No, included in baseline
Dunlin Alpha	Decommissioning	Underway	Y	Y	Y	N	N	N	2016 - 2026	No, included in baseline
Eider	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2028	No, included in baseline
Foinaven FPSO Offstation Decommissioning Programmes	Decommissioning	Underway	Y	Y	N	N	N	N	2021 - 2022	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Fulmar & Auk North	Decommissioning	Underway/ completed	Y	Y	Y	N	Y	N	2017 - 2021	No, included in baseline
Glamis	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2021 - 2027	No, included in baseline
Goldeneye	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2018 - 2024	No, included in baseline
Guinevere	Decommissioning	Underway	Y	Y	Y	N	N	N	2018 - 2022	No, included in baseline
Heather Topsides Decommissioning Programme	Decommissioning	Underway	Y	Y	Y	N	N	N	2021 - 2026	No, included in baseline
Huntington	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2021 - 2028	No, included in baseline
Juliet	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2021	No, included in baseline
Ketch	Decommissioning	Underway	Y	Y	Y	N	N	N	2018 - 2022	No, included in baseline
Kingfisher Decommissioning Programme	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2024	No, included in baseline
Lincolnshire Offshore Gas Gathering System (LOGGS) PR, LOGGS PC, LOGGS PP, LOGGS PA, North Valiant PD, & Associated Pipelines – LDP5	Decommissioning	Underway	Y	Y	N	N	N	N	2020 - 2024	No, included in baseline
LOGGS Satellites Jupiter Area	Decommissioning	Underway	Y	Y	N	N	N	N	2020 - 2023	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
LOGGS Satellites Jupiter Area: LDP3b	Decommissioning	Underway/ completed	Y	Y	N	N	N	N	2020 - 2021	No, included in baseline
LOGGS Satellites Vulcan UR, Viscount VO, Vampire OD-LDP1	Decommissioning	Underway/ completed	Y	Y	N	N	N	N	1988 - 2018	No, included in baseline
MacCulloch	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2019 - 2025	No, included in baseline
Minke	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2022	No, included in baseline
Nevis N11 Wellhead	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	2019 - 2020	No, included in baseline
Nicol	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2021 - 2027	No, included in baseline
Ninian Northern Platform	Decommissioning	Underway	Y	Y	Y	N	N	N	2020 - 2025	No, included in baseline
North Cormorant	Decommissioning	Underway	Y	Y	N	N	N	N	2020 - 2028	No, included in baseline
Northern Producer FPF Float-off and Disconnection of Risers and pipelines	Decommissioning	Underway	Y	Y	N	N	N	N	2021 - 2022	No, included in baseline
Pickerill Alpha (A) and Pickerill Bravo (B)	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2022	No, included in baseline
Pickerill Alpha (A) and Pickerill Bravo (B)	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	2018 - 2019	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
PL301 Heimdal to Brae Pipeline Decommissioning Programme	Decommissioning	Underway	Y	Y	Y	Y	N	N	2021 - 2026	No, included in baseline
Rev Decommissioning Programme	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2022	No, included in baseline
Rockrose Energy	Decommissioning	Underway	Y	Y	N	N	N	N	2019 - 2027	No, included in baseline
Rockrose Energy	Decommissioning	Underway	Y	Y	N	N	N	N	2020 - 2021	No, included in baseline
Saturn (Annabel)	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	2018 - 2021	No, included in baseline
Schooner	Decommissioning	Underway	Y	Y	Y	N	N	N	2018 - 2022	No, included in baseline
Stirling	Decommissioning	Underway	Y	Y	Y	N	Y	Y	2021 - 2027	No, included in baseline
Tern Topside	Decommissioning	Underway	Y	Y	Y	N	N	N	2020 - 2028	No, included in baseline
Thistle Alpha Platform	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2022	No, included in baseline
Topaz	Decommissioning	Underway	Y	Y	Y	N	N	N	2021 - 2024	No, included in baseline
TYNE	Decommissioning	Underway	Y	Y	Y	N	N	N	2018 - 2022	No, included in baseline
Viking	Decommissioning	Underway	Y	Y	Y	N	N	N	2016 - 2024	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Viking Satellites CD, DD, ED, GD, HD Pipelines	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	Programme states TBC by end of 2019 (but no close out report)	No, included in baseline
Viking satellites KD, LD, AR	Decommissioning	Underway/ completed	Y	Y	Y	N	N	N	2016 - 2021	No, included in baseline
Windermere	Decommissioning	Underway	Y	Y	Y	N	N	N	2019 - 2023	No, included in baseline
Abigail Field Development	Production licence	Application submitted	Y	Y	Y	N	Y	Y	Application submitted July 2021/Construction 2022 & 2024	No, no pathways expected
Affleck Re-development	Production licence	Application submitted	Y	Y	Y	N	Y	N	Construction Q2 2023-Q2 2024	No, no pathways expected
Alwyn East Development	Production licence	Application submitted	Y	Y	Y	N	N	N	Construction spring 2022, completion by September 2022	No, no pathways expected
Banff and Kyle Decommissioning Programmes	Decommissioning	Approved	Y	Y	Y	N	Y	Y	2022 - 2026	No, no pathways expected

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Beatrice	Decommissioning	Approved	Y	Y	Y	Y	Y	N	2022 - 2030	Yes, however the noise and disturbance levels were not considered to have a cumulative effect and were therefore screened out.
Caledonia	Decommissioning	Approved	Y	Y	Y	N	Y	Y	2022 - 2028	No, included in baseline
Captain EOR Stage 2 Phase II Development	Production licence	Unknown	Y	Y	Y	N	N	N	Construction Q1 2023-Q2 2024	No, no pathways expected
CDP3 Decommissioning Programmes for Murdoch Installations and Trunk Pipelines, CDP3	Decommissioning	Consented	Y	Y	Y	N	N	N	2021 - 2027	No, included in baseline
Chestnut Phase 2	Decommissioning	Unknown	Y	Y	Y	N	Y	Y	2022 - 2029	Yes, however the noise and disturbance levels were not considered to have a cumulative effect and were therefore screened out.
Cormorant Alpha Topsides	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2028	No, included in baseline
Decommissioning Programmes Caister-Murdoch System III Installations for and Pipelines, CDP2	Decommissioning	Consented	Y	Y	Y	N	N	N	Construction Q1 2021-Q4 2027	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Ensign installation DP	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2026	No, included in baseline
Fulmar and Auk North Topsides, Subsea Facilities and Pipelines Decommissioning Programme	Decommissioning	Approved	Y	Y	Y	N	Y	N	2026 - 2033	Yes, however the noise and disturbance levels were not considered to have a cumulative effect and were therefore screened out.
Gaupe Decommissioning Programme	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2031	
Heather Upper Jacket	Decommissioning	Unknown	Y	Y	Y	Y	N	N	2025 - 2032	
Hewett Platforms	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2029	No, included in baseline
Hummingbird FPSO Sailaway and Chestnut riser disconnection	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2028	No, included in baseline
Hunter & Rita Decommissioning Programme	Decommissioning	Approved	Y	Y	Y	N	N	N	2021 - 2025	No, included in baseline
Indefatigable 18A Topsides Decommissioning Programme	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2029	No, included in baseline
Jackdaw Field Development	Production licence	Unknown	Y	Y	Y	N	Y	Y	Unknown	No, no pathways expected
Jacky	Decommissioning	Approved	Y	Y	Y	Y	Y	N	2022 - 2023	No, included in baseline

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Leman 27H and 27J Topsides	Decommissioning	Unknown	Y	Y	Y	N	N	N	2023 - 2024	No, no pathways expected
LOGGS Satellites-Mimas MN, Saturn ND and Tethys TN, and Associated Infield Pipelines – LDP2	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2028	No, included in baseline
LOGGS Satellites V-Fields Area-Vanguard QD, North Valiant SP, South Valiant TD and Vulcan RD, and Associated Infield Pipelines-LDP4	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2027	No, included in baseline
Murlach Field Development (redevelopment of Skua, part of the Marnock-Skua field)	Production licence	Approved	Y	Y	N	N	N	N	Well drill 2024/production 2025	No, no pathways expected
Rhum Production Increase	Production increase	Approved	Y	Y	Y	Y	N	N	Re-opening a production well only- no additional infrastructure to be built - planned to commence in July 2021, but not yet consented	No, no pathways expected
Rosebank Field Development	Production licence	Unknown	Y	Y	Y	N	N	N	Unknown	No, no pathways expected

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Sean	Decommissioning	Approved	Y	Y	Y	N	N	N	2023 - 2028	No, no pathways expected
Southwark Pipeline Installation Project	Pipeline installation	Application submitted	Y	Y	Y	N	N	N	Application submitted April 2021/Construction originally planned for 2021, but not yet consented	No, no pathways expected
Talbot Field Development	Production licence	Application submitted	Y	Y	Y	N	Y	Y	Construction Q4 2022 - Q3 2024	No, no pathways expected
Teal West Development	Production licence	Approved	Y	Y	Y	N	Y	Y	Construction Q3 2023 - Q1/Q2 2027	No, no pathways expected
Thistle Topsides	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2027	No, included in baseline
Tolmount East Development	Production licence	Approved	Y	Y	Y	N	N	N	Application submitted April 2021, and consented August 2021. operational by 2023	No, no pathways expected
Victoria	Decommissioning	Approved	Y	Y	Y	N	N	N	2022 - 2025	No, included in baseline
Victory Field Development	Production licence	Approved	Y	Y	Y	N	N	N	Construction May-Oct 2024	No, no pathways expected

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Wenlock	Decommissioning	Approved	Y	Y	Y	N	N	N	2023 - 2025	No, no pathways expected
Atlantic and Cromarty	Decommissioning	Application submitted	Y	Y	Y	N	Y	Y	2017 - 2021	No, included in baseline
Avalon	Production licence	Application submitted	Y	Y	N	N	N	N	Construction Q1 2024, completion by Q3 2025	No
Brae Alpha, Brae Bravo, Central Brae, West Brae and Sedgwick	Decommissioning	Application submitted	Y	Y	Y	N	N	N	2019 - 2029	No, included in baseline
Brent	Decommissioning	Application submitted	Y	Y	Y	N	N	N	2022 - 2026	No, included in baseline
Buchan redevelopment	Production licence	Application submitted	Y	Y	Y	N	Y	Y	Drilling Q2 2025-Q4 2026; Commissioning Q2-Q4 2026; Operations Q4 2026	No, no pathways expected
Cambo Phase 1 Field Development	Production licence	Application submitted	Y	Y	N	N	N	N	Application submitted June 202/construction planned for 2021-2025 (but not yet consented), operational by 2025	No, no pathways expected

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Causeway and Fionn	Decommissioning	Application submitted	Y	Y	Y	N	N	N	2022 - 2027	No, included in baseline
Duart Decommissioning Programmes	Decommissioning	Application submitted	Y	Y	Y	N	N	N	Decommissioning 2029 - 2034	No, insufficient information
Dunlin Alpha Field	Decommissioning	Application submitted	Y	Y	Y	N	N	N	2021 - 2026	No, included in baseline
Hewett Area Subsea Installations	Decommissioning	Application submitted	Y	Y	Y	N	N	N	2022 - 2028	No, included in baseline
Johnston Decommissioning Programmes	Decommissioning	Application submitted	Y	Y	Y	N	N	N	Decommissioning 2027 - 2029	Yes, however the noise and disturbance levels were not considered to have a cumulative effect and were therefore screened out.
Lancaster Field FPSO Decommissioning Programme	Decommissioning	Application submitted	Y	Y	Y	N	N	N	Decommissioning 2024	No, no pathways expected
Pegasus West Development	Production licence	Application submitted	Y	Y	N	N	N	N	Application submitted October 2021/construction Q2/3 2023, operational by Q1-3 2024	No, no pathways expected

Name of Project	Type of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MU [6]	HS MU [7]	Expected Date of Activity	Potential for Overlap of Oil and Gas Activities with Bellrock WFDA Construction[8]
					GNS MU[4]	CES MU[5]				
Saltire A Topsides and Saltire Area Subsea Infrastructure Decommissioning Programmes	Decommissioning	Application submitted	Y	Y	Y	N	N	N	Decommissioning 2027 - 2031	No, insufficient information
Scoter & Merganser Fields Decommissioning Programmes	Decommissioning	Application submitted	Y	Y	Y	N	Y	Y	Decommissioning 2024 - 2026	No, no pathways expected
Tartan Subsea – Tartan North Terrace & Tartan Satellite decommissioning programmes	Decommissioning	Application submitted	Y	Y	Y	N	Y	Y	Decommissioning 2029 - 2034	No, insufficient information
Tartan Topsides Decommissioning Programme	Decommissioning	Application submitted	Y	Y	Y	N	Y	Y	Decommissioning 2029 - 2032	No, insufficient information

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit.

[3] BND = Bottlenose dolphin.

[4] GNS MU = Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[5] CES MU = Coastal East Scotland Management Unit.

[6] GS MU = Grey seal Management Unit.

[7] HS MU = Harbour seal Management Unit.

[8] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

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4.2.6 Subsea Cables and Pipelines

113. Subsea cables that were operational, had construction underway, were consented, or had a planning application submitted were part of the initial screening process. Existing projects prior to the baseline surveys (March 2022) have been considered as part of the baseline. Only those subsea cables and pipelines with potential to contribute to cumulative impacts with the Bellrock Wind Farm Infrastructure during their construction phase have been considered in the CEA.

114. Of the subsea cable projects initially identified in the screening, many had project timelines available in the public domain but that did not overlap with the Bellrock Wind Farm Infrastructure construction and were therefore not considered further. For all other projects where dates were unknown, the project status was derived from the 4C Offshore website, and it was concluded that these projects that were 'commissioned', 'pre-construction', or 'under construction' would have finalised all construction activities prior to the commencement of construction at the Bellrock Wind Farm Infrastructure. Some projects had unknown timelines as the project was halted or an application is to be expected prior to Bellrock Wind Farm Infrastructure construction in 2031. Two projects (Eastern Green Link 3 and 4) have the potential to overlap with Bellrock Wind Farm Infrastructure construction, as construction is anticipated to commence in 2028. However, both projects are still in early development (Tier 2) and current timelines may change over time. As such, the projects are screened out at the current stage due to a lack of information.

115. Therefore, all subsea cables have been screened out from the CEA. The results of the CEA screening for subsea cables are in **Table 4.6**.

116. This section also includes the screening results of all pipelines that are classed as 'active' in the CEA Screening area. The methodology for this involved retrieving data from the NSTA (UK continental shelf (UKCS) Lease Agreements) website (provided via an ArcGIS (Graphic Information System) viewer). The data for all 'NSTA Offshore Infrastructure Pipelines Linear' was filtered for pipeline as type of infrastructure that had the status of 'active'. The filtered list returned 1,044 entries of which only 353 had known start dates, ranging between the years 1977-2023.

117. Due to the large number of entries in the search results and the absence of known construction start dates for the pipelines, the results were not included in this report and are also screened out from the CEA.

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Table 4.6: Cumulative Effects Assessment Screening for Subsea Cables and Pipelines Within Relevant Spatial Areas and with the Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
Atlantic Crossing-1	Brookhaven, US	Whitesands Bay, UK; Sylt, DE; Beverwijk, NL	Y	Y	Y	N	N	N	1998	No, included in baseline
Aminth Energy Interconnector	Mablethorpe, UK	Danish Energy Island, UK	Y	Y	Y	N	N	N	2032	Yes, but project is a Tier 2 and timelines may change.
BT Highlands and Islands	Orkney, UK	Orkney, UK	Y	Y	Y	N	N	N	2014	No, included in baseline
Caithness Moray	Noss Head, UK	Tannachy, UK	Y	Y	Y	Y	Y	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Circe North	Lowestoft, UK	Zandvoort, NL	Y	Y	Y	N	N	N	1999	No, included in baseline
Circe South	Pevensey Bay, UK	Cayeux-sur-Mer, FR	Y	Y	Y	N	N	N	1999	No, included in baseline
Concerto	Sizewell, UK	Zandvoort, NL; Zeebrugge, BE	Y	Y	Y	N	N	N	1999	No, included in baseline
Continental Link Multi-Purpose Interconnector	Holderness Coast, UK	NO	Y	Y	Y	N	N	N	2030-2035	Yes, but project is Tier 2 and timelines may change.
Cromarty Firth	Skye, UK	Harris, UK	Y	Y	Y	Y	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
CrossChannel Fibre	Brighton, UK	Veules-les-Roses, FR	Y	Y	Y	N	N	N	2021	No, included in baseline
Eastern Green Link 1	East Lothian, UK	County Durham, UK	Y	Y	Y	Y	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Eastern Green Link 2	Peterhead, UK	Drax, UK	Y	Y	Y	Y	N	N	2029	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Eastern Green Link 3	Peterhead, UK	Aberdeenshire, UK	Y	Y	N	Y	N	N	After 2033	Yes, but project is a Tier 2 and timelines may change.
Eastern Green Link 4	Fife, UK	Norfolk, UK	Y	Y	Y	Y	N	N	After 2033	Yes, but project is a Tier 2 and timelines may change.
Eday-Sanday	Eday, UK	Sanday, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Eday-Westray	Eday, UK	Westray, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
ElecLink	Folkestone, UK	Les Mandarins, FR	Y	Y	Y	N	N	N	2022	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Farland North	Aldeburgh, UK	Domburg, NL	Y	Y	Y	Y	N	N	1998	No, included in baseline

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
Gridlink	Kingsnorth, UK	Dunkerque, FR	Y	Y	Y	N	N	N	Halted since 2022	Unknown
Havfrue/AEC-2	Wall Township, US	Blaabjerg, DK; Lecanvey, IS	Y	Y	Y	N	N	N	2020	No, included in baseline
Havhingsten/North Sea Connect (NSC)	Newcastle, UK	Houstrup, DK	Y	Y	Y	N	Y	N	2022	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Hoy-Flotta	Hoy, UK	Flotta, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Hoy-Orkney Mainland (centre)	Hoy, UK	Orkney, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Hoy-Orkney Mainland (north)	Hoy, UK	Orkney, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Hoy-Orkney Mainland (south)	Hoy, UK	Orkney, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Iceni	Winterton-on-Sea, UK	Callantsoog, NL	Y	Y	Y	N	N	N	2024	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
Interconnexion France-Angleterre 2	Merville, FR	Monks Hill Beach, UK	Y	Y	Y	N	N	N	2021	No, included in baseline
IOEMA	Dumpton Gap, UK	DK, NL, NO, DE	Y	Y	Y	N	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Mainland Orkney- Hoy (Centre) Replacement Cable	Orkney, UK	Hoy, UK	Y	Y	Y	N	N	N	Pre-construction	No, construction assumed to be completed prior to Bellrock Wind Farm Infrastructure construction
Mainland Orkney- Hoy (North) Replacement Cable	Orkney, UK	Hoy, UK	Y	Y	Y	N	N	N	Pre-construction	No, construction assumed to be completed prior to Bellrock Wind Farm Infrastructure construction
Mercator	Broadstairs, UK	Ostend, BE	Y	Y	Y	N	N	N	2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Mossbank-Yell North	Mossbank, UK	Yell, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Mossbank-Yell South	Mossbank, UK	Yell, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
Nautilus Interconnector	Suffolk, UK	BE	Y	Y	Y	N	N	N	Application expected to be submitted 2024	Unknown
NeuConnect	Thames Estuary, UK	DE	Y	Y	Y	N	N	N	2028	No, constructed before Project
North Ness-South Ness	North Ness, UK	South Ness, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
North Sea Link	Hylsfjorden, NO	Blyth, UK	Y	Y	Y	N	Y	Y	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Northern Lights	Skaill, UK	Dunnet Head, UK	Y	Y	Y	N	N	N	2008	No, included in baseline
NO-UK	Newcastle, UK	Stavanger, NO	Y	Y	Y	N	Y	N	2021	No, included in baseline
Orkney-Graemsay	Orkney, UK	Graemsay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Orkney-Rousay	Orkney, UK	Rousay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Orkney-Shapinsay	Orkney, UK	Shapinsay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
Orkney AC Link	Thruso, UK	Orkney, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Pan European Crossing (UK-BE)	Dumpton Gap, UK	Bredene, BE	Y	Y	Y	N	N	N	1999	No, included in baseline
R100 North	Shetland, UK	Orkney, UK	Y	Y	Y	Y	N	N	2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Rossie Island-Ferryden	Rossie Island, UK	Ferryden, UK	Y	Y	Y	Y	N	N	Pre-construction	No, construction assumed to be completed prior to Bellrock Wind Farm Infrastructure construction
Rousay-Egilsay	Rousay, UK	Egilsay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Rousay-Wyre	Rousay, UK	Wyre, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
SeaLink	Sizewell, UK	Kent, UK	Y	Y	Y	N	N	N	2030	No, outside of ZoI
SeaMeWe-3	Ostend, BE	Goonhilly Downs, UK	Y	Y	Y	N	N	N	1999	No, included in baseline
Shapinsay – Stronsay Replacement Cable	Shapinsey, UK	Stronsay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
Shetland-West Linga	Shetland, UK	West Linga, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Shetland-Whalsay	Shetland, UK	Whalsay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Shetland 2 High-voltage Direct Current (HVDC) link	Shetland, UK	Buckie, UK	Y	Y	Y	Y	N	N	Pre-construction	No, construction assumed to be completed prior to Bellrock Wind Farm Infrastructure construction
Shetland HVDC link	Shetland, UK	Wick, UK	Y	Y	Y	N	N	N	Under construction	No, construction assumed to be completed prior to Bellrock Wind Farm Infrastructure construction
Stronsay – Sanday replacement cable	Stronsay, UK	Sanday, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
VikingLink Corridor	Bicker Fen, UK	Revsing, DK	Y	Y	Y	N	N	N	2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Weisdale Voe	North Scotland, UK	Shetland, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				
West Linga-Whalsay	West Linga, UK	Whalsay, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Westray-Papa Westray	Westray, UK	Papa Westray, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Whalsay-Out Skerries	Whalsay, UK	Out Skerries, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Yell-Fetlar 1	Yell, UK	Fetlar, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Yell-Fetlar 2	Yell, UK	Fetlar, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Yell-Unst 1	Yell, UK	Unst, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Yell-Unst 2	Yell, UK	Unst, UK	Y	Y	Y	N	N	N	Commissioned	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Landfall Point 1	Landfall Point 2	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Operation	Potential for Overlap of Cable/Pipeline Construction with Bellrock Wind Farm Infrastructure Construction[8, 9]
					GNS MU[4]	CES MU[5]				

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit.

[3] BND = Bottlenose dolphin.

[4] GNS MU = Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[5] CES MU = Coastal East Scotland Management Unit.

[6] GS MU = Grey seal Management Unit.

[7] HS MU = Harbour seal Management Unit.

[8] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

[9] Were operation dates were unknown, project status was retrieved from https://map.4coffshore.com/offshorewind/ (accessed 31 October 2025) and assumed as having no overlapping effects with Bellrock Wind Farm Infrastructure construction.

UK = United Kingdom.

NL = Netherlands.

BE = Belgium.

DK = Denmark.

FR = France.

DE = Germany.

NO = Norway.

IS = Iceland.

US = United States of America.

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4.2.7 Coastal Developments

118. Coastal development projects include construction of ports, harbours and coastal defence schemes. All coastal developments that were completed prior to March 2022 were considered as part of the baseline.

119. The Marine Licences in Scotland registered on the Marine Directorate website were screened, but only two activities were found in the relevant part of the Screening Area, of which both were in pre-application stage and timeframes of construction were uncertain.

120. All Marine Licences in England are registered on the marine case management system. All coastal developments that were completed prior to March 2022 were considered to be part of the baseline. Those projects that started after the Bellrock WFDA baseline surveys were screened for the activities under the type ‘construction of new works’ and ‘construction of other works’ in the relevant marine areas.

121. Other projects such as domestic seawall, jetty, pontoon or footbridge constructions; intertidal restoration schemes; or schemes in the Thames River near London City have been screened out when filtering through the results.

122. No coastal development projects in Europe were considered due to a lack of available information and negligible impact ranges.

123. The construction of the Cromer Phase 2 Coastal Management Scheme is anticipated to have ended by 2024 and would not overlap with the Bellrock Wind Farm Infrastructure construction. Additionally, the Environmental Statement (Mott MacDonald, 2024) indicated that effects to marine mammals from the scheme were assessed as not significant (in EIA terms). All other screened projects were not taken forward as the construction dates do not overlap with that of the Bellrock Wind Farm Infrastructure.

124. Therefore, no coastal development projects were taken forward for the assessment. **Table 4.7** provides the screening results for coastal developments.

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Table 4.7: Cumulative Effects Assessment Screening for UK Coastal Developments with an Approved Status (Such as Ports, Harbour, Coastal Defence Schemes) Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Name of Project	Type of Project	Marine Licence Number	HP-NS MU[1]	CGNS[2]	BND[3]		GS MUs[6]	HS MUS[7]	Marine Licence Dates	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS[4]	CES[5]				
Scotland										
Screening -Breakwater Construction – Lerwick Marina-SCR-0083	Coastal defence	Pre-application	Y	Y	Y	N	N	N	Pre-application	No, construction is subject to obtaining a Marine Licence
Screening-Construction of Flood Defences – Lower Largo Peir, Fife-SCR-0085	Coastal defence	Pre-application	Y	Y	Y	N	Y	Y	Pre-application	Unknown
England										
Stallingborough Phase 3 Sea Defence Improvement Scheme - Stage 2	Coastal defence	MLA/2023/00379	Y	Y	Y	N	N	N	Sept 2023 - Nov 2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Cromer Phase 2 Coastal Management Scheme	Coastal defence	MLA/2023/00141	Y	Y	Y	N	N	N	March 2024 - March 2034	No, construction expected to finish by 2024. Effects to marine mammals were assessed as not significant in EIA terms

Name of Project	Type of Project	Marine Licence Number	HP-NS MU[1]	CGNS[2]	BND[3]		GS MUs[6]	HS MUS[7]	Marine Licence Dates	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS[4]	CES[5]				
Hull River Defences Phase 3	Coastal defence	MLA/2022/00452	Y	Y	Y	N	N	N	January 2024 - Jan 2026	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
TEAM2100-Canvey Island-Southern Shoreline Revetment Replacement	Coastal defence	MLA/2022/00429/1	Y	Y	Y	N	N	N	April 2023 - April 2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Great Yarmouth-New Flood Defence Quay Wall (WP10 Wall 112)	Coastal defines	MLA/2021/00483	Y	Y	Y	N	N	N	May 2022 - May 2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Seaham Artificial Nesting Structures	New construction	MLA/2023/00309	Y	Y	Y	N	Y	N	March 2024 - December 2066	No, construction (summer 2024) completed prior to Bellrock Wind Farm Infrastructure construction. Licence is for monitoring during lifespan of Hornsea 3 offshore wind farm
North Shields Ferry Landing Relocation to Fish Quay	Coastal defence	MLA/2022/00406	Y	Y	Y	N	Y	N	May 2023 - December 2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Stonehill Wall Rock Revetment Extension	Coastal defence	MLA/2022/00289	Y	Y	Y	N	Y	N	October 2023 - October 2024	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Type of Project	Marine Licence Number	HP-NS MU[1]	CGNS[2]	BND[3]		GS MUs[6]	HS MUS[7]	Marine Licence Dates	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS[4]	CES[5]				
Littlehampton-West Beach Groyne Reinstatement	Coastal defence	MLA/2023/00038	Y	Y	Y	N	N	N	March 2023 - March 2024	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Weston Shore Emergency Coast Protection	Coastal defence	MLA/2022/00094	Y	Y	Y	N	N	N	August 2022 - August 2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Dover Harbour Board-Outer Wave Screen	Coastal defence	MLA/2021/00448	Y	Y	Y	N	N	N	July 2022 - July 2023	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Notes:

[1] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

HP = Harbour porpoise.

BND = Bottlenose dolphin.

GS = Grey seal.

HS = Harbour seal.

N/A = Not applicable/available.

MU = Management Unit.

GNS = Greater North Sea.

NS = North Sea.

CGNS = Celtic & Greater North Sea.

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4.2.8 Other Offshore Industries

125. The results of the CEA screening for gas storage and offshore mines are presented in **Table 4.8**. Carbon capture and storage (CCS) and hydrogen storage projects are presented in **Table 4.9**.

4.2.8.1 Gas Storage

126. Rough Gas Storage was reopened after significant engineering upgrades in 2022 (Centrica, 2023) and therefore no construction would coincide with the Bellrock Wind Farm Infrastructure construction. The only other gas storage projects screened were already operational prior to the baseline surveys in March 2022. Hence, gas storage schemes have been screened out from further consideration in the CEA.

4.2.8.2 Offshore Mining

127. All offshore mining projects screened have been operational for several years prior to the baseline surveys for the Bellrock WFDA. These schemes are therefore considered part of the current baseline and therefore not considered further in the CEA.

128. No European schemes were considered due to a lack of information on scheme locations, phases, and programmes.

4.2.8.3 Carbon Capture and Storage and Hydrogen Storage Projects

129. CCS projects considered in the CEA screening are operational, under construction, or in early/advanced development. There was limited information on the projects in the early/advanced development phase, and as such have been assigned a range of Tiers. The majority of data for CCS projects comes from the Global CCS Map and a report on the Global Status of CCS 2023 (Global CCS Institute, 2023) and includes all countries with boundaries to the CEA Screening Area.

130. Hydrogen storage projects initially screened are at the final design or concept stages. However, there is limited information available on these projects and the information provided below has been obtained from Hydrogen UKs project map.

131. A number of projects were already operational before the baseline surveys commenced in March 2022. For the projects already under construction, it is assumed that the construction would be finished by the time the Bellrock Wind Farm Infrastructure would begin construction, and there are no anticipated effects from operational CCS infrastructure. Therefore, all operational or under construction projects are screened out of further assessment.

132. Some of the screened CCS projects have the status ‘advanced development’ as per the CCS 2023 report. These were described to having “received significant funds for engineering development, are demonstrating a higher level of commitment, and have a higher probability of moving to funding approval and construction” (Global CCS Institute, 2023). Provided that the projects will be operational at the dates provided below, there would be no overlap in construction periods with the Bellrock Wind Farm Infrastructure. Only one CCS project has the potential for an overlapping construction programme with the Bellrock Wind Farm Infrastructure; the BASF Antwerp (Kairos@C) project.

133. The 'early development' CCS projects would encompass the Tiers 2 to 3, and there is limited information on these projects. These projects are still in the planning phase at the time of the screening/assessment and timelines are likely to change. Therefore, these projects were screened out from further assessment.

134. CCS schemes are unlikely to contribute significantly to any potential cumulative impacts for underwater noise, as most construction work will be on land and use existing offshore infrastructure. Therefore, all carbon capture schemes have been screened out of the CEA.

135. All hydrogen storage projects are screened out of further assessment, on the basis that they will not overlap with the Bellrock Wind Farm Infrastructure construction programme. However, it should be noted that the majority are also in an early phase of development, and therefore there is limited information available in order to inform an assessment.

Table 4.8: Cumulative Effects Assessment Screening for Other Industries (Offshore Mines and Gas Storage Carbon Capture and Storage Projects Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Name of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
				GNS MU[4]	CES MU[5]				
Gas Storage									
Rough	Operational	Y	Y	Y	N	N	N	2022	No, part of the baseline
Atwick	Operational	Y	Y	Y	N	N	N	1979	No, part of the baseline
Aldbrough	Operational	Y	Y	Y	N	N	N	2012	No, part of the baseline
Offshore Mining									
Hundale Potash Mine	Operational	Y	Y	Y	N	Y	N	2016	No, part of the baseline
Boulby Potash Mine	Operational	Y	Y	Y	N	Y	N	1998	No, part of the baseline

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit.

[3] BND = Bottlenose dolphin.

[4] GNS MU = Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[5] CES MU = Coastal East Scotland Management Unit.

Name of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS MUs[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
				GNS MU[4]	CES MU[5]				

[6] GS MU = Grey seal Management Unit.

[7] HS MU = Harbour seal Management Unit.

[8] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

Table 4.9: Cumulative Effects Assessment Screening for Carbon Capture and Storage and Hydrogen Storage Projects Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
Carbon Capture and Storage										
East Coast Cluster Humber Pipeline	Under construction	UK	Y	Y	Y	N	N	N	2028	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
East Coast Cluster Teesside Pipeline	Under construction	UK	Y	Y	Y	N	N	N	2028	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Northern Endurance Storage Site	Under construction	UK	Y	Y	Y	N	Y	N	2028	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
BOC Teesside Hydrogen	Advanced development	UK	Y	Y	Y	N	Y	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Harbour Energy Viking Transport and Storage	Advanced development	UK	Y	Y	Y	N	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
Hydrogen to Humber Saltend	Advanced development	UK	Y	Y	Y	N	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Northern Endurance Partnership	Advanced development	UK	Y	Y	Y	N	N	N	2026-2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Phillips 66 Humber Refinery	Advanced development	UK	Y	Y	Y	N	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
Prax Lindsey Carbon Capture	Advanced development	UK	Y	Y	Y	N	N	N	2028	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
SSE Thermal Keadby 3 Power Station	Advanced development	UK	Y	Y	Y	N	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
VPI Immingham Power Plant	Advanced development	UK	Y	Y	Y	N	N	N	2027	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
Caledonia Clean Energy Project	Advanced development	UK	Y	Y	Y	Y	Y	Y	Earliest 2025	No, construction completed prior to Bellrock Wind Farm Infrastructure construction
8 Rivers Whitetail Clean Energy	Early development	UK	Y	Y	Y	N	Y	N	Under evaluation	No, Tier 2 and 3 have limited info available
Acorn Carbon Capture and Storage	Early development	UK	Y	Y	N	Y	N	N	Unknown	No, Tier 2 and 3 have limited info available
Acorn CO2 SAPLING PCI	Early development	UK	Y	Y	N	Y	N	N	Unknown	No, Tier 2 and 3 have limited info available
Acorn Direct Air Capture	Early development	UK	Y	Y	N	Y	N	N	2026	No, Tier 2 and 3 have limited info available
BP H2Teesside	Early development	UK	Y	Y	Y	N	N	N	Under evaluation	No, Tier 2 and 3 have limited info available
C.GEN North Killingholme Power	Early development	UK	Y	Y	Y	N	N	N	Under evaluation	No, Tier 2 and 3 have limited info available
CF Fertilisers Billingham Ammonia CCS	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
ExxonMobil Blue Hydrogen Fawley Refinery	Early development	UK	Y	Y	Y	N	N	N	2030	No, Tier 2 and 3 have limited info available
Humber Zero	Early development	UK	Y	Y	Y	N	N	N	2028	No, Tier 2 and 3 have limited info available
Kellas Midstream H2NorthEast	Early development	UK	Y	Y	Y	N	Y	Y	By 2030	No, Tier 2 and 3 have limited info available
NET Power Plant	Early development	UK	Y	Y	-	-	-	-	2027	No, Tier 2 and 3 have limited info available
Net Zero Teesside-CCGT Facility	Early development	UK	Y	Y	Y	N	Y	N	2028	No, Tier 2 and 3 have limited info available
NZT Power	Early development	UK	Y	Y	Y	N	Y	N	2028	No, Tier 2 and 3 have limited info available
Peterhead Low Carbon CCGT Power Station Project	Early development	UK	Y	Y	N	Y	N	N	By 2030	No, Tier 2 and 3 have limited info available
RWE Stallingborough	Early development	UK	Y	Y	Y	N	N	N	Under evaluation	No, Tier 2 and 3 have limited info available

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
RWE Straythorpe	Early development	UK	Y	Y	Y	N	N	N	Under evaluation	No, Tier 2 and 3 have limited info available
Singleton Birch ZerCaL250	Early development	UK	Y	Y	Y	N	N	N	2028	No, Tier 2 and 3 have limited info available
SSE Thermal Peterhead Power Station	Early development	UK	Y	Y	N	Y	Y	Y	2027	No, Tier 2 and 3 have limited info available
Storegga Acorn Transport and Storage	Early development	UK	Y	Y	N	Y	Y	Y	Unknown	No, Tier 2 and 3 have limited info available
SUEZ Tees Valley Energy Recovery Facility	Early development	UK	Y	Y	Y	N	Y	N	2026	No, Tier 2 and 3 have limited info available
Suez Waste to Energy	Early development	UK	Y	Y	Y	N	Y	N	2027	No, Tier 2 and 3 have limited info available
Synergia Energy Damhead Pipeline	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available
Synergia Energy Damhead Power Station	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
Synergia Energy Grain Power Station	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available
Synergia Energy Isle of Grain Transport	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available
Synergia Energy Medway Transport and Storage	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available
Synergy Energy Medway Power Station	Early development	UK	Y	Y	Y	N	N	N	Under evaluation	No, Tier 2 and 3 have limited info available
Uniper Humber Hub Blue Project	Early development	UK	Y	Y	Y	N	N	N	2027	No, Tier 2 and 3 have limited info available
Viking CCS	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available
Zero Carbon Humber	Early development	UK	Y	Y	Y	N	N	N	2026	No, Tier 2 and 3 have limited info available

Name of Project	Status (at the Time of Assessment)	Country	HP-NS MU[1]	CGNS[2]	BND[3]		GS Mus[6]	HS MUS[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
					GNS MU[4]	CES MU[5]				
Hydrogen Storage										
Aldbrough Hydrogen Pathway	Early development	UK	Y	Y	Y	N	N	N	Unknown	No, Tier 2 and 3 have limited info available
Dolphyn Hydrogen	Advanced development	UK	Y	Y	Y	N	Y	Y	Early 2030s	No, Tier 2 and 3 have limited information available
Salamander	Early development	UK	Y	Y	Y	N	Y	Y	2029	No, construction completed prior to Bellrock Wind Farm Infrastructure construction

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit.

[3] BND = Bottlenose dolphin.

[4] GNS MU = Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[5] CES MU = Coastal East Scotland Management Unit.

[6] GS MU = Grey seal Management Unit.

[7] HS MU = Harbour seal Management Unit.

[8] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

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4.2.8.4 Wet Storage

136. Temporary mooring of FSSs and/or FOUs (known as 'wet storage') will be undertaken at port(s) or dedicated mooring locations under Marine Licence(s) or other consents as required, secured by the relevant port(s)/storage locations. However, due to no planned dates for wet storage development, and falling outside of the ZoI (100 km), wet storage of FOUs will not be considered further within the cumulative section along with other projects and plans.

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Table 4.10: Cumulative Effects Assessment Screening for Wet Storage Projects Within the Relevant Spatial Area for Each Species and Potential to Overlap with the Bellrock Wind Farm Development Area Construction (2030 – 2037)

Name of Project	Status (at the Time of Assessment)	HP-NS MU[1]	CGNS MU[2]	BND[3]		GS Mus[6]	HS Mus[7]	Date of Operation	Potential for Overlap with the Bellrock Wind Farm Infrastructure Construction[8]
				GNS MU[4]	CES MU[5]				
Moray FLOW-Park	In Planning	Y	Y	Y	N	Y	N	Unknown	No, outside of ZoI
TS-SLOW UK-North Project	In Planning	Y	Y	Y	N	Y	N	Unknown	No, outside of ZoI

Notes:

[1] HP NS MU = Harbour porpoise North Sea Management Unit.

[2] CGNS MU = Celtic & Greater North Sea Management Unit.

[3] BND = Bottlenose dolphin.

[4] GNS MU = Greater North Sea Management Unit (Common dolphin, White-beaked dolphin and Minke whale).

[5] CES MU = Coastal East Scotland Management Unit.

[6] GS MU = Grey seal Management Unit.

[7] HS MU = Harbour seal Management Unit.

[8] Bellrock Wind Farm Infrastructure construction 2031 – 2037 (with site preparation works in 2030).

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4.2.9 Future Potential Activities

4.2.9.1 Seismic Surveys

137. It was not possible to estimate the location or number of potential seismic surveys that could be undertaken at the same time as construction and potential piling activity at the Bellrock Wind Farm Infrastructure. A Marine Licence exemption application is only required to be submitted at least 28days prior to the start of a relevant survey (MMO, 2022). Seismic survey licences for oil and gas are issued separately through the NSTA.

138. It is noted that there is low certainty on the schedule of these activities and there are no active licence applications at the time of writing. However, for information purposes the potential for cumulative impacts from seismic surveys has been screened into the CEA for further consideration.

139. Analysis of Marine Noise Registry (MNR) entries indicates that in the North Sea, over the last few years of available data, the following seismic surveys were carried out:

- 2021: 20 activities carried out for a total of 475 days;
- 2022: 43 activities carried out for a total of 668 days; and
- 2023: 41 activities carried out for a total of 797 days.

140. This gives a potential for 1.30, 1.76 and 2.18 seismic surveys (respectively for 2021-2023) to be undertaken at any one time in the North Sea. Therefore, it is assumed, as a worst-case scenario, that there could be three seismic surveys undertaken at the same time as the construction at the Bellrock Wind Farm Infrastructure.

141. For information purposes, the potential for cumulative impacts from seismic surveys has been screened into the CEA for further consideration. For the EIA, it has been assumed, as a worst-case scenario, that there could be three seismic surveys undertaken at the same time as the construction at the Bellrock Wind Farm Infrastructure.

4.2.9.2 Geophysical Surveys

142. Prior to construction, marine development projects (e.g. OWF, MRE and port expansions) conduct geophysical surveys to determine seabed conditions and check for debris/other anomalies.

143. These geophysical surveys can involve different equipment, such as:

- Sub-bottom profilers (SBP) (such as pingers, sparkers, boomers and CHIRP systems);
- Ultra-short baseline (USBL) systems;
- Multibeam echo sounder (MBES) system; and
- Side scan sonar (SSS).

144. Due to the high amplitude of MBES and SSS, there is the potential for injury to marine mammal species, however this is highly unlikely as an animal would need to be within very close proximity (only several meters) to the source.

145. It is also unlikely that the MBES and SSS could cause disturbance due to the operating frequencies being outside the audible range of marine mammals (JNCC et al. 2010). MBES and SSS surveys that are carried out in waters of less than 200 m in depth are not considered to be a risk to marine mammals, as the higher frequencies typically used fall outside of their hearing ranges, and the sounds are likely to attenuate quickly due to the high frequencies used. Therefore, geophysical surveys using MBES and SSS have been screened out of the CEA.

146. The SBP and USBL frequency ranges are within marine mammal hearing range (JNCC, 2017) and would therefore be audible to the marine mammals that could be present in the area. Geophysical surveys using SBP and USBL have the potential to disturb marine mammals and have therefore been screened into the CEA.

147. Auditory injury impacts from SBP and USBL were not predicted, as an animal would need to remain in the very small zone of ensonification for a prolonged period, which was highly unlikely (JNCC et al. 2010). Most of the sound energy generated by the SBP or USBL equipment would be directed towards the seabed and the pulse duration would be extremely short, with the continuous movement of the survey.

148. For geophysical surveys with SBP, it is realistic and appropriate to base the assessments on the potential impact area around the vessel, as the potential for disturbance would be around the vessel at any one time. Marine mammals would not be at risk throughout the entire area surveyed in a day, as animals would return once the vessel had passed, and the disturbance had ceased.

149. Analysis of the activities reported to the MNR, indicated the following activities in the North Sea:

- 2021: 30 SBP surveys carried out for a total of 257 days;
- 2022: 66 SBP surveys carried out for a total of 520 days; and
- 2023: 89 SBP surveys carried out for a total of 707 days.

150. This gives a potential for 0.70, 1.42 and 1.93 geophysical surveys (respectively for 2021 – 2023) to occur at any one time within a year. Therefore, it is assumed, as a worst-case scenario, that there could be two geophysical surveys undertaken at the same time as the construction at the Bellrock WFDA for the EIA.

4.2.9.3 Unexploded Ordnance

151. As outlined in **Section 9.9** of **Chapter 9: Marine Mammals (Volume II)**, the potential risk of PTS in marine mammals from cumulative impacts has been screened out from further consideration in the CEA. This is because if there is the potential for any PTS, suitable mitigation would be put in place to reduce any risk to marine mammals.

152. The potential for cumulative disturbance effects from UXO clearance at other schemes during construction at the Bellrock Wind Farm Infrastructure have been screened into the CEA. Alternative

methods for UXO clearance include the use of low-order clearance techniques, which could include a small donor charge, rather than full high-order detonation.

153. It is therefore highly unlikely that more than one unmitigated UXO high-order detonation would occur at exactly the same time or on the same day as another UXO detonation, even if they had overlapping UXO clearance operation durations.

154. However, it is noted there is low certainty of the schedule for these activities and likelihood of temporal overlap. In 2021 there were six cases of UXO detonations reported to the MNR in the North Sea which occurred over a total of 16 days. In 2022 there 25 cases reported over 25 days and in 2023 there were 12 cases reported over 25 days. This gives a potential for 0.04 to 0.07 UXO clearances (respectively for 2021 to 2023) to occur within a year at any one time in the North Sea. It is therefore highly unlikely that more than one UXO high-order detonation would occur at exactly the same time or on the same day as another UXO detonation, even if they had overlapping UXO clearance operation durations.

155. The CEA is therefore based on potential for disturbance from one unmitigated UXO high-order detonation (worst-case), and one low-order detonation. Therefore, one high order and one low-order UXO clearance is assessed in the CEA to occur at the same time as construction for the Bellrock Wind Farm Infrastructure.

5 Summary of Cumulative Effect Assessment Project Screening

156. This section provides a summary of screening outcomes, with **Table 5.1** showing both the impact pathways and the plans, projects, and activities screened in and out of the marine mammals CEA. The results of the CEA are presented in **Section 9.9** of **Chapter 9: Marine Mammals (Volume II)**.

Table 5.1: Summary of Plans and Projects Screened In/Screened Out of the Marine Mammals Cumulative Effects Assessment

Impact	Project Type	Projects
Screened In		
Disturbance from underwater noise during construction	Piling at other OWFs	OWFs that could be piling at the same time as the Bellrock Wind Farm Infrastructure and screened into the CEA are: ▪ Tier 1: Buchan, Cenos, Dogger Bank D, Muir Mhor, North Falls, Ossian, Sheringham Shoal Extension, and West of Orkney; and ▪ Although the Bellrock OfTDA is classified as a Tier 1 project, it cannot be included in the quantitative cumulative piling assessment because detailed piling parameters for the offshore substations are not yet available. Consequently, its contribution to cumulative effects from piling cannot be quantified at this stage and it is to be assessed using similar numbers as that of the Bellrock WFDA.
	Other construction activities at OWFs (other than piling) including vessels, cable installation works, dredging, seabed preparation and rock placement	OWFs screened in for other construction activities that could have cumulative effects with construction activities at the Project were: ▪ Tier 1: Bellrock OfTDA (included as a Tier 1 project due to its essential requirement for the function of the Bellrock Project), Aspen and Berwick Bank. ▪ Tier 2/3: Arven, Ayre, Bowdun, Broadshore Hub, Cedar, Havbredey, Morven, Normandie, Stoura and Stromar. However, the projects that are already included under the piling assessment above (which would represent the worst-case for disturbance), these projects are not considered separately for other construction related activities.
	Operational OWFs	OWFs that could have cumulative operational impacts with the Bellrock WFDA and screened into the CEA are: ▪ Cedar and Morven. OWFs that are screened in for construction related impacts above are screened out of operational impacts in order to avoid any potential for 'double counting' effects from the same project in the resultant CEA.

Impact	Project Type	Projects
	Aggregate extraction and dredging and disposal sites	Projects screened in for construction activities that could have cumulative effects with construction activities at the Bellrock WFDA are: ▪ Inner Dowsing 481/1-2; ▪ West Bassurelle 458; and ▪ West Bassurelle 464.
	Subsea cables and pipelines	All projects are screened out for construction activities that could have cumulative effects with construction activities at the Bellrock WFDA.
	Seismic surveys	Unknown. There are currently no active licence applications for seismic surveys. However, for information purposes, an assessment has been made based on the assumption that there would be at least **two** seismic surveys in the North Sea at any one time, during construction at the Bellrock Wind Farm Infrastructure.
	Geophysical surveys using SBP and USBL	Unknown. It was therefore assumed, for information purposes, that there could potentially be up to **two** geophysical surveys at OWFs in the North Sea at any one time, during construction at the Bellrock Wind Farm Infrastructure.
	UXO clearance	Unknown. It has been assumed UXO clearance would use low-order technique. However, for information purposes, the CEA included potential for **one** UXO high-order (no mitigation) clearance and **one** low-order clearance in the North Sea at the same time as piling at the Bellrock WFDA. The likelihood of high order use and temporal overlap was low.
Disturbance from underwater noise during operation	Underwater noise from operational turbines and maintenance activities	OWFs that are screened in for operational impacts at the same time as operational impacts at the Bellrock WFDA within 50 km are: ▪ Bellrock OfTDA; ▪ Cedar OWF; ▪ Morven OWF; and ▪ Ossian OWF.
Disturbance and injury from underwater noise-all phases	Vessel Disturbance and Collision Risk	It is expected that each OWF project (including the Bellrock OfTDA) will contribute to the increase of vessel traffic and hence to the potential of disturbance and risk of collision during the construction, O&M and decommissioning phases.
Changes to prey availability	All project activities	The CEA includes all the projects assessed in the CEA for **Chapter 8: Fish and Shellfish Ecology**.
Disturbance at seal haul-out sites	All project activities	It is expected that each OWF project (including the Bellrock OfTDA) will contribute to the increase of vessel traffic and hence to the potential of disturbance at seal haul-out sites during the construction, O&M and decommissioning phases.

Impact	Project Type	Projects
Screened Out		
Disturbance from underwater noise	The activities and types of projects screened out of the CEA, as no potential for significant contribution to underwater noise cumulative impacts during the Bellrock Wind Farm Infrastructure construction, were: ▪ Decommissioning of OWFs (**Section 4.1.1**); ▪ Decommissioning of oil and gas infrastructure (**Section 4.1.2**); ▪ Shipping (**Section 4.1.3**); ▪ Commercial fishing (**Section 4.1.4**); ▪ Operational OWFs before March 2022 (**Section 4.2.1**); ▪ Marine Renewable Energy projects (**Section 4.2.2**); ▪ Licensed disposal sites (**Section 4.2.4**); ▪ Oil and gas infrastructure (construction, operation and decommissioning) (**Section 4.2.5**); ▪ Subsea cables and pipelines (**Section 4.2.6**); ▪ Coastal developments (**Section 4.2.7**); ▪ Gas storage (**Section 4.2.8.1**); ▪ Offshore mining (**Section 4.2.8.2**); and ▪ CCS and hydrogen storage (**Section 4.2.8.3**).	
EMF effects	As there are no projects within 10 km of the Bellrock WFDA, all cumulative effects from EMF are screened out (**Section 3.2.1**).	
Commercial Shipping	Commercial shipping is considered to be part of the baseline environment (**Section 4.1.3**).	
Commercial Fishing	Commercial fishing has been screened out of the CEA, as it is an ongoing activity that is considered to be part of the baseline environment (**Section 4.1.4**).	

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