



# Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

## Volume 3

### Appendix 10.3 - Marine Mammal Cumulative Impact Assessment (CIA) Screening

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## Glossary of Acronyms

BEIS	Department for Business, Energy and Industrial Strategy
BND	Bottlenose Dolphin
CES	Coastal East Scotland
CIA	Cumulative Impact Assessment
dB	Decibel
DEP	Dudgeon Extension Project
EDR	Effective Deterrence Range
EMODnet	European Marine Observation and Data Network
ES	Environmental Statement
FCS	Favourable Conservation Status
CGNS	Celtic and Greater North Seas
GNS	Greater North Sea
GS	Grey Seal
HP	Harbour Porpoise
HRA	Habitats Regulation Assessment
HS	Harbour Seal
JNCC	Joint Nature and Conservation Committee
MBES	Multibeam Echo Sounder
MMO	Marine Management Organisation
MU	Management Unit
MW	Minke Whale
NE	North East
NS	North Sea
PEIR	Preliminary Environmental Information Report
PTS	Permanent Threshold Shift
RMS	Root mean square
RIAA	Report to Inform Appropriate Assessment
RoC	Review of Consents
SAC	Special Area of Conservation
SBP	Sub-Bottom Profilers
SE	South East
SEP	Sheringham Extension Project

SNS	Southern North Sea
SPL	Sound Pressure Level
SSS	Side Scan Sonar
TTS	Temporary Threshold Shift
UK	United Kingdom
USBL	Ultra-Short Baseline
UXO	Unexploded Ordnance
WBD	White-Beaked Dolphin

## Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).

## 10.3 MARINE MAMMAL CUMULATIVE IMPACT ASSESSMENT (CIA) SCREENING

### 10.3.1 Introduction

1. The cumulative impacts of the SEP and DEP wind farm sites have been addressed in the main chapter of the ES. This Appendix summarises the results of the Cumulative Impact Assessment (CIA) screening and outlines the cumulative impacts of SEP and DEP as well as other plans and projects which have been screened into the marine mammals CIA. Parameters for inclusion of plans and projects were:
  - a) Projects and plans within the agreed reference population boundary for the given receptor (see **Section 10.3.2** of **Chapter 10 Marine Mammal Ecology** for more information):
    - Harbour porpoise (HP) *Phocoena phocoena*: North Sea (NS) Management Unit (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;
    - Minke whale (MW) *Balaenoptera acutorostrata*: CGNS MU;
    - Grey seal (GS) *Halichoerus grypus*: South-east (SE) England, North-east (NE) England MUs, and the Wadden Sea region; and
    - Harbour seal (HS) *Phoca vitulina*: South-east England MU and the Wadden Sea region.
  - b) Projects and plans with the potential to cause the type of impact which could have a cumulative impact with SEP and DEP (**Chapter 10 Marine Mammal Ecology**).
  - c) Projects and plans from an assessment tier which was screened into the assessment.
2. Information and maps of the relevant MU areas and Wadden Sea region are provided in **Appendix 10.1**.
3. Note that, due to the large size of both the white-beaked dolphin and minke whale MUs, projects and plans were considered only if they are located within the North Sea / GNS MU area, in order to provide a more realistic while still precautionary list of projects that may impact the same population of each species.
4. For this assessment, the tiers used for assessment are based on guidance issued by the Joint Nature and Conservation Committee (JNCC) and Natural England in September 2013, and are as follows:
  - Tier 1: built and operational projects;
  - Tier 2: projects under construction;

- Tier 3: projects that have been consented (but construction has not yet commenced);
  - Tier 4: projects that have an application submitted to the appropriate regulatory body that have not yet been determined;
  - Tier 5: projects that the regulatory body are expecting to be submitted for determination (e.g. projects listed under the Planning Inspectorate programme of projects); and
  - Tier 6: projects that have been identified in relevant strategic plans or programmes.
5. These tiers are used as they are more appropriate to use compared to the tiers in The Planning Inspectorate (2019) Advice Note 17 for the types of projects and plans considered in this assessment, in particular for the offshore wind farm (OWF) stages.
6. Any plans or projects that have the potential for a construction / commissioning cumulative impact that commenced construction / commissioning (Tier 1 or 2) between the end of the baseline surveys in April 2020 and submission in August 2022 of the Environmental Statement (ES) will not be taken forward in the CIA for this type of cumulative impact. It is assumed that construction / commissioning will be completed before the start of construction of SEP and DEP.
7. All Tier 1 projects are considered to be part of the existing baseline environment if operational prior to the start of the baseline surveys for SEP and DEP in May 2018.
8. The first stage of the screening is based on the widest possible range of offshore construction dates for the SEP and DEP, of between 2027 and 2032, based on the earliest possible offshore construction in 2027. If both Projects are constructed concurrently, the offshore construction phase would be 2027 to 2029, with foundation piling taking place in 2028. If the projects were constructed sequentially, then the first project would be constructed on the same programme as if they were constructed concurrently, and the second project would undergo offshore construction from 2030 to 2032, with foundation piling taking place in 2031.
9. The worst-case for SEP and DEP being developed concurrently has been assessed, based on simultaneous piling i.e. piling in SEP at the same time as piling in DEP, noting that simultaneous piling within SEP or DEP individually could occur but has not been assessed since it is not the worst-case.

### 10.3.1.1 Data Sources

10. A wide range of data sources and information was used for the CIA and CIA screening, including, but not limited to:
- SEP and DEP ES (and Preliminary Environment Information Report (PEIR));
  - Developer websites;
  - 4C Offshore Winds Database [REDACTED];
  - Renewable UK website [REDACTED];
  - Crown Estate website;



- Oil and gas UK licensing rounds website (<https://www.gov.uk/guidance/oil-and-gas-licensing-rounds#past-licensing-rounds>);
- Oil and gas environmental submissions and determinations (<https://www.gov.uk/guidance/oil-and-gas-environmental-data>);
- Cefas website (e.g. [REDACTED]);
- Planning Inspectorate National Infrastructure Planning website;
- The Marine Management Organisation (MMO) public register; and
- European Marine Observation and Data Network (EMODnet) data.

### 10.3.2 Identification of Potential Cumulative Impacts

11. The first step in the CIA is the identification of the impacts assessed for SEP and/or DEP that have the potential for a cumulative impact with other plans, projects and activities (described as ‘impact screening’). Only potential impacts assessed as greater than negligible are considered in the CIA (i.e. those assessed as ‘negligible’ are not taken forward as there is no potential for them to contribute to a cumulative impact).
12. Initially the potential for cumulative impacts were considered for:
  - The risk of permanent change in hearing sensitivity (Permanent Threshold Shift (PTS)) from underwater noise;
  - The risk of temporary change in hearing sensitivity (Temporary Threshold Shift (TSS)) from underwater noise;
  - Disturbance from underwater noise;
  - Changes to prey availability; and
  - Vessel collision risk.

#### 10.3.2.1 PTS from Underwater Noise

13. PTS could occur as a result of pile driving during offshore wind farm installation, pile driving during oil and gas platform installation, underwater explosives (used occasionally during the removal of underwater structures and unexploded ordnance (UXO) clearance) and seismic surveys (JNCC, 2010a, 2010b). However, if there is the potential for any PTS, from any project, suitable mitigation would be put in place to reduce any risk to marine mammals. Other activities such as dredging, drilling, rock placement, vessel activity, operational windfarms, oil and gas installations or wave and tidal sites will emit broadband noise in lower frequencies and PTS from these activities is very unlikely. Therefore, the potential risk of PTS in marine mammals from cumulative impacts has been **screened out** from further consideration in the CIA.

#### 10.3.2.2 TTS from Underwater Noise

14. Where there is little information on the potential disturbance ranges for marine mammals, TTS has been used to indicate possible fleeing response (see **Section 10.6.1.4 of Chapter 10 Marine Mammal Ecology**). It is acknowledged that disturbance is likely to have greater impact ranges than for TTS.

15. The risk of TTS will be within disturbance ranges for marine mammals. The effects of TTS in marine mammals are temporary.
16. TTS / fleeing response has been **screened in** to the CIA, where there is a lack of further relevant information for disturbance.

#### 10.3.2.3 Disturbance from Underwater Noise

17. The potential for the disturbance to marine mammals from underwater noise has been **screened in** to the CIA.

#### 10.3.2.4 Changes to Water Quality

18. No significant impacts with regard to water quality are expected as a result of the SEP and DEP projects (see **Section 10.6.1.11** of **Chapter 10 Marine Mammal Ecology**). Aggregate and dredging projects have the potential for increased sediment suspension (and therefore impacts to marine mammal species), however any changes to water quality as a result of aggregate extraction and dredging would be very localised and temporary. Therefore, no potential for cumulative impact on marine mammal populations as a result of changes to water quality. Therefore, changes to water quality (including from aggregate extraction and dredging) has been **screened out** from further consideration in the CIA.

#### 10.3.2.5 Changes to Prey Availability

19. For any potential changes to prey availability, it has been assumed that any potential impacts on marine mammal prey species from underwater noise, including piling, would be the same or less than those for marine mammals. Therefore, there would be no additional cumulative impacts other than those assessed for marine mammals, i.e. if prey are disturbed from an area as a result of underwater noise, marine mammals will be disturbed from the same or greater area, therefore any changes to prey availability would not affect marine mammals as they would already be disturbed from the same area.
20. Any impacts on prey species are likely to be intermittent, temporary and highly localised, with potential for recovery following cessation of the disturbance activity. Any permanent loss or changes of prey habitat will typically represent a small percentage of the potential habitat in the surrounding area.
21. The potential for changes in prey availability as a result of changes to habitat from aggregate extraction and dredging will be considered further for in-combination affects in the SNS SAC in the **RIAA** (document reference 5.4). However, there is no potential for cumulative impact to have any significant effects on marine mammal populations as a result of changes to prey availability. Taking into account the range of prey species taken by marine mammals and the extent of their foraging ranges (see **Appendix 10.1**), also that any changes to prey availability as a result of aggregate extraction and dredging will be localised and temporary. Therefore, changes to prey availability from aggregate extraction and dredging has been **screened out** from further consideration in the CIA.
22. Therefore, any changes in prey availability has been **screened out** from further consideration in the CIA.

### 10.3.2.6 Vessel Collision Risk

23. As outlined in **Section 10.6.1.8** of **Chapter 10 Marine Mammal Ecology**, the increased collision risk even using a very precautionary approach, the potential impact is negligible.
24. Vessel movements to and from any port will be incorporated within existing vessel routes and therefore there would be no increased collision risk as the increase in the number offshore wind farm vessels would be relatively small compared to the baseline levels of vessel movements in these areas.
25. Once on-site, offshore wind farm vessels would be stationary or slow moving, as they undertake the activity they are associated with. Therefore, the risk of any increased collision risk for marine mammals would be negligible, if any.
26. Vessels associated with aggregate extraction and dredging are large and typically slow moving, using established transit routes to and from ports. Therefore, the potential increased collision risk with vessels is considered to be extremely low or negligible. Therefore, increased collision risk from aggregate extraction and dredging has been **screened out** from further consideration in the CIA.
27. Good practice would ensure any risk of vessels colliding with marine mammals is avoided.
28. Therefore, any increased collision risk with vessels has been **screened out** from further assessment in the CIA.

### 10.3.3 Stages of Plans and Projects Considered in the CIA

29. The second step in the CIA screening is the identification of the plans and projects that may result in cumulative impacts for inclusion in the CIA (described as ‘project screening’).
30. The types of plans and projects included in the CIA, and the approach to screening, are based on the current stage of the plan or project within the planning and development process. This approach allows for the different levels of ‘uncertainty’ to be taken into account in the CIA, as well as the quality of the data available (as outlined in **Section 10.4.4** of **Chapter 10 Marine Mammal Ecology**).

#### 10.3.3.1 Tier 1 Projects

31. Tier 1 projects are operational projects, and therefore there is no potential for any overlap in the construction of these projects with the construction of SEP and DEP.
32. Most tier 1 projects were part of the baseline because they were fully operational in May 2018; therefore they are not included in the CIA.

#### 10.3.3.2 Tier 2 Projects

33. Tier 2 projects are marine infrastructure projects currently under construction, and which are due to be commissioned prior to the construction of SEP and DEP, and therefore there is no potential for any overlap in the construction of these projects with the construction and piling of SEP and DEP.

#### 10.3.3.3 Tier 3 Projects

34. Tier 3 projects are relevant marine infrastructure projects which have been consented, but for which construction has not yet commenced. Therefore, there is more certainty that these projects will be constructed compared to projects for which an application has not yet been determined. For tier 3 offshore wind farm projects there is also more information on when construction is likely to be undertaken and an assessment of the potential impacts during construction activities have been provided in the project ESs, which allows quantified assessment of the potential impacts of these projects in the CIA.
35. 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, offshore wind farm 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.
36. Tier 3 offshore wind farms could have possible cumulative construction impacts.

#### 10.3.3.4 Tier 4 Projects

37. Tier 4 projects are relevant marine infrastructure projects which have an application submitted to the appropriate regulatory body but that have not yet been determined, or projects that are consented but currently on hold due to judicial challenge or appeal process. There is increased uncertainty about these projects, especially where the projects are currently on-hold, as to when or if they could be constructed and what changes could be made to the scale of the developments.
38. Tier 4 offshore wind farms could have possible cumulative construction impacts.

#### 10.3.3.5 Tier 5 Projects

39. Tier 5 projects are relevant marine infrastructure projects that the regulatory body are expecting to be submitted for determination (e.g. projects listed under the Planning Inspectorate programme of projects). For Tier 5 projects there is a lot of uncertainty and not enough information to allow a robust assessment. However, as a very precautionary approach, the Tier 5 UK offshore wind farm projects that we are currently aware of have been considered in the CIA.
40. Tier 5 offshore wind farms could have possible cumulative construction impacts.

#### 10.3.4 CIA Screening

41. The types of plans, projects and activities initially considered in the CIA screening area:
- Other offshore wind farms (OWFs)
    - Construction: (i) piling and (ii) other construction activities, including vessels
    - Operation
    - Maintenance
    - Decommissioning
  - Marine renewable (wave and tidal) developments
  - Aggregate extraction and dredging
  - Licenced disposal sites
  - Shipping
  - Oil and gas installations
    - Construction
    - Operation
    - Decommissioning
  - Oil and gas seismic surveys
  - Sub-sea cables and pipelines
  - Other industries - gas storage, offshore mines, and carbon capture projects
  - Commercial fisheries
  - Unexploded Ordnance (UXO) clearance

### 10.3.4.1 Offshore Wind Farms

#### 10.3.4.1.1 Construction of Offshore Wind Farms

##### 10.3.4.1.1.1 UK Offshore Wind Farm Long List

42. UK based projects listed in Tiers 1-4 were considered for potential construction cumulative impacts, if the construction phases could overlap with the proposed construction of SEP and DEP, and sufficient information and certainty in project programmes allowed for a meaningful assessment. In addition, Tier 5 projects for which the applications are currently in preparation have also been considered.
43. Where possible, known dates of OWF construction are used to assess whether there is the potential for construction periods to overlap with SEP and DEP. Where construction dates of OWFs are not known, as a precautionary approach and to allow for any delays and changes in schedule, the potential for overlap with the proposed construction of SEP and DEP is based on a seven year window in which construction could commence (although most projects have a five year consent window). For UK Tier 4 projects (application submitted) the possible construction windows were based on the best available information.
44. The initial screening process resulted in a list of 79 UK OWF projects within the relevant screening areas for harbour porpoise, bottlenose dolphin, white-beaked dolphin, minke whale, grey seal and harbour seal.
45. OWFs were considered part of the baseline if they were operational (Tier 1) at the time of the start of the SEP and DEP site specific surveys (May 2018). There were 28 Tier 1 UK OWF projects screened out at this stage.
46. Out of the 22 Tier 2-4 UK OWF projects, 17 projects, do not have potential for the construction phase to overlap with construction of SEP and DEP (2027-2032) and were therefore screened out. Five UK OWF projects have the potential for the construction phase to overlap with construction of SEP and DEP (2027-2032) for all marine mammal species:
  - Norfolk Boreas (all species)
  - East Anglia ONE North (all species)
  - East Anglia TWO (all species)
  - Hornsea Project Four (all species)
  - Norfolk Vanguard (all species)
47. Of the 29 Tier 5 UK OWF projects, 21 projects had insufficient information available to determine if there is the potential for the construction phase to overlap with construction of SEP and DEP (2027-2032) and were therefore screened out.
48. Eight Tier 5 UK OWF projects were considered further, as a precautionary approach, for the potential construction phase to overlap with construction of SEP and DEP (2027-2032) and the relevant areas for each species:
  - Berwick Bank (not grey or harbour seal)
  - Dogger Bank South (not harbour seal)
  - Dolphyn Project (not grey or harbour seal)

- Five Estuaries (all species)
- North Falls (all species)
- Outer Dowsing (all species)
- Rampion Extension (harbour porpoise only)
- Salamander (not grey or harbour seal)

49. The results of this initial screening are presented in **Table 10.3.1**.

**Table 10.3.1: Initial CIA Screening for UK Offshore Wind Farm Projects within the Relevant Spatial Area for Each Species and Potential to Overlap with SEP and DEP Construction (2027-2032)**

(P = harbour porpoise, BND = bottlenose dolphin, WBD = white-beaked dolphin, MW = minke whale, GS = grey seal, HS = harbour seal, Y = Yes, N = No)

Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
Aberdeen (EOWDC)	1	UK		2018-2018	N	Y	Y	Y	N	N	N
Beatrice	1	UK	2014	2017-2019	N	Y	Y	Y	N	N	N
Blyth Offshore Demonstrator Project - Array 2	1	UK	2013	2017-2018	N	Y	Y	Y	Y	Y	N
Dudgeon	1	UK	2012	2016-2017	N	Y	Y	Y	Y	Y	N
East Anglia ONE	1	UK	2014	2018-2020	N	Y	Y	Y	Y	Y	N
Galloper	1	UK	2013	2016-2018	N	Y	Y	Y	Y	Y	N
Greater Gabbard	1	UK	2002	2008-2009	N	Y	Y	Y	Y	Y	N
Gunfleet Sands 3 (Demo Zone)	1	UK	2012	2012-2013	N	Y	Y	Y	Y	Y	N
Gunfleet Sands I	1	UK	2004	2008-2010	N	Y	Y	Y	Y	Y	N
Hornsea Project One	1	UK	2014	2017-2021	N	Y	Y	Y	Y	Y	N
Humber Gateway	1	UK	2011	2013-2015	N	Y	Y	Y	Y	Y	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
Hywind Scotland Pilot Park	1	UK	2015	2016-2017	N	Y	Y	Y	N	N	N
Inner Dowsing	1	UK	2003	2007-2009	N	Y	Y	Y	Y	Y	N
Kentish Flats	1	UK	2003	2004-2005	N	Y	Y	Y	Y	Y	N
Kentish Flats Extension	1	UK	2013	2014-2015	N	Y	Y	Y	Y	Y	N
Kincardine - Phase 1	1	UK	Unknown	Unknown	N	Y	Y	Y	N	N	N
Kincardine - Phase 2	1	UK	Unknown	2021	N	Y	Y	Y	N	N	N
Levenmouth (Demo)	1	UK	2013	2013	N	Y	Y	Y	N	N	N
Lincs	1	UK	2008	2011-2013	N	Y	Y	Y	Y	Y	N
London Array	1	UK	2006	2011-2013	N	Y	Y	Y	Y	Y	N
Lynn	1	UK	2003	2007-2008	N	Y	Y	Y	Y	Y	N
Race Bank	1	UK	2012	2016-2017	N	Y	Y	Y	Y	Y	N
Rampion Wind Farm	1	UK	2014	2015-2018	N	Y	N	N	N	N	N
Scroby Sands	1	UK	2002	2003-2004	N	Y	Y	Y	Y	Y	N
Sheringham Shoal	1	UK	2008	2009-2012	N	Y	Y	Y	Y	Y	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
Teesside	1	UK	2007	2012-2013	N	Y	Y	Y	Y	N	N
Thanet	1	UK	2006	2009-2010	N	Y	Y	Y	Y	Y	N
Westermost Rough	1	UK	2011	2013-2014	N	Y	Y	Y	Y	Y	N
Hornsea Project Two	2	UK	2016	2020-2022	N	Y	Y	Y	Y	Y	N
Moray East	2	UK	2014	2019-2022	N	Y	Y	Y	N	N	N
Near na Gaoithe	2	UK	2014 & 2019	2019-2022	N	Y	Y	Y	N	N	N
Triton Knoll phase 1-3	2	UK	2013	2019-2022	N	Y	Y	Y	Y	Y	N
Seagreen (formerly Alpha Bravo)	2	UK		2021-2022	N	Y	Y	Y	N	N	N
Blyth Offshore Demonstrator Project - Array 3 & 4	3	UK	2013	2025	N	Y	Y	Y	Y	N	N
Dogger Bank A	3	UK	2015	2022-2024	N	Y	Y	Y	Y	Y	N
Dogger Bank B	3	UK	2015	2023-2024	N	Y	Y	Y	Y	Y	N
Dogger Bank C	3	UK	2015	2024-2025	N	Y	Y	Y	Y	Y	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
East Anglia THREE	3	UK	2017	2023-2026	N	Y	Y	Y	Y	Y	N
ForthWind Demo Phase 1	3	UK	2016	2023 – Unknown <sup>2</sup>	N	Y	Y	Y	N	N	N
Hornsea Project Three	3	UK	2020	2023 (earliest construction start 2021 with offshore export cable construction in year 3)	N	Y	Y	Y	Y	Y	N
Inch Cape	3	UK	2014	2021-2023	N	Y	Y	Y	N	N	N
Moray West	3	UK	2014	2022-2025	N	Y	Y	Y	N	N	N
Norfolk Boreas	3	UK	2021	2025-2027	Y	Y	Y	Y	Y	Y	Y
Pentland Floating (formerly Dounreay Tri)	3	UK	Unknown	??-2023	N	Y	Y	Y	N	N	N
Sofia (formerly Dogger Bank Teesside B)	3	UK	2015	2023 – Unknown <sup>2</sup>	N	Y	Y	Y	Y	Y	N
East Anglia ONE North	4	UK	2020	2023-2026 <sup>3</sup>	Y	Y	Y	Y	Y	Y	Y
East Anglia TWO	4	UK	2020	2023-2026 <sup>3</sup>	Y	Y	Y	Y	Y	Y	Y
Hornsea Project Four	4	UK	-	2026-2029	Y	Y	Y	Y	Y	Y	Y
Norfolk Vanguard	4	UK	-	2025-2027	Y	Y	Y	Y	Y	Y	Y



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
Seagreen 1A	4	UK	-	2023-?	N	Y	Y	Y	N	N	N
Aspen	5	UK	Unknown	2023-2024	N	Y	Y	Y	N	N	N
Beech	5	UK	Unknown	2023-2024	N	Y	Y	Y	N	N	N
Berwick Bank (Seagreen Charlie Delta Echo)	5	UK	2022	2028-2029	Y	Y	Y	Y	N	N	Y
Berwick Bank (Seagreen Charlie-Delta-Echo / Marr Bank)	5	UK	Unknown	2028-2029	Y	Y	Y	Y	N	N	N
Cenos	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
Dogger Bank South	5	UK	Unknown	2026-??	Y	Y	Y	Y	Y	N	Y
Dolphyn Project - commercial	5	UK	Unknown	2028-2030	Y	Y	Y	Y	N	N	Y
Dolphyn Project - pre-commercial	5	UK	Unknown	2024-2025	N	Y	Y	Y	N	N	N
<i>Dudgeon Extension</i>	5	<i>UK</i>	-	<i>2027-2031</i>	-	Y	Y	Y	Y	Y	-
Five Estuaries	5	UK	2025	2028-2030	Y	Y	Y	Y	Y	Y	Y



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
ForthWind Demo Phase 2	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
Green Volt	5	UK	Unknown	2024-2026	N	Y	Y	Y	N	N	N
Berwick Bank (Seagreen Charlie-Delta-Echo / Marr Bank)	5	UK	Unknown	2028-2029	Y	Y	Y	Y	N	N	N
North Falls	5	UK	2024	2028-2030	Y	Y	Y	Y	Y	Y	Y
Outer Dowsing	5	UK	Unknown	?-2033	Y	Y	Y	Y	Y	Y	Y
Rampion Extension	5	UK	2023	2026-2029	Y	Y	N	N	N	N	Y
Salamander	5	UK	Unknown	2026-2028	Y	Y	Y	Y	N	N	Y
ScotWind Site 1	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 2	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 3	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 4	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 5	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 6	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 7	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA: Construction Phase	Potential for construction phase overlap with construction at SEP & DEP?	Spatial Area for Species					Screened into CIA?
						HP	BND	MW & WBD	GS	HS	
ScotWind Site 8	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 9	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 10	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 11	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
ScotWind Site 12	5	UK	Unknown	Unknown	Unknown	Y	Y	Y	N	N	N
<i>Sheringham Shoal Extension</i>	5	UK	-	2027-2031	-	Y	Y	Y	Y	Y	-

<sup>1</sup>Operational prior to SEP and DEP baseline surveys commencing

<sup>2</sup>Unknown construction end date, but assumed before 2027 based on construction start date

<sup>3</sup>Assessed on a precautionary basis



#### 10.3.4.1.1.2 *European Offshore Wind Farms Long List*

50. European OWF projects (**Table 10.3.2**) listed in Tier 1-4 were considered for the CIA. Where possible, known dates of construction were used to assess whether there is the potential for construction periods to overlap with SEP and DEP (2027-2032). The screening for the construction of the European OWF Tier 3 projects was based on the seven year window in which construction could occur (e.g. from date of consent for Tier 3 projects). If there was no information or any uncertainty, the projects were initially screened in as a precautionary approach.
51. Of the 76 Tier 1-4 European OWF projects considered, 60 are currently operational (Tier 1) and were screened out. Two Tier 2 projects are under construction and will not have construction phase that will overlap with construction of SEP and DEP and were therefore also screened out.
52. All of the 11 Tier 3 European OWF projects do not have construction phase that will overlap with construction of SEP and DEP and were therefore also screened out.
53. All of the three Tier 4 European OWF projects were also screened out based on location in relation to the relevant spatial area for each species and the potential to have construction phase that will potentially overlap with construction of SEP and DEP. For example, Galatea-Galene is located in the Kattegat, outside of the North Sea MU.
54. The results of the screening are presented in **Table 10.3.2**.

**Table 10.3.2: Results of the Initial CIA Screening for European Offshore Wind Farm within Relevant Spatial Area for Each Species and the Potential to Overlap with SEP and DEP Construction (2027-2032)**

Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
<b>OWFs that are currently fully operational</b>											
Belwind	1	Belgium	2008	2009-2010	N	Y	Y	Y	N	N	N
Belwind Alstom Haliade Demonstration	1	Belgium	Unknown	2013-2014	N	Y	Y	Y	N	N	N
Nobelwind	1	Belgium	2008	2016-2017	N	Y	Y	Y	N	N	N
Norther	1	Belgium	2012	2018-2019	N	Y	Y	Y	Y	Y	N
Northwester 2	1	Belgium	2015	2019-2020	N	Y	Y	Y	Y	Y	N
Northwind	1	Belgium	2009	2013-2014	N	Y	Y	Y	N	N	N
RENTEL	1	Belgium	2013	2017-2018	N	Y	Y	Y	N	N	N
Seamade (Mermaid)	1	Belgium	2015	2017-2020	N	Y	Y	Y	N	N	N
Seamade (SeaStar)	1	Belgium	2014	Unknown	N	Y	Y	Y	N	N	N
Thornton Bank phase I	1	Belgium	2004	2008-2009	N	Y	Y	Y	N	N	N
Thornton Bank phase II	1	Belgium	2004	2010-2013	N	Y	Y	Y	N	N	N





Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
Thornton Bank phase III	1	Belgium	2004	2011-2013	N	Y	Y	Y	N	N	N
Anholt	1	Denmark	2010	2011-2013	N	N	Y	Y	N	N	N
Frederikshavn	1	Denmark	2001	2002-2003	N	N	Y	Y	N	N	N
Horns Rev 1	1	Denmark	2001	2002	N	Y	Y	Y	Y	Y	N
Horns Rev 2	1	Denmark	2007	2008-2010	N	Y	Y	Y	N	N	N
Horns Rev 3	1	Denmark	2015	2018-2019	N	Y	Y	Y	N	N	N
Nissum Bredning Vind	1	Denmark	2017	2017-2018	N	Y	Y	Y	N	N	N
Rønland (Nissum Bredning)	1	Denmark	2009	2013-2014	N	Y	Y	Y	N	N	N
Samsø	1	Denmark	2001	2002-2003	N	N	Y	Y	N	N	N
Tunø Knob	1	Denmark	1994	1995	N	N	Y	Y	N	N	N
Albatros	1	Germany		2019-2020	N	Y	Y	Y	N	N	N
Alpha Ventus	1	Germany	2001	2008-2010	N	Y	Y	Y	N	N	N
Amrumbank West	1	Germany	2004	2013-2015	N	Y	Y	Y	N	N	N
BARD Offshore 1	1	Germany	2007	2010-2013	N	Y	Y	Y	N	N	N

Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
Borkum Riffgrund I	1	Germany	2001	2008-2010	N	Y	Y	Y	N	N	N
Borkum Riffgrund II	1	Germany	2011	2017-2019	N	Y	Y	Y	N	N	N
Butendiek (Offshore-Bürger- windpark)	1	Germany	2002	2014-2015	N	Y	Y	Y	N	N	N
Dan Tysk	1	Germany	2005	2013-2015	N	Y	Y	Y	N	N	N
Deutsche Bucht	1	Germany	2010	2018-2019	N	Y	Y	Y	N	N	N
ENOVA Ems Emden	1	Germany	2003	2004	N	Y	Y	Y	N	N	N
Global Tech I	1	Germany	2006	2012-2015	N	Y	Y	Y	N	N	N
Gode Wind 1 and 2	1	Germany	2009	2015-2017	N	Y	Y	Y	N	N	N
Hohe See	1	Germany	2010	Unknown	N	Y	Y	Y	N	N	N
Meerwind Ost Sud	1	Germany	2007	2012-2014	N	Y	Y	Y	N	N	N
Merkur	1	Germany	2009	2017-??	N	Y	Y	Y	N	N	N
Nordergrunde	1	Germany	2008	2016-2017	N	Y	Y	Y	Y	Y	N
Nordsee One (Innogy Nordsee I)	1	Germany	2012	2015-2017	N	Y	Y	Y	N	N	N
Nordsee Ost	1	Germany	2004	2012-2015	N	Y	Y	Y	N	N	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
OWP Albatros Phase 1	1	Germany	2015	2018 - Unknown	N	Y	Y	Y	N	N	N
Riffgat	1	Germany	2010	2012-2014	N	Y	Y	Y	Y	Y	N
Sandbank	1	Germany	2004	2015-2017	N	Y	Y	Y	N	N	N
Trianel Windpark Borkum Phase 1 (Borkum West II phase 1)	1	Germany	2008	2011-2015	N	Y	Y	Y	N	N	N
Trianel Windpark Borkum Phase 2 (aka Borkum West II phase 2)	1	Germany	2007	2017-2020	N	Y	Y	Y	N	N	N
Veja Mate	1	Germany	2009	2016-2017	N	Y	Y	Y	N	N	N
Borssele I and II	1	Netherlands	2016	2019-2020	N	Y	Y	Y	N	N	N
Borssele III and IV	1	Netherlands	2016	2019-2021	N	Y	Y	Y	N	N	N
Borssele Site V - Leeghwater - Innovation Plot	1	Netherlands	2016	2020 - 2021	N	Y	Y	Y	N	N	N
Egmond aan Zee (aka OWEZ)	1	Netherlands	2005	2006-2007	N	Y	Y	Y	N	N	N
Eneco Luchterduinen	1	Netherlands	2012	2014-2015	N	Y	Y	Y	N	N	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
Gemini ZeeEnergie	1	Netherlands	2009	2015-2017	N	Y	Y	Y	N	N	N
Irene Vorrink	1	Netherlands	Unknown	1996	N	Y	Y	Y	N	N	N
Prinses Amalia Windpark (formerly Q7)	1	Netherlands	2002	2006-2007	N	Y	Y	Y	N	N	N
Westermeerwind	1	Netherlands	2012	2015-2016	N	Y	Y	Y	N	N	N
Windpark Fryslân	1	Netherlands	2018	2020-2021	N	Y	Y	Y	Y	Y	N
Karmøy - Marine Energy Test Centre (Metcentre) - Fixed	1	Norway	2010	Unknown	N	Y	Y	Y	N	N	N
Karmøy - Marine Energy Test Centre (Metcentre) - Floating	1	Norway	2010	Unknown	N	Y	Y	Y	N	N	N
TetraSpar Demo - Metcentre	1	Norway	Unknown	2021	N	Y	Y	Y	N	N	N
UNITECH Zefryos by Hywind Technology (Karmoy / Hywind)	1	Norway	2006	2009	N	Y	Y	Y	N	N	N
SeaTwirl S1	1	Sweden	2015	2015	N	Y	Y	Y	N	N	N
<b>OWFs that are currently under construction</b>											



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
Hollandse Kust Zuid Holland I and II - Chinook	2	Netherlands	Unknown	2022-2023	N	Y	Y	Y	N	N	N
Hollandse Kust Zuid Holland III and IV	2	Netherlands	Unknown	2022-2023	N	Y	Y	Y	N	N	N
<b>OWFs that are consented</b>											
Vesterhav Nord/Syd	3	Denmark	Unknown	2022-2023	N	Y	Y	Y	N	N	N
Eoliennes du Calvados	3	France	2016	2023-2024	N	Y	N	Y	N	N	N
Dieppe - Le Treport	3	France	2019	2022-2023	N	Y	N	Y	N	N	N
Fécamp	3	France	2016	2022-2023	N	Y	N	Y	N	N	N
Borkum Riffgrund III	3	Germany	2011	2024-2025	N	Y	Y	Y	N	N	N
EnBW He Dreiht	3	Germany	2010	2024-2025	N	Y	Y	Y	N	N	N
Gode Wind 03	3	Germany	2016	2023 - Unknown	N	Y	Y	Y	N	N	N
Kaskasi	3	Germany	2018	2021 - Unknown	N	Y	Y	Y	N	N	N
Hollandse Kust Noord Holland I and II	3	Netherlands	Unknown	2022-2023	N	Y	Y	Y	N	N	N
Hywind Tampen	3	Norway	Unknown	2022	N	Y	Y	Y	N	N	N



Project	Tier	Country	Time of Consent	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
				Construction phase	Potential for construction phase overlap?	HP	BND	MW & WBD	GS	HS	
Kattegatt Offshore	3	Sweden	2015	Unknown	N	N	Y	Y	N	N	N
<b>OWFs that have submitted planning applications, but are not yet consented</b>											
Jammerland Bugt	4	Denmark	Unknown	2023-2024	N	N	Y	Y	N	N	N
Galatea-Galene	4	Sweden	Unknown	2028-2030	Y	N	N	N	N	N	N
Mejlflak	4	Denmark	Unknown	ON HOLD	N	N	Y	Y	N	N	N

#### 10.3.4.1.1.3 Offshore Wind Farms Short List

55. Following the initial screening of UK and European OWFs, the next stage of the screening exercise was undertaken on those projects that have been identified as having the potential for cumulative construction impacts. This stage of the screening is based on known construction periods of UK and European OWF projects, including known piling and /or construction timings, in order to determine a more realistic, but still worst-case, list of UK and European OWF projects that may the potential for overlapping piling with SEP and / or DEP (**Table 10.3.3**).
56. Within this stage of the screening, it is assumed that, where OWF developers have more than one offshore wind farm, they are unlikely to develop more than one site at a time, unless further information is available (for example, in the case of the East Anglia Hub where two sites could be developed at the same time).
57. Of the UK and European OWFs screened in for having a construction period that could potentially overlap with the construction of SEP and DEP, ten UK OWFs could be piling at the same time as SEP and / or DEP:
- East Anglia ONE North (all species)
  - East Anglia TWO (all species)
  - Hornsea Project Four (all species)
  - Berwick Bank (not grey or harbour seal)
  - Dogger Bank South (not harbour seal)
  - Five Estuaries (all species)
  - North Falls (all species)
  - Outer Dowsing (all species)
  - Rampion Extension (harbour porpoise only)
58. The other four OWFs could have other construction activities that could overlap with piling or other construction activities at SEP and / or DEP:
- Dolphyn Project (not grey or harbour seal)
  - Norfolk Boreas (all species)
  - Norfolk Vanguard (all species)
  - Salamander (not grey or harbour seal)
59. This more realistic short list of OWF projects that could be piling at the same time as SEP and / or DEP could change as projects develop, but this is the best available information at the time of writing, and more accurately reflects the limitations and constraints to project delivery.

**Table 10.3.3: Screening of Offshore Wind Farms for Potential Cumulative Piling Activities.**

All details presented are based on the most up to date information for each project at the time of writing

Name of Project	Tier	Spatial Area					Piling dates	Overlap of piling at SEP/DEP (2028 or 2031)	Screened in CIA for piling?
		HP	BND	MW & WBD	GS	HS			
Berwick Bank (Seagreen Charlie Delta Echo / Marr Bank <sup>2</sup> )	5	Y	Y	Y	N	N	2028-2029	Y <sup>2</sup>	Y
Dogger Bank South	5	Y	Y	Y	Y	N	2026-??	Y	Y
Dolphyn Project – commercial <sup>3</sup>	5	Y	Y	Y	N	N	Floating project	N <sup>3</sup>	N
East Anglia ONE North <sup>1</sup>	4	Y	Y	Y	Y	Y	2025-??	Y	Y
East Anglia TWO <sup>1</sup>	4	Y	Y	Y	Y	Y	2026-??	Y	Y
Five Estuaries <sup>2</sup>	5	Y	Y	Y	Y	Y	2028-2030	Y	Y
Hornsea Project Four	4	Y	Y	Y	Y	Y	2027-2028	Y	Y
Norfolk Boreas	4	Y	Y	Y	Y	Y	2025-2027	N	N
Norfolk Vanguard	3	Y	Y	Y	Y	Y	2025-2027	N	N
North Falls	5	Y	Y	Y	Y	Y	2028-2030	Y	Y
Outer Dowsing	5	Y	Y	Y	Y	Y	Unknown	Y	Y
Rampion Extension	5	Y	N	N	N	N	2026-2029	Y	Y
Salamander <sup>3</sup>	5	Y	Y	Y	N	N	Floating project	N <sup>3</sup>	N

<sup>1</sup>Constructed at the same time, referred to as the East Anglia Hub. Assume that no more than two projects will be piled at the same time

<sup>2</sup>Where projects have the same developer, it is assumed (unless further information is known), that only one will be piled at a time, and therefore additional projects with the same developer and similar construction windows are screened out of assessment of concurrent piling with SEP/DEP

<sup>3</sup>project is floating offshore wind farm, and therefore assume that there will be no piling activity



#### 10.3.4.1.1.4 Offshore Wind Farm Piling Screening for Potential Construction Programmes

60. This stage of the CIA screening considers the results from the short-list assessment, as shown in **Table 10.3.3**, for both UK and European OWFs, in relation to the SEP and DEP construction scenarios:
- If both SEP and DEP were to be constructed concurrently, with offshore construction taking place from 2027 to 2029, with piling in 2028
  - SEP and DEP are constructed sequentially, it is not known whether SEP or DEP would be constructed first, and they would be constructed as follows:
    - For the first project to be constructed, offshore construction would take place from 2027 to 2029, with piling in 2028
    - For the second project to be constructed, offshore construction would take place from 2030 to 2032, with piling in 2031
61. The potential worst-case scenario would be if SEP and DEP were to be constructed concurrently with simultaneous piling in 2028:
- SEP
  - DEP
  - Berwick Bank
  - Dogger Bank South
  - East Anglia ONE North
  - East Anglia TWO
  - Five Estuaries
  - Hornsea Project Four
  - North Falls
  - Outer Dowsing
  - Rampion Extension
62. If SEP and DEP were constructed sequentially the CIA for piling in 2028 for the first project would include:
- SEP or DEP
  - Berwick Bank
  - Dogger Bank South
  - East Anglia ONE North
  - East Anglia TWO
  - Five Estuaries
  - Hornsea Project Four
  - North Falls
  - Outer Dowsing
  - Rampion Extension

63. Currently only the Outer Dowsing could also have piling in 2031, as the piling dates are unknown.
64. Note that not all projects for the cumulative piling assessment are relevant for each species. The species to be included for each cumulative project are indicated in **Table 10.3.4**.

**Table 10.3.4: Offshore Wind Farms Screened In for Cumulative Impacts from Piling for SEP & DEP Piling Scenarios.**

All details presented are based on the most up to date information for each project at the time of writing.

✓ = included in CIA for piling activities.

Project	Date of Piling	Piling scenarios			Species					
		Construct concurrently (piling in 2028)	Construct sequentially – Project 1 (piling in 2028)	Construct sequentially – Project 2 (piling in 2031)	HP	BND	WBD	MW	GS	HS
SEP	2028 or 2031	✓	✓	✓	✓	✓	✓	✓	✓	✓
DEP	2028 or 2032	✓	✓	✓	✓	✓	✓	✓	✓	✓
Berwick Bank	2028-2029	✓	✓	✗	✓	✓	✓	✓	✗	✗
Dogger Bank South	2026-??	✓	✓	✗	✓	✓	✓	✓	✓	✗
East Anglia ONE North	2025-??	✓	✓	✗	✓	✓	✓	✓	✓	✓
East Anglia TWO	2026-??	✓	✓	✗	✓	✓	✓	✓	✓	✓
Five Estuaries	2028-2030	✓	✓	✗	✓	✓	✓	✓	✓	✓
Hornsea Project Four	2027-2028	✓	✓	✗	✓	✓	✓	✓	✓	✓
North Falls	2028-2030	✓	✓	✗	✓	✓	✓	✓	✓	✓
Outer Dowsing	Unknown	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rampion Extension	2026-2029	✓	✓	✗	✓	✗	✗	✗	✗	✗



#### 10.3.4.1.1.5 Offshore Wind Farm Construction Activities

65. All OWFs with construction dates that have the potential to overlap with the construction dates for SEP and DEP, have the potential for other construction activities (such as sea bed preparation, dredging, trenching, cable installation, rock placement, drilling and vessels) to occur at the same time as other construction activities at SEP and DEP.

OWFs screened in for other construction activities that could have cumulative impacts with other construction activities at SEP and DEP are:

- SEP and / or DEP
- Norfolk Boreas
- East Anglia ONE North
- East Anglia TWO
- Hornsea Project Four
- Norfolk Vanguard
- Berwick Bank (Seagreen Charlie Delta Echo / Marr Bank)
- Dogger Bank South
- Dolphyn Project – commercial
- Five Estuaries
- North Falls
- Outer Dowsing
- Rampion Extension
- Salamander

#### 10.3.4.1.2 Geophysical Surveys

66. Prior to construction, OWFs conduct geophysical surveys to determine sea bed conditions, check for debris and other anomalies.

67. These geophysical surveys at OWFs 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
- Side Scan Sonar (SSS)

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

69. 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 200m in depth are not considered to be a risk to marine mammals, as that 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 CIA.
70. The SBP and USBL frequency ranges are within marine mammal hearing range (JNCC, 2017), and will 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 in** to the CIA.
71. Auditory injury effects from SBP and USBL are not predicted, as an animal would need to remain in the very small zone of personification for a prolonged period, which is highly unlikely (JNCC *et al.*, 2010). Most of the sound energy generated by the SBP or USBL equipment will be directed towards the seabed and the pulse duration is extremely short, with the continuous movement of the survey.
72. Assessments for the Review of Consents (RoC) Habitats Regulation Assessment (HRA) for the Southern North Sea (SNS) Special Area of Conservation (SAC) (BEIS, 2020), modelled the potential for disturbance due to the use of a SBP and results indicated that there is the potential for a possible behavioural response in harbour porpoise at up to 3.77km (44.65km<sup>2</sup>) from the source. The current guidance for assessing the significance of noise disturbance for harbour porpoise SACs (JNCC *et al.*, 2020) recommends the use of an Effective Deterrence Radius (EDR) of 5km (78.54km<sup>2</sup>) for geophysical surveys.
73. As a worst-case, it has been assumed that all marine mammals within 5km of the survey source, a total area of 78.54km<sup>2</sup>, could be disturbed.
74. 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.
75. However, as a precautionary approach, the assessment of the potential disturbance of harbour porpoise in the SNS SAC in the Report to Inform Appropriate Assessment (RIAA) (document reference 5.4) will also include the possible disturbance from the survey area as assessed in BEIS (2020).
76. It is currently not possible to estimate the location or number of potential OWF geophysical surveys that could be undertaken at the same time as construction and potential piling activity at SEP and DEP. It is therefore assumed, as a worst-case scenario, that there could potentially be up to two geophysical surveys at OWFs in the North Sea at any one time, during construction of SEP and DEP.
77. Geophysical surveys for SEP and DEP will be assessed separately prior to the surveys being undertaken, based on the type of survey required, equipment used, area covered, time of year and duration, including cumulative impacts during geophysical surveys at SEP and DEP. Therefore, geophysical surveys for SEP and DEP are not included in this CIA.

#### 10.3.4.1.3 Operational Offshore Wind Farms

78. The noise levels associated with operation OWFs is relatively low, with recorded levels of between 141 and 146dB re 1 $\mu$ Pa-m (RMS SPL) at four United Kingdom (UK) OWFs (MMO, 2015; Cheesman *et al.*, 2016), and levels of 106 and 126dB re 1 $\mu$ Pa-m (RMS SPL) at three operational OWFs in Sweden and Denmark, which could not be audible for harbour porpoise at a distance of 70m from the wind turbine location (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). Due to the low noise levels associated with operational OWFs, the BEIS (2020) RoC HRA for the SNS SAC, concluded that there would no potential for significant impact from the operation of OWFs, alongside the construction of OWFs (BEIS, 2020).
79. Therefore, operational OWFs are **screened out** from further consideration within the CIA screening.
80. The potential for cumulative impacts from operation wind turbines at SEP and DEP with other projects and activities has also been **screened out** from further consideration within the CIA screening.

#### 10.3.4.1.4 Maintenance of Operational Offshore Wind Farms

81. Maintenance activities at OWFs, such as such as additional rock placement or cable re-burial, will be very localised, short in duration and temporary.
82. The potential for cumulative impacts from maintenance activities, including vessels at OWFs would be less than the cumulative impacts assessed for construction activities other than piling.
83. Therefore, maintenance of OWFs is **screened out** from further consideration within the CIA screening.

#### 10.3.4.1.5 Decommissioning of Offshore Wind Farms

84. There is currently no information on any OWFs that could be decommissioning during the construction of SEP and DEP. Therefore, decommissioning of OWFs is **screened out** from further consideration within the CIA screening.
85. The potential for cumulative impacts during the decommissioning of SEP and DEP are currently unknown. The potential impacts for the decommissioning of SEP and DEP including CIA will be assessed prior to any decommissioning activities. Therefore, the decommissioning of SEP and DEP has also been **screened out** from further consideration within this CIA screening.

#### 10.3.4.2 Marine Renewable (Wave and Tidal) Developments

86. Marine renewable projects (e.g. wave and tidal) assessed in the CIA screening were Tier 1-5 for UK based projects, and Tier 1-3 for other European projects.

87. UK based projects listed in Tiers 1-4 were considered for potential construction, operational cumulative impacts, if those phases could overlap with the proposed construction of SEP and DEP and sufficient information was available to determine this. Where no information was known on the potential construction phases of the other renewable energy projects, it was assumed that all Tier 2 and 3 projects would have completed construction prior to the construction of SEP and DEP. It was also assumed that all Tier 1 renewable energy projects are considered to be part of the existing baseline environment. No European projects have been **screened in** (at Tier 3 or above). The results of the screening are in **Table 10.3.5**.
88. A total of 23 projects were considered for the CIA, nine of which could have the potential for construction to overlap with the proposed construction of SEP and DEP, and 20 have the potential for operational cumulative impacts (nine of which also have overlapping construction periods with SEP and DEP).
89. All currently operational tidal projects (Tier 1) have been operational since the start of the baseline surveys for SEP and DEP (May 2018), and are therefore **screened out** from further consideration in the CIA.
90. Piling is highly unlikely to be used during the installation of wave and tidal projects. The installation of wave/tidal projects is typically using drilled pins or gravity bases. Percussive piling is not anticipated to be used as an installation method and therefore the noise impacts during construction will have a very limited impact range, especially compared to offshore wind farms.
91. The construction of wave or tidal developments is highly unlikely to contribute to the cumulative impacts of the disturbance of marine mammals from underwater noise sources. In addition, all marine renewable energy projects are located at significant distance from both SEP and DEP, with the closest being located to the south of the Isle of Wight (approximately 425km from the closest point of SEP and DEP). Therefore, the potential for cumulative impact from the construction of marine renewable energy projects with SEP and DEP have not been included in the CIA.
92. The operation and maintenance of wave and tidal projects are also highly unlikely to contribute to the cumulative impacts of the disturbance of marine mammals from underwater noise sources and therefore have not been included in the CIA.
93. Potential impacts during the operation of tidal projects include collision risk. However, tidal projects will have to have effective mitigation and monitoring to reduce the collision risk for marine mammals. Therefore, collision risk with tidal devices has been **screened out** of the CIA.
94. The construction, operation and maintenance of all wave and tide projects have been **screened out** of the CIA (**Table 10.3.5**).

*Table 10.3.5: CIA Screening for Marine Renewable Projects within Relevant Spatial Areas and Potential Overlap with SEP and DEP Construction*

Project	Type	Tier	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
			Construction	Operation	HP	BND	MW & WBD	GS	HS	
<b>Marine renewable projects that are currently fully operational</b>										
Bluemull Sound	Tidal	1	N	N	Y	Y	Y	N	N	N
EMEC Magallanes 2	Tidal	1	N	Y	Y	Y	Y	N	N	N
EMEC OpenHydro	Tidal	1	N	Y	Y	N	Y	N	N	N
MeyGen Pentland Firth Phase 1a	Tidal	1	N	N	Y	N	Y	N	N	N
Minesto Strangford Loch	Tidal	1	N	Y	N	N	Y	N	N	N
Shetland Tidal Array Phase 1	Tidal	1	N	N	Y	Y	Y	N	N	N
<b>Marine renewable projects that are currently under construction</b>										
EMEC Blue Horizon	Wave	2	N	Y	Y	Y	Y	N	N	N
<b>Marine renewable projects that are consented</b>										
EMEC Orbital O2	Tidal	3	N	Y	Y	Y	Y	N	N	N
MeyGen Pentland Firth Phase 1B	Tidal	3	N	Y	Y	N	Y	N	N	N
MeyGen Pentland Firth Phase 1C	Tidal	3	N	Y	Y	N	Y	N	N	N





Project	Type	Tier	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
			Construction	Operation	HP	BND	MW & WBD	GS	HS	
Perpetuus Tidal Energy Centre (PTEC)	Tidal	3	N	Y	Y	N	Y	N	N	N
Shetland Tidal Array Phase 2	Tidal	3	N	Y	Y	Y	Y	N	N	N
<b>Marine renewable projects that are currently in the process of drafting planning applications, or are in the early development stage</b>										
Brims tidal array Phase 1	Tidal	5	N	Y	Y	N	Y	N	N	N
Brims tidal array Phase 2	Tidal	5	N	Y	Y	N	Y	N	N	N
EMEC Orbital O2 - Phase 2	Tidal	5	Y	Y	Y	Y	Y	N	N	N
EMEC Stronsay Firth	Tidal	5	Y	Y	Y	Y	Y	N	N	N
Lashy Sound (1 & 2)	Tidal	5	Y	Y	Y	N	Y	N	N	N
MeyGen Pentland Firth Phase 2	Tidal	5	Y	Y	Y	N	Y	N	N	N
Ness of Duncansby Phase 1	Tidal	5	Y	Y	Y	N	Y	N	N	N
Ness of Duncansby Phase 2	Tidal	5	Y	Y	Y	N	Y	N	N	N
Portland Bill Tidal Site	Tidal	5	Y	Y	Y	N	Y	N	N	N



Project	Type	Tier	Phase of Project Considered in CIA		Spatial Area					Screened into CIA?
			Construction	Operation	HP	BND	MW & WBD	GS	HS	
Seagen Brough Ness	Tidal	5	Y	Y	Y	N	Y	N	N	N
Westray South	Tidal	5	Y	Y	Y	N	Y	N	N	N



### 10.3.4.3 Aggregate Extraction and Dredging

96. Aggregate extraction and dredging projects considered for the CIA screening were Tier 1-4 for UK based projects (**Table 10.3.6**). No European projects were screened in due to a lack of information on project locations, phases, and programmes.
97. UK based projects listed in Tiers 1-4 were initially considered for potential operational cumulative impacts, if those phases could overlap with the proposed construction of SEP and DEP.
98. All aggregate extraction and dredging projects are considered to be part of the existing baseline environment if operational prior to the start of the baseline surveys for SEP and DEP in May 2018. Out of the initial list of 70 projects 59 were initially screened out as being operational prior to May 2018.
99. 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.
100. When undertaking dredging activities, higher levels of broadband noise at frequencies above 1kHz are produced due to the impact or abrasion of aggregate material passing through the draghead, 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).
101. As outlined in **Appendix 10.2**, the underwater noise modelling indicates the risk of permanent change in hearing sensitivity (PTS) or temporary change in hearing sensitivity (TTS) for dredging and vessels is less than 100m for all marine mammal species. With exception of 200m TTS impact range for harbour porpoise.
102. Taking into account the small potential impact ranges, distances of the aggregate extraction and dredging projects from SEP and DEP, 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 CIA.
103. The closest of these aggregate sites to SEP and DEP is the 'Off Great Yarmouth' site, approximately 60km from the closest point of SEP and DEP.
104. As outlined in the BEIS (2020) RoC HRA for the SNS SAC, studies have indicated that harbour porpoise may be displaced by dredging operations within 600m of the activities (Diederichs *et al.*, 2010).
105. As a precautionary approach, a total of 11 aggregate extraction and dredging projects will be considered further for the potential cumulative disturbance of harbour porpoise.
106. Based on precautionary level of behavioural displacement of harbour porpoise out to 600m, there is potential for an area of 1.13km<sup>2</sup> to be affected (BEIS, 2020). As a worst-case scenario, assuming for all 11 sites active at the same time, the area of potential disturbance of harbour porpoise is up to 12.43km<sup>2</sup>. Therefore, risk of marine mammal displacement has been **screened in** to the CIA.
107. The aggregate extraction and dredging projects located in the SNS SAC will be considered further for in-combination effects in the RIAA (document reference 5.4).

108. The results of the screening aggregate extraction and dredging projects is presented in **Table 10.3.6**.

**Table 10.3.6: CIA Screening for UK Aggregate and Dredging Projects within the Relevant Spatial Areas and Potential to Overlap with SEP and DEP Construction**

Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
<b>Aggregate extraction and dredging projects that are in production (Tier 1)</b>												
Area 1 South	Production	DEME Building Materials Ltd	Dec-12	Apr-24	Y	N	Y	N	Y	N	N	N
Cross Sands	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Goodwin Sands	Production	Dover Harbour Board	Oct-18	Dec-22	N	Y	Y	Y	Y	Y	Y	Yes for HP disturbance
Greenwich Light East	Production	CUML	Nov-21	Nov-36	N	Y	Y	N	Y	N	N	Yes for HP disturbance
Greenwich Light East	Production	CUML	Nov-21	Nov-36	N	Y	Y	N	Y	N	N	Yes for HP disturbance
Humber 1	Production	CUML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber 2	Production	CUML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber 3	Production	CUML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber 3	Production	DEME Building Materials Ltd	Jan-16	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber 4	Production	CUML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N



Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
Humber 4 and 7	Production	DEME Building Materials Ltd	Apr-17	Mar-32	Y	N	Y	Y	Y	Y	Y	N
Humber 5	Production	DEME Building Materials Ltd	Apr-18	Mar-33	Y	N	Y	Y	Y	Y	Y	N
Humber Estuary	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber Estuary	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber Estuary	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber Estuary	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Humber Overfalls	Production	TML	Jan-17	Dec-31	Y	N	Y	Y	Y	Y	Y	N
Inner Dowsing	Production	TML	Dec-12	Oct-24	Y	N	Y	Y	Y	Y	Y	N
Inner Dowsing	Production	Van Oord Ltd	Dec-12	Oct-24	Y	N	Y	Y	Y	Y	Y	N
Inner Owers	Production	HAML	Jul-15	Jul-30	Y	N	Y	N	Y	N	N	N
Inner Owers	Production	TML	Apr-17	Jul-30	Y	N	Y	N	Y	N	N	N
Inner Owers North	Production	TML	Apr-17	Jul-30	Y	N	Y	N	Y	N	N	N
Longsand	Production	Tarmac Marine Ltd	Jun-15	Jun-30	Y	N	Y	Y	Y	Y	Y	N



Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
Longsand	Production	CUML	Jun-15	Jun-30	Y	N	Y	Y	Y	Y	Y	N
Longsand	Production	Britannia Aggregates Ltd	Apr-14	Mar-29	Y	N	Y	Y	Y	Y	Y	N
Median Deep	Production	Volker Dredging Ltd	Sep-21	Sep-36	N	Y	Y	N	Y	N	N	Yes for HP disturbance
Needles Isle of Wight	Production	CUML	Jan-15	Dec-29	Y	N	Y	N	Y	N	N	N
North Cross Sands	Production	TML	Jan-17	Dec-31	Y	N	Y	Y	Y	Y	Y	N
North Falls East	Production	Westminster Gravels Ltd	Jul-17	Jun-32	Y	N	Y	Y	Y	Y	Y	N
North Inner Gabbard	Production	Britannia Aggregates Ltd (BAL)	Jan-15	Jan-30	Y	N	Y	Y	Y	Y	Y	N
North Inner Gabbard	Production	Volker Dredging Ltd / CUML	Jan-15	Jan-30	Y	N	Y	Y	Y	Y	Y	N
Off Great Yarmouth	Production	TML	Oct-18	Sep-33	N	Y	Y	Y	Y	Y	Y	Yes for HP disturbance
Off Great Yarmouth	Production	Volker Dredging Ltd (VDL)	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N



Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
Off Great Yarmouth Extension	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Off Saltfleet	Production	TML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Off Selsey Bill	Production	TML	Mar-13	Mar-28	Y	N	Y	N	Y	N	N	N
Off Selsey Bill	Production	Kendall Bros (Portsmouth) Ltd / TML	Mar-13	Mar-28	Y	N	Y	N	Y	N	N	N
Outer Dowsing	Production	Westminster Gravels Ltd	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Owers Extension	Production	CUML	Apr-17	Mar-32	Y	N	Y	N	Y	N	N	N
Shipwash	Production	CEMEX UK Marine Ltd (CUML)	Oct-16	Sep-31	Y	N	Y	Y	Y	Y	Y	N
South East Isle of Wight	Production	Volker Dredging Ltd / CUML	Jan-15	Dec-29	Y	N	Y	N	Y	N	N	N
South East Isle of Wight	Production	Volker Dredging Ltd / CUML	Jan-15	Dec-29	Y	N	Y	N	Y	N	N	N
South East Isle of Wight	Production	CUML	Jan-15	Dec-29	Y	N	Y	N	Y	N	N	N
South East Isle of Wight	Production	TML	Jan-15	Dec-29	Y	N	Y	N	Y	N	N	N



Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
South Hastings	Production	CUML	Jan-13	Jan-28	Y	N	Y	N	Y	N	N	N
South Hastings	Production	HAML	Jan-13	Jan-28	Y	N	Y	N	Y	N	N	N
South Hastings	Production	TML	Jan-13	Jan-28	Y	N	Y	N	Y	N	N	N
South of Needles Channel	Production	HAML	Apr-17	Mar-32	Y	N	Y	N	Y	N	N	N
South West Isle of Wight	Production	TML	Apr-17	Mar-32	Y	N	Y	N	Y	N	N	N
South West Isle of Wight	Production	TML	Jan-15	Dec-29	Y	N	Y	N	Y	N	N	N
South Wight	Production	TML	Apr-17	Mar-32	Y	N	Y	N	Y	N	N	N
Southwold East	Production	CUML	Dec-12	Nov-25	Y	N	Y	Y	Y	Y	Y	N
Southwold East	Production	TML	Dec-12	Nov-25	Y	N	Y	Y	Y	Y	Y	N
St Catherine's	Production	CUML	Mar-13	Mar-28	Y	N	Y	N	Y	N	N	N
St Catherine's	Production	Westminster Gravels Ltd	Apr-13	Mar-28	Y	N	Y	N	Y	N	N	N
West Bassurelle	Production	CUML	Dec-12	Sep-22	Y	N	Y	N	Y	N	N	N
West Bassurelle	Production	TML	Dec-12	Sep-22	Y	N	Y	N	Y	N	N	N
West Wight	Production	CUML	Sep-21	Sep-36	N	Y	Y	N	Y	N	N	Yes for HP disturbance



Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
Yarmouth	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Yarmouth	Production	HAML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
<b>Aggregate extraction and dredging projects that are an exploration &amp; option area (Tiers 4/5)</b>												
Colbart	Exploration & option area	Westminster Gravels Ltd	Aug-17	Jul-22	Y	N	Y	N	Y	Y	Y	N
East Orford Ness	Exploration & option area	Volker Dredging Ltd	Sep-19	Aug-24	N	Y	Y	Y	Y	Y	Y	Yes for HP disturbance
EEC 1 (former 503)	Exploration & option area	Sea Aggregates Ltd	Aug-17	Jul-22	Y	N	Y	N	Y	Y	Y	N
EEC 5 South	Exploration & option area	Hanson Aggregates Marine Ltd	Sep-19	Aug-24	N	Y	Y	N	Y	Y	Y	Yes for HP disturbance
EEC 5 South	Exploration & option area	Volker Dredging Ltd	Sep-19	Aug-24	N	Y	Y	N	Y	Y	Y	Yes for HP disturbance
Lowestoft	Exploration & option area	CUML	Jan-15	Dec-29	Y	N	Y	Y	Y	Y	Y	N
Lowestoft Extension	Exploration & option area	CUML	Sep-19	Aug-24	N	Y	Y	Y	Y	Y	Y	Yes for HP disturbance



Project	Project status	Project owner	Licence start date	Licence end date	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
							HP	BND	WBD & MW	GS	HS	
Outer OTE	Exploration & option area	HAML	Aug-17	Jul-22	Y	N	Y	Y	Y	Y	Y	N
Thames D	Exploration & option area	DEME Building Materials Ltd	Sep-15	Dec-21	Y	N	Y	Y	Y	Y	Y	N
West Bassurelle Extension	Exploration & option area	CUML	Sep-19	Aug-24	N	Y	Y	Y	Y	Y	Y	Yes for HP disturbance



#### 10.3.4.4 Licensed Disposal Sites

109. All UK licensed disposal sites are considered to be part of the existing baseline environment as were all operational prior to the start of the baseline surveys in May 2018. All UK licensed disposal sites have been **screened out** from further consideration in the CIA.
110. The results of the CIA screening for UK licensed disposal sites is presented in **Table 10.3.7**.

*Table 10.3.7: CIA Screening for UK Disposal Sites*

Project	Status	Tier	Considered part of the baseline?
Aberdeen	Open	1	Yes
Anstruther	Open	1	Yes
Arbroath	Open	1	Yes
Avonmouth (Inner)	Open	1	Yes
Ayr Bay	Open	1	Yes
Balnapaling	Open	1	Yes
Banff Harbour	Open	1	Yes
Barrow D	Open	1	Yes
Belfast Dredgings C	Open	1	Yes
Birdham Pool Marina	Open	1	Yes
Blyth A&B	Open	1	Yes
Blyth OWF Demo	Open	1	Yes
Bo'ness	Open	1	Yes
Boston 7	Open	1	Yes
Bridlington a	Open	1	Yes
Brighton/ Rottingdean	Open	1	Yes
Broughton	Open	1	Yes
Brownsea experimental	Open	1	Yes
Buckie	Open	1	Yes
Bull sand fort extension	Open	1	Yes
Burbo Bank Extension OWF	Open	1	Yes
Burgh Castle Yacht Station	Open	1	Yes
Burghead	Open	1	Yes
Canning Half Tide	Open	1	Yes
Cardiff Grounds	Open	1	Yes
Cleveland Potash Outfall	Open	1	Yes
Cloch Point	Open	1	Yes
Conmy Beneficial Use	Open	1	Yes
Copperas	Open	1	Yes
Cross sands 2	Open	1	Yes
Degabwy Beneficial Use	Open	1	Yes
Douglas (I.O.M)	Open	1	Yes
Dover	Open	1	Yes

Project	Status	Tier	Considered part of the baseline?
Dover - emergency site	Open	1	Yes
EA One Route EC-1	Open	1	Yes
EA One Route EC-2	Open	1	Yes
EA One Route EC-3	Open	1	Yes
EA One Route EC-4	Open	1	Yes
EA One Route EC-5	Open	1	Yes
EAOW3	Open	1	Yes
East Anglia One	Open	1	Yes
East Halton	Open	1	Yes
Eastbourne	Open	1	Yes
Erwarton Track	Open	1	Yes
Eyemouth	Open	1	Yes
Falmouth Bay (B)	Open	1	Yes
Foul Ground	Open	1	Yes
Fraserburgh	Open	1	Yes
Galloper owf	Open	1	Yes
Girvan	Open	1	Yes
Goole Reach	Open	1	Yes
Granton	Open	1	Yes
Great Yarmouth	Open	1	Yes
Greve d'Azette	Open	1	Yes
Grouville Bay	Open	1	Yes
Harwich Haven	Open	1	Yes
Hill Head	Open	1	Yes
Holme Channel Deep	Open	1	Yes
Holyhead North	Open	1	Yes
Hornsea Disposal Area 1	Open	1	Yes
Humber 1a	Open	1	Yes
Humber 2	Open	1	Yes
Humber 3a	Open	1	Yes
Humber 4	Open	1	Yes
Humber 4b/hook	Open	1	Yes
Humber 4b/hook extension	Open	1	Yes
Hurst fort	Open	1	Yes
Inner gabbard	Open	1	Yes
Inner gabbard east	Open	1	Yes
Inverness	Open	1	Yes
Keadby Station	Open	1	Yes
Kilkeel	Open	1	Yes
Kinness Burn	Open	1	Yes
Kirkcudbright	Open	1	Yes
Lantic Bay	Open	1	Yes



Project	Status	Tier	Considered part of the baseline?
Levington Site 1	Open	1	Yes
Levington Site 2	Open	1	Yes
Levington Site 3	Open	1	Yes
Levington Site 4	Open	1	Yes
Lochboisdale	Open	1	Yes
Lossiemouth	Open	1	Yes
Lossiemouth Harbour	Open	1	Yes
Lowestoft circular north	Open	1	Yes
Lowestoft marina temporary disposal site	Open	1	Yes
Lune River B	Open	1	Yes
Macduff	Open	1	Yes
Maidens	Open	1	Yes
Maldon saltings 3	Open	1	Yes
Merkur Buoy	Open	1	Yes
Mersey (Garston Site)	Open	1	Yes
Mersey (Mid-river Site)	Open	1	Yes
Methil	Open	1	Yes
Middle Bank (tay)	Open	1	Yes
Milford Haven 2	Open	1	Yes
Milford Haven 3	Open	1	Yes
Montrose	Open	1	Yes
MORECAMBE BAY B	Open	1	Yes
MORECAMBE BAY: LUNE DEEP	Open	1	Yes
MOSTYN DEEP (MAINTENANCE)	Open	1	Yes
MOUNTS BAY	Open	1	Yes
Nab Tower	Open	1	Yes
Nairn	Open	1	Yes
Narrow Deep B	Open	1	Yes
Needles	Open	1	Yes
Nemo Disposal site A	Open	1	Yes
Nemo Disposal site B	Open	1	Yes
Newhaven	Open	1	Yes
NEWPORT	Open	1	Yes
Newquay Track	Open	1	Yes
NEYLAND (OFF MILFORD HAVEN)	Open	1	Yes
Norfolk Vanguard East	Open	1	Yes
Norfolk Vanguard ECC 1	Open	1	Yes
Norfolk Vanguard ECC 2	Open	1	Yes
Norfolk Vanguard West	Open	1	Yes
North Buchan Ness	Open	1	Yes
NORTH CHANNEL, SCOTLAND	Open	1	Yes
North Tyne	Open	1	Yes



Project	Status	Tier	Considered part of the baseline?
Noses Point	Open	1	Yes
Orwell East Track	Open	1	Yes
Orwell West Track	Open	1	Yes
Orwell Yacht Club	Open	1	Yes
Oxcars ext a	Open	1	Yes
Oxcars ext b	Open	1	Yes
Oxcars main	Open	1	Yes
PADSTOW BAY	Open	1	Yes
PEEL (I.O.M)	Open	1	Yes
Pegwell Bay	Open	1	Yes
Peterhead Harbour	Open	1	Yes
Plymouth Deep	Open	1	Yes
PORT ELLEN	Open	1	Yes
PORTAVOGIE	Open	1	Yes
PORTISHEAD	Open	1	Yes
Race Bank OWF	Open	1	Yes
RAME HEAD SOUTH	Open	1	Yes
Rampion OWF	Open	1	Yes
Reedham Marina	Open	1	Yes
River Brora	Open	1	Yes
River Carron	Open	1	Yes
River Dee	Open	1	Yes
River orwell (abp)	Open	1	Yes
ROTHESAY BAY	Open	1	Yes
ROYAL EDWARD ENTRANCE	Open	1	Yes
ROYAL PORTBURY PIER	Open	1	Yes
Ryde harbour	Open	1	Yes
Scarborough Rock	Open	1	Yes
Seaton	Open	1	Yes
Shoreham	Open	1	Yes
SILLOTH B	Open	1	Yes
SITE Y	Open	1	Yes
SITE Z	Open	1	Yes
SOLWAY FIRTH	Open	1	Yes
Souter Point (outer)	Open	1	Yes
South falls	Open	1	Yes
SPREY POINT	Open	1	Yes
St Bredlades Bay	Open	1	Yes
St Monans	Open	1	Yes
St.Aubins	Open	1	Yes
Sunderland	Open	1	Yes
Sunk Dredge Channel Window C	Open	1	Yes



Project	Status	Tier	Considered part of the baseline?
Sutors	Open	1	Yes
Swanage bay	Open	1	Yes
SWANSEA BAY (OUTER)	Open	1	Yes
Tees Bay A	Open	1	Yes
Tees Bay C	Open	1	Yes
TEOW Disposal Site 1	Open	1	Yes
TEOW Disposal Site 2	Open	1	Yes
TEOW Disposal Site 3	Open	1	Yes
Treloar hole	Open	1	Yes
ventnor harbour	Open	1	Yes
WARRENPOINT B	Open	1	Yes
WATCHET HARBOUR	Open	1	Yes
Water of Girvan	Open	1	Yes
Well Beneficial Use Site2	Open	1	Yes
Wells Outer Harbour B1	Open	1	Yes
Wells Outer Harbour Site A	Open	1	Yes
Wells Outer Harbour Site C	Open	1	Yes
West Balnapaling	Open	1	Yes
West Stones	Open	1	Yes
Whitby	Open	1	Yes
Whitgift Bight (river ouse)	Open	1	Yes
Whitstable c	Open	1	Yes
WORKINGTON ANCHORAGE	Open	1	Yes

#### 10.3.4.5 Shipping

111. Shipping is considered to part of the baseline environment. All shipping has been **screened out** from further consideration in the CIA.

#### 10.3.4.6 Oil and Gas Installations

112. Oil and gas production and decommissioning projects could have the potential for cumulative impacts during the construction of SEP and DEP. Plans or projects considered during the CIA screening were Tier 1-4 for UK based projects. No European projects are assessed in due to a lack of information on project locations, phases, and programmes.
113. Tier 2-4 projects were initially considered for potential cumulative impacts, if those projects could overlap with the construction of SEP and DEP.



114. As outlined in the BEIS (2020) Roc HRA for the SNS SAC, the use of cutting equipment is predicted to be required primarily during decommissioning activities. There is 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.*, 2017). 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.
115. 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. Therefore, potential cumulative impacts from decommissioning activities, such as cutting equipment has been **screened out** from further consideration in the CIA.
116. The potential for cumulative impacts from vessels associated with the decommissioning of oil and gas installations has also been **screened out** from further consideration in the CIA. As the potential impacts 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 impacts from vessels during decommissioning of oil and gas installations has been **screened out** from further consideration in the CIA.
117. Of the 90 oil and gas projects considered, 82 were decommissioning projects. Taking into account the potential for any significant contribution to cumulative impact and the distances of the projects in relation to SEP and DEP, any potential cumulative impacts during decommissioning of oil and gas installations has been **screened out** from further consideration in the CIA.
118. Oil and gas installations that were operational prior to the SEP and DEP baseline surveys in May 2018 are considered part of the baseline environment. Therefore, any potential cumulative impacts from operational oil and gas installations has been **screened out** from further consideration in the CIA.
119. Of the other eight projects considered, none had construction phases with the potential to overlap with the construction of SEP and DEP and were therefore **screened out** from further consideration in the CIA.
120. The results of the screening are in **Table 10.3.8**.

*Table 10.3.8: CIA Screening for Oil and Gas Projects (both Decommissioning and Production Projects are Included) within Relevant Spatial Areas and with the Potential to Overlap with SEP and DEP Construction*

Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
<b>Oil &amp; Gas projects that are underway/ completed (Tier 2)</b>											
Huntington	Decommissioning	2	2020	N	N	Y	Y	Y	N	N	N
Viking satellites KD, LD, AR	Decommissioning	2	2016-2021	N	N	Y	Y	Y	Y	Y	N
Fulmar & Auk North	Decommissioning	2	2017-2021	N	N	Y	Y	Y	N	N	N
Pickerill Alpha (A) and Pickerill Bravo (B)	Decommissioning	2	2018-2019	N	N	Y	Y	Y	Y	Y	N
NEVIS N11 WELLHEAD	Decommissioning	2	2019-2020	N	N	Y	Y	Y	N	N	N
Brae Bravo Topsides, Flare Bridge, Flare Tower and Flare Jacket and Substructure	Decommissioning	2	2019-2020	N	N	Y	Y	Y	N	N	N
Brynhild	Decommissioning	2	2019-2021	N	N	Y	Y	Y	N	N	N
LOGGS Satellites Jupiter Area: LDP3b	Decommissioning	2	2020-2021	N	N	Y	Y	Y	Y	Y	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
"CORMORANT ALPHA Derrick Structure Removal & MDR Installation"	Decommissioning	2	2020-2021	N	N	Y	Y	Y	N	N	N
Viking Satellites CD, DD, ED, GD, HD Pipelines	Decommissioning	2	Programme states TBC by end of 2019 (but no close out report).	N	N	Y	Y	Y	Y	Y	N
LOGGS Satellites Vulcan UR, Viscount VO, Vampire OD - LDP1	Decommissioning	2	Programme states TBC by end of 2021.	N	N	Y	Y	Y	Y	Y	N
Saturn (Annabel)	Decommissioning	2	Q2 2018 - Q2 2021	N	N	Y	Y	Y	Y	Y	N
Viking	Decommissioning	2	2016-2024	N	N	Y	Y	Y	Y	Y	N
Dunlin Alpha	Decommissioning	2	2016-2026	N	N	Y	Y	Y	N	N	N
SCHOONER	Decommissioning	2	2018-2022	N	N	Y	Y	Y	Y	Y	N
TYNE	Decommissioning	2	2018-2022	N	N	Y	Y	Y	Y	Y	N
GUINEVERE	Decommissioning	2	2018-2022	N	N	Y	Y	Y	Y	Y	N
Goldeneye	Decommissioning	2	2018-2024	N	N	Y	Y	Y	N	N	N
BRENT ALPHA JACKET	Decommissioning	2	2018-2025	N	N	Y	Y	Y	N	N	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
Juliet	Decommissioning	2	2019-2021	N	N	Y	Y	Y	Y	Y	N
Caister	Decommissioning	2	2019-2022	N	N	Y	Y	Y	Y	Y	N
Cavendish	Decommissioning	2	2019-2022	N	N	Y	Y	Y	Y	Y	N
Minke	Decommissioning	2	2019-2022	N	N	Y	Y	Y	Y	Y	N
Pickerill Alpha (A) and Pickerill Bravo (B)	Decommissioning	2	2019-2022	N	N	Y	Y	Y	Y	Y	N
Thistle Alpha Platform	Decommissioning	2	2019-2022	N	N	Y	Y	Y	N	N	N
Windermere	Decommissioning	2	2019-2023	N	N	Y	Y	Y	Y	Y	N
Curlew B&D and Curlew C	Decommissioning	2	2019-2023	N	N	Y	Y	Y	N	N	N
Kingfisher Decommissioning Programme	Decommissioning	2	2019-2024	N	N	Y	Y	Y	N	N	N
BUCHAN & HANNAY	Decommissioning	2	2019-2025	N	N	Y	Y	Y	N	N	N
MacCulloch	Decommissioning	2	2019-2025	N	N	Y	Y	Y	N	N	N
Rockrose Energy	Decommissioning	2	2019-2027	N	Y	Y	Y	Y	N	N	N
Eider	Decommissioning	2	2019-2028	N	Y	Y	Y	Y	N	N	N
Rockrose Energy	Decommissioning	2	2020-2021	N	N	Y	Y	Y	N	N	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
Anglia Field	Decommissioning	2	2020-2022	N	N	Y	Y	Y	N	N	N
LOGGS Satellites Jupiter Area	Decommissioning	2	2020-2023	N	N	Y	Y	Y	Y	Y	N
LOGGS PR, LOGGS PC, LOGGS PP, LOGGS PA, North Valiant PD, & Associated Pipelines – LDP5	Decommissioning	2	2020-2024	N	N	Y	Y	Y	Y	Y	N
Brent Field	Decommissioning	2	2020-2024	N	N	Y	Y	Y	N	N	N
NINIAN NORTHERN PLATFORM	Decommissioning	2	2020-2025	N	N	Y	Y	Y	N	N	N
TERN TOPSIDE	Decommissioning	2	2020-2028	N	Y	Y	Y	Y	N	N	N
NORTH CORMORANT	Decommissioning	2	2020-2028	N	Y	Y	Y	Y	N	N	N
Northern Producer FPF Float-off and Disconnection of Risers and Pipelines	Decommissioning	2	2021-2022	N	N	Y	Y	Y	N	N	N
Topaz	Decommissioning	2	2021-2024	N	N	Y	Y	Y	Y	Y	N
Heather Topsides Decommissioning Programme	Decommissioning	2	2021-2026	N	N	Y	Y	Y	N	N	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
PL301 Heimdal to Brae Pipeline Decommissioning Programme	Decommissioning	2	2021-2026	N	N	Y	Y	Y	N	N	N
Amethyst A1D, A2D, B1D & C1D Topsides	Decommissioning	2	2021-2026	N	N	Y	Y	Y	Y	Y	N
STIRLING	Decommissioning	2	2021-2027	N	Y	Y	Y	Y	N	N	N
NICOL	Decommissioning	2	2021-2027	N	Y	Y	Y	Y	N	N	N
GLAMIS	Decommissioning	2	2021-2027	N	Y	Y	Y	Y	N	N	N
BRENDA	Decommissioning	2	2021-2027	N	Y	Y	Y	Y	N	N	N
BALMORAL	Decommissioning	2	2021-2027	N	Y	Y	Y	Y	N	N	N
Alma & Galia	Decommissioning	2	2021-2027	N	Y	Y	Y	Y	N	N	N
HUNTINGTON	Decommissioning	2	2021-2028	N	Y	Y	Y	Y	N	N	N
Conrie, Don SW, W Don and Ythan Decommissioning Programmes	Decommissioning	2	2021-2029	N	Y	Y	Y	Y	N	N	N
Brent Alpha, Bravo and Charlie Topsides	Decommissioning	2	Q1 2018 - Q3 2024	N	N	Y	Y	Y	N	N	N
Audrey	Decommissioning	2	Q1 2019 - Q2 2023	N	N	Y	Y	Y	Y	Y	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
Ann and Alison	Decommissioning	2	Q1 2020 - Q2 2023	N	N	Y	Y	Y	Y	Y	N
Ketch	Decommissioning	2	Q3 2018 - Q1 2022	N	N	Y	Y	Y	Y	Y	N
Rev Decommissioning Programme		2	Q4 2019 - Q4 2022	N	N	Y	Y	Y	N	N	N
<b>Oil &amp; Gas projects that are consented</b>											
Tolmount East Development	Production licence	3	Application submitted April 2021, and consented August 2021. Construction in 2023, operational by 2023	N	N	Y	Y	Y	Y	Y	N
Hunter & Rita Decommissioning Programme	Decommissioning	3	2021-2025	N	N	Y	Y	Y	Y	Y	N
Banff and Kyle Decommissioning Programmes	Decommissioning	3	2022-2026	N	N	Y	Y	Y	N	N	N
Ensign installation DP	Decommissioning	3	2022-2026	N	N	Y	Y	Y	Y	Y	N
Indefatigable 18A Topsides Decommissioning Programme	Decommissioning	3	2022-2029	N	Y	Y	Y	Y	Y	Y	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
HEWETT PLATFORMS	Decommissioning	3	2022-2029	N	Y	Y	Y	Y	Y	Y	N
Beatrice	Decommissioning	3	2022-2030	N	Y	Y	Y	Y	N	N	N
Gaube Decommissioning Programme	Decommissioning	3	2022-2031	N	Y	Y	Y	Y	N	N	N
Fulmar and Auk North Topsides, Subsea Facilities and Pipelines Decommissioning Programme	Decommissioning	3	2026-2033	N	Y	Y	Y	Y	Y	N	N
Jacky	Decommissioning	3	Q1 2022 - Q3 2023	N	N	Y	Y	Y	N	N	N
<b>Oil &amp; Gas projects that have an application submitted</b>											
Atlantic and Cromarty	Decommissioning	4	2017-2021	N	N	Y	Y	Y	N	N	N
Brae Alpha, Brae Bravo, Central Brae, West Brae and Sedgwick	Decommissioning	4	2019-2029	N	Y	Y	Y	Y	N	N	N
Dunlin Alpha Field	Decommissioning	4	2021-2026	N	N	Y	Y	Y	N	N	N
Victoria	Decommissioning	4	2022-2025	N	N	Y	Y	Y	Y	Y	N
Brent	Decommissioning	4	2022-2026	N	N	Y	Y	Y	N	N	N





Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
Causeway and Fionn	Decommissioning	4	2022-2027	N	Y	Y	Y	Y	N	N	N
LOGGS Satellites V-Fields Area - Vanguard QD, North Valiant SP, South Valiant TD and Vulcan RD, and Associated Infield Pipelines - LDP4	Decommissioning	4	2022-2027	N	Y	Y	Y	Y	Y	Y	N
Thistle Topsides	Decommissioning	4	2022-2027	N	Y	Y	Y	Y	N	N	N
Hewett Area Subsea Installations	Decommissioning	4	2022-2028	N	Y	Y	Y	Y	Y	Y	N
LOGGS Satellites - Mimas MN, Saturn ND and Tethys TN, and Associated Infield Pipelines – LDP2	Decommissioning	4	2022-2028	N	Y	Y	Y	Y	Y	Y	N
Hummingbird FPSO Sailaway and Chestnut riser disconnection	Decommissioning	4	2022-2028	N	Y	Y	Y	Y	N	N	N
Caledonia	Decommissioning	4	2022-2028	N	Y	Y	Y	Y	N	N	N
Cormorant Alpha Topsides	Decommissioning	4	2022-2028	N	Y	Y	Y	Y	N	N	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
Wenlock	Decommissioning	4	2023-2025	N	N	Y	Y	Y	Y	Y	N
Sean	Decommissioning	4	2023-2028	N	Y	Y	Y	Y	Y	Y	N
Southwark Pipeline Installation Project	Pipeline installation	4	Application submitted April 2021. Construction originally planned for 2021 but not yet consented.	N	N	Y	Y	Y	Y	Y	N
Abigail Field Development	Production licence	4	Application submitted July 2021. Construction 2022 & 2024.	N	N	Y	Y	Y	N	N	N
Cambo Phase 1 Field Development	Production licence	4	Application submitted June 2021. Construction planned for 2021-2025 (but not yet consented), operational by 2025	N	N	Y	Y	Y	N	N	N
Jackdaw Field Development	Production licence	4	Application submitted May 2021.	N	N	Y	Y	Y	N	N	N



Project	Type of Oil and Gas Project	Tier	Expected Date of Activity	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
			Construction 2023-2024, operational by 2024								
Pegasus West Development	Production licence	4	Application submitted October 2021. Construction Q2/3 2023, operational by Q1-3 2024	N	N	Y	Y	Y	Y	Y	N
Alwyn East Development	Production licence	4	Application submitted September 2021. Construction spring 2022, completion by September 2022.	N	N	Y	Y	Y	N	N	N
Rhum Production Increase	Production increase	4	Re-opening a production well only - no additional infrastructure to be built. Planned to commence in July 2021, but not yet consented.	N	N	Y	Y	Y	N	N	N



#### 10.3.4.7 Oil and Gas Seismic Surveys

121. It is currently 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 SEP and DEP.
122. As a precautionary approach the potential for cumulative impacts from oil and gas seismic surveys has been **screened in** to the CIA for further consideration.
123. It is assumed, as a worst-case scenario, that there could potentially be up to two oil and gas seismic surveys in the North Sea at any one time, during construction of SEP and DEP.

#### 10.3.4.8 Subsea Cables and Pipelines

124. Subsea cables and pipelines only have the potential for cumulative impacts with SEP and DEP during their construction. Plans or projects initially considered for the CIA screening were Tier 1-4 projects, where relevant.
125. All of the Tier 1 projects identified during screening were already installed and are therefore considered part of the baseline and have been **screened out** from further consideration in the CIA.
126. Of the sub-sea cables and pipelines for which information was currently available, 77 of the 83 projects were **screened out** from further consideration in the CIA.
127. Six projects were considered further. For five of the six projects there is currently no information on possible construction dates and the potential to overlap with construction at SEP and DEP.
128. As indicated in underwater noise modelling in **Appendix 10.2**, the underwater noise that could be generated during the seabed preparation, ploughing / jetting / pre-trenching or cutting for installation of cables / pipelines, rock dumping for protection of the cable / pipelines, and installation vessels, would be restricted to the area of installation (less than 100m), with the exception of TTS in harbour porpoise during rock placement (1km) and suction dredging (200m). Any impacts would be temporary.
129. As a precautionary approach, the six projects have been **screened in** to the CIA for harbour porpoise.
130. For harbour porpoise, the potential impact has been based on impact range of 1km, with the potential impact area of 3.14km<sup>2</sup> for each project and 18.84km<sup>2</sup> for the six projects.
131. The results of the CIA screening for subsea cables and pipelines is presented in **Table 10.3.9**.

*Table 10.3.9: CIA Screening for Subsea Cables and Pipelines within Relevant Spatial Areas and with the Potential to Overlap SEP and DEP Construction*

Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
<b>Subsea cables that are operational (Tier 1)</b>											
BritNed	1	Isle of Grain, UK	Rotterdam, Netherlands	HVDC 1,000MW	No - considered as part of the baseline	Y	Y	Y	Y	Y	N
Caithness Moray	1	Noss Head	Tannachy	HVDC 1,200 MW	No - considered as part of the baseline	Y	Y	Y	N	N	N
Carradale - Arran 1	1	UK	UK	MVAC	No - considered as part of the baseline	N	Y	Y	N	N	N
Carradale - Arran 2	1	UK	UK	MVAC	No - considered as part of the baseline	N	Y	Y	N	N	N
Clift Sound	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Cromarty Firth	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Dagebull - Langeness	1	Dagebull, Germany	Langeness, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Dagebull - Oland	1	Dagebull, Germany	Oland, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Eday - Sanday	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Eday - Westray	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Emmellsull - Horsbull - Fohr	1	Emmellsull-Horsebull, Germany	Fohr, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Fohr - Amrum	1	Fohr, Germany	Amrum, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Harlingen-Vlieland	1	Netherlands	Netherlands	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Helgoland	1	Helgoland, Germany	Sankt Peter-Ordning, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Hoy - Flotta	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Hoy - Orkney Mainland (centre)	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Hoy - Orkney Mainland (north)	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Hoy - Orkney Mainland (south)	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Interconnexion France-Angleterre 2000	1	Sangatte, France	Folkestone, UK	HVDC 2,000MW	No - considered as part of the baseline	Y	Y	Y	Y	Y	N
Lerwick - Bressay 1	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Lerwick - Bressay 2	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Little Belt	1	Denmark	Denmark	EHVAC 1,100MW	No - considered as part of the baseline	Y	Y	Y	N	N	N
Lutemoorsiel - Nordstrandischmoo r	1	Lutemoorsiel	Nordstrandischmoo r	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Mongstad-Kollsnes	1	Norway	Norway	EHVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Mossbank - Yell North	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Mossbank - Yell South	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Nordstrand - Pellworm	1	Nordstrand, Germany	Pellworm, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N





Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Nordstrandischmoor - Pellworm	1	Nordstrandischmoor, Germany	Pellworm, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
NorNed	1	Freda, Norway	Eemshaven	HVDC 700MW	No - considered as part of the baseline	Y	Y	Y	Y	Y	N
North Ness - South Ness	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Oland - Langeness	1	Oland, Germany	Langeness, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Oresund replacement	1	Kristinelundveien	Denmark	HVAC 132kV	No - considered as part of the baseline	Y	Y	Y	N	N	N
Orkney - Graemsay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Orkney - Rousay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Orkney - Shapinsay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Orkney AC Link	1	Thruso, UK	Orkney, UK	AC 30MW	No - considered as part of the baseline	Y	Y	Y	N	N	N
Oscarsborg - Drobak	1	Oscarsbord, Denmark	Drobak, Denmark		No - considered as part of the baseline	N	Y	Y	N	N	N
Pellworm - Hooge	1	Pellworm, Germany	Hooge, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Rossie Island - Ferryden	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Rousay - Egilsay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Rousay - Westray	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Rousay - Wyre	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Sanday - North Ronaldsay	1	Germany	Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Schluttsiel - Grode	1	Ockholm, Germany	Grode, Germany	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Shapinsay - Stronsay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Shetland - Papa Stour	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Shetland - West Linga	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Shetland - Whalsay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Skagerrak 1 and 2	1	Kristiansand, Norway	Tjele, Denmark	HVDC 500MW	No - considered as part of the baseline	Y	Y	Y	N	N	N
Skagerrak 3	1	Kristiansand, Norway	Tjele, Denmark	HVDC 440MW	No - considered as part of the baseline	Y	Y	Y	N	N	N
Skagerrak 4	1	Kristiansand, Norway	Bulbjerg, Denmark	HVDC 700MW	No - considered as part of the baseline	Y	Y	Y	N	N	N
Stronsay - Sanday	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Weisdale Voe	1	Unknown	Unknown	Unknown	No - considered as part of the baseline	Y	Y	Y	N	N	N
West Linga - Whalsay	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Westray - Papa Westray	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Whalsay - Out Skerries	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Yell - Fetlar 1	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Yell - Fetlar 2	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Yell - Unst 1	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
Yell - Unst 2	1	UK	UK	MVAC	No - considered as part of the baseline	Y	Y	Y	N	N	N
<b>Subsea cables that are currently under construction (Tier 2)</b>											



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
COBRACable	2	Eemshaven, Netherlands	Endrup, 6740, Denmark	HVDC 700MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
ElecLink	2	Folkestone	Les Mandarins, France	HVDC 1,000MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
Interconnexion France-Angleterre 2	2	Merville, France	Monks Hill Beach, UK	HVDC 1,000MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
Nemo Link	2	Pegwell Bay	Zeebrugge	HVDC 1,000MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Nordlink	2	Büsum, Germany	Ertsmyra, Norway	HVDC 1,400MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
North Sea Link	2	Hylsfjorden, Norway	Blyth, UK	HVDC 1,400MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	N	N
<b>Subsea pipelines that are currently under construction (Tier 1)</b>											
PL2236 - MIMAS TO SATURN	2	N/A	N/A	10 inch Precommission GAS pipeline operated by CONOCOPHILLIPS	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
PL2237 - SATURN TO MIMAS	2	N/A	N/A	3 inch Precommission CHEMICAL pipeline operated by CONOCOPHILLIPS	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
PL2894 - KATY TO KELVIN GAS EXPORT PIPELINE	2	N/A	N/A	10 inch Precommission GAS pipeline operated by CONOCOPHILLIPS	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
PL2895 - KELVIN TO KATY METHANOL PIPELINE	2	N/A	N/A	2 inch Precommission METHANOL pipeline operated by CONOCOPHILLIPS	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
PL3086 - CYGNUS A TO CYGNUS B GAS PIPELINE	2	N/A	N/A	12 inch Precommission GAS pipeline operated by ENGIE	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N





Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
PL3088 - CYGNUS TO ETS GAS PIPELINE	2	N/A	N/A	24 inch Precommission GAS pipeline operated by ENGIE	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
PL3121 - JULIET TO PICKERILL A GAS PIPELINE	2	N/A	N/A	12 inch Precommission MIXED HYDROCARBONS pipeline operated by ENGIE	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N
PLU3122 - JULIET TO PICKERILL A UMBILICAL	2	N/A	N/A	138 mm Precommission MIXED HYDROCARBONS pipeline operated by ENGIE	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	Y	N



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
<b>Subsea cables that are consented (Tier 3)</b>											
NorthConnect	3	Peterhead, UK	Simadalen, Norway	HVDC 1,400MW	No - assume construction completed prior to SEP / DEP construction commencing	Y	Y	Y	Y	N	N
<b>Subsea cables that have applications submitted (but not approved) (Tier 4)</b>											
Atlantic Super Connection	4	UK	Iceland	HVDC 1,000MW	Unknown, but possible	Y	Y	Y	N	N	Y
Carradale - Arran 1 replacement	4	UK	UK	MVAC	Unknown, but possible	N	Y	Y	N	N	Y
Gridlink	4	Kingsnorth, UK	Dunkerque, France	HVDC 1,400MW	Unknown, but possible	Y	Y	Y	Y	Y	Y
VikingLink Corridor	4	Lincolnshire Coast, UK	Southern Jutland, Denmark	HVDC	Unknown, but possible	Y	Y	Y	Y	Y	Y
<b>Subsea cables with refused consent</b>											



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
AQUIND Interconnector	N/A	Portsmouth, UK	Le Havre, France	HVDC 2,000MW	Unknown – project refused consent and not considered further	Y	N	Y	N	N	Y
<b>NGS pipelines (unknown Tiers)</b>											
Endurance to Barmston	N/A	N/A	N/A	CSS pipeline	No - pipeline should have been operational by 2021, and no potential for overlap with construction	Y	Y	Y	Y	Y	N
Hewett Depleted Gas	N/A	N/A	N/A	CSS pipeline	Yes - pipeline to be operational by 2028; potential for overlap with construction	Y	Y	Y	Y	Y	Y



Project	Tier	Landfall point 1	Landfall point 2	Type of cable	Potential for overlap with SEP / DEP construction ?	Spatial Area					Screened into CIA?
						H P	BN D	WB D & MW	G S	H S	
Goldeneye To St. Fergus	N/A	N/A	N/A	CSS pipeline	No - pipeline to be operational by 2025, and no potential for overlap with construction	Y	Y	Y	Y	N	N



#### 10.3.4.9 Other Industries - Gas Storage, Offshore Mines and Carbon Capture Projects

132. For gas storage projects, there are two within the relevant species areas, one of which was cancelled (Deborah), and one of which has been decommissioned (Rough). Therefore, gas storage projects have been **screened out** from further consideration in the CIA.
133. Offshore mining projects considered for the CIA screening were Tier 1-3 UK based projects. No European projects were considered due to a lack of information on project locations, phases, and programmes. Two UK mining projects were identified, one currently under construction and one operational. The operational project is considered part of the current baseline and therefore not considered further in the CIA. The other project is unlikely to contribute significantly to underwater noise and therefore any potential disturbance as any construction will be on land or under the seabed, based on currently available information, and therefore not considered further in the CIA. Therefore, offshore mining projects have been **screened out** from further consideration in the CIA.
134. Carbon capture projects considered in the CIA screening were Tier 1-3 for UK based projects. All European projects were screened out due to a lack of information on project locations, phases, and programmes. No projects were identified in Tier 2 or 3, and all of the Tier 1 projects identified by screening were already active and are therefore considered part of the baseline.
135. There is limited information on Tier 4 and 5 projects, including the Endurance and Goldeneye projects, on which to base a cumulative impact assessment.
136. Carbon capture projects 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 projects have been **screened out** of the CIA.
137. The results of the CIA screening for gas storage, offshore mines and carbon capture projects is presented in **Table 10.3.10**.

*Table 10.3.10: CIA Screening for Other Industries (Offshore Mines and Carbon Capture Projects) within the Relevant Spatial Areas and with the Potential to Overlap with SEP and DEP Construction*

Project	Type of Project	Tier	Dates of Project	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
<b>Offshore Mining Projects (Tier 1)</b>											
Hundale Potash Mine	Offshore Minerals Exploration and Option	1	Jul-16 - Operational	Y	N	Y	Y	Y	Y	N	N
Boulby Potash Mine	Offshore Minerals Lease	1	Dec-98 - Operational	Y	N	Y	Y	Y	Y	N	N
<b>Carbon Capture Projects</b>											
Endurance	Carbon Capture	3	Operational by 2025	N	N	Y	Y	Y	Y	Y	N
Hewett Depleted Gas	Carbon Capture	3	Operational by 2028	N	Y	Y	Y	Y	Y	Y	N
Goldeneye	Carbon Capture	1	Operational by 2021	N	N	Y	Y	Y	Y	N	N
Bunter Closure 36	Carbon Capture	3	Consented by 2022, construction in 2024 and operational by 2027	N	Y	Y	Y	Y	Y	Y	N
Captain X	Carbon Capture	2	Consented by 2018, operational by 2022	N	N	Y	Y	Y	N	N	N



Project	Type of Project	Tier	Dates of Project	Operational prior to SEP / DEP surveys?	Potential for overlap with SEP / DEP construction?	Spatial Area					Screened into CIA?
						HP	BND	WBD & MW	GS	HS	
Forties 5 Site 1	Carbon Capture	3	Consented by 2025, operational by 2030	N	Y	Y	Y	Y	N	N	N
Viking A	Carbon Capture	5	Consented by 2027, operational by 2031	N	Y	Y	Y	Y	Y	Y	N

#### 10.3.4.10 Commercial Fisheries

138. As outlined in **Section 10.1.2.1** of **Appendix 10.1** (document reference 6.3.10.1), commercial fisheries was scoped out of the CIA, in agreement with PINS), as it is an ongoing activity that is considered to part of the baseline environment. Further detail on the reasoning for this scoping decision has been provided below.
139. Commercial fisheries within the North Sea and underwater noise associated with fishing vessels, have the potential to cause a cumulative impact on marine mammals, through both the direct impact of by-catch and the indirect impact through the loss of marine mammal prey species (from commercial fisheries) and the disturbance from underwater noise (from vessel presence).
140. By-catch as a result of commercial fisheries is recognised as a historic and continuing cause of harbour porpoise mortality in the southern North Sea and will therefore be a factor in shaping the size of the current North Sea MU population. The available prey resource for harbour porpoise has also been influenced by historic and continuing commercial fishing. Noise from vessels are also considered to be part of the baseline conditions.
141. This approach is in accordance with the Planning Inspectorate (2019) Advice Note 17 Cumulative Effects Assessment, which states that:  
*“Where other projects are expected to be completed before construction of the proposed NSIP and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline”.*
142. The potential for cumulative impacts associated with commercial fisheries within the Southern North Sea (SNS) Special Area of Conservation (SAC) site has been considered in the Review of Consents (RoC) Habitats Regulation Assessment (HRA) (Business for Environment and Industrial Strategy (BEIS), 2020). With regard to effects to habitats, the RoC HRA states:  
*“18.120 There have been no quantified assessments undertaken on the extent impacts from commercial fishing may have within the SAC and therefore information to inform this assessment is not available.*  
*18.122 Without knowing the extent of impact on the seabed arising from the fishing industry ...it is not possible to undertake an in-combination assessment that addresses all the potential impacts on the habitats within the SAC.”*
143. With regard to direct effects on harbour porpoise, the RoC HRA (BEIS, 2020) also states that:  
*“18.203 Commercial fishing has occurred within the SAC for many years and has had, and will continue to have, direct and indirect impacts on harbour porpoise, their habitat and prey within the SAC. As the conservation status of harbour porpoise in UK waters and the SAC is considered favourable (JNCC, 2019; JNCC and Natural England, 2019) current and historical levels of fishing in the SAC are not considered to have affected the conservation status of the species.*



18.210 *There are no known plans to suggest that the level of fishing within the SAC will significantly increase over the period the consented wind farms are planned to be constructed, such that, it is predicted that the current level of impacts from fishing on harbour porpoise within the SAC will not increase.*

144. Natural England's Deadline 4 Response to the Examining Authority's Further Written Questions and Requests for information for Hornsea Project 3 (15<sup>th</sup> January 2019) (page 46, Q 2.2.73) was that:

*"Where there is ongoing fishing activity in the site, it is important that the impacts of the activity are captured within the assessment in the context of the conservation objectives of the affected designated site(s). This assessment will likely take place as part of the baseline characterisation of the development area, however, as fishing activity is mobile, variable and subject to change, there may be instances whereby fishing impacts are not adequately captured in the baseline characterisation and therefore may need to be considered as part of the in-combination assessment. This could be due to a change in effort; change in management; or a change in legislation amongst other things, and fishery managers (i.e. Marine Management Organisation (MMO)) would be best placed to advise on this.*

*In relation to the assessment of impacts on the SNS SAC, Natural England..... are not currently aware of anything that would have significantly altered the levels of fishing activity within the site; any current plans for new fisheries, or changes to existing fisheries that have not been captured, but we would look to fisheries managers to advise more definitively on these points."*

145. This, along with the RoC HRA (BEIS, 2020), suggests that by-catch has not affected a population considered to be in Favourable Conservation Status (FCS), whilst Natural England acknowledge that there is currently no evidence to suggest that the current levels of fishing would significantly alter in the future.
146. Therefore, the potential impacts from commercial fishing (including by-catch and loss of prey species) and from the underwater noise associated with vessels are considered to be a part of the environmental baseline for marine mammals of the North Sea, including for harbour porpoise, and are **screened out** of further assessment.

#### 10.3.4.11 Unexploded Ordnance (UXO) clearance

147. As outlined in **Section 10.3.2.1**, the potential risk of PTS in marine mammals from cumulative impacts has been screened out from further consideration in the CIA. As if there is the potential for any PTS, suitable mitigation would be put in place to reduce any risk to marine mammals.
148. The potential for cumulative disturbance effects from UXO clearance at other projects during construction of SEP and DEP has been **screened in** to the CIA.
149. Mitigation measures for UXO clearance include the use of low-order clearance techniques, which could include a small donor charge, rather than full high-order detonation.

150. 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. The CIA is therefore based on potential for disturbance from one UXO high-order detonation without mitigation (worst-case).
151. UXO clearance at SEP and DEP will be assessed as part of a separate Marine Licence. The assessment prior to any UXO clearance will be based on the latest information for the types, size, number, location and latest UXO clearance methods and mitigation measures, including cumulative impacts during UXO clearance at SEP and DEP. Therefore, UXO clearance for SEP and DEP are not included in this CIA.

### 10.3.5 Summary of CIA screening

152. **Table 10.3.11** summarises the impact screening for the CIA.

*Table 10.3.11: Summary of Cumulative Impacts Screening*

Impact	Potential for Cumulative Impact	Rationale
PTS from underwater noise	No	If there is the potential for any PTS, suitable mitigation would be put in place to reduce any risk to marine mammals. Therefore, the potential from cumulative impactive from PTS should be negligible.
TTS from underwater noise	Yes, used to determine possible fleeing response	TTS / fleeing response has been screened into the CIA, where there is a lack of further relevant information for disturbance.
Disturbance from underwater noise	Yes	Potential for cumulative impacts from underwater noise from: <ul style="list-style-type: none"> <li>• piling at OWFs</li> <li>• other construction activities at OWFs (other than piling) including vessels, cable installation works, dredging, sea bed preparation and rock placement</li> <li>• geophysical surveys at OWFs</li> <li>• aggregate extraction and dredging for harbour porpoise</li> <li>• oil and gas seismic surveys</li> <li>• subsea cable and pipelines for harbour porpoise</li> <li>• UXO clearance</li> </ul>
Changes to water quality	No	No significant impacts due to water quality are expected from any projects or potential sources.
Changes to prey availability	No	Any potential changes to prey availability from underwater noise, including piling, would be the same or less than for marine mammals. Any impacts on prey species are likely to be intermittent, temporary and highly localised, with potential for recovery following cessation of the disturbance activity. Any permanent loss or changes of prey habitat will typically represent a small percentage of the potential habitat in the surrounding area.
Vessel collision risk	No	The increased collision risk even using a very precautionary approach is negligible. Vessel movements to and from any port will be incorporated within existing vessel routes. Once on-site vessels would be stationary or slow moving. Good practice would ensure any risk of vessels colliding with marine mammals is avoided.

153. **Table 10.3.12** summarises the activities, plans and projects screened into the CIA.



**Table 10.3.12: Summary of Activities, Plans and Projects Screened into the CIA**

Impact	Potential for Cumulative Impact	Projects
Disturbance from underwater noise	Piling at OWFs (Section 10.3.4.1.1)	<p>The OWFs that could be piling at the same time as SEP and DEP and screened into the CIA are:</p> <ul style="list-style-type: none"> <li>• SEP and DEP</li> <li>• Berwick Bank</li> <li>• Dogger Bank South</li> <li>• East Anglia ONE North</li> <li>• East Anglia TWO</li> <li>• Five Estuaries</li> <li>• Hornsea Project Four</li> <li>• North Falls</li> <li>• Outer Dowsing</li> <li>• Rampion Extension</li> </ul>
	Other construction activities at OWFs (other than piling) including vessels, cable installation works, dredging, sea bed preparation and rock placement (Section 10.3.4.1.1)	<p>The OWFs screened in for other construction activities that could have cumulative impacts with other construction activities at SEP and DEP are:</p> <ul style="list-style-type: none"> <li>• SEP and DEP</li> <li>• Norfolk Boreas</li> <li>• East Anglia ONE North</li> <li>• East Anglia TWO</li> <li>• Hornsea Project Four</li> <li>• Norfolk Vanguard</li> <li>• Berwick Bank (Seagreen Charlie Delta Echo / Marr Bank)</li> <li>• Dogger Bank South</li> <li>• Dolphyn Project – commercial</li> <li>• Five Estuaries</li> <li>• North Falls</li> <li>• Outer Dowsing</li> <li>• Rampion Extension</li> <li>• Salamander</li> </ul>
	Geophysical surveys at OWFs (Section 10.3.4.1.2)	<p>Unknown It is therefore assumed, as a worst-case scenario, that there could potentially be up to two geophysical surveys at OWFs in the North Sea at any one time, during construction of SEP and DEP.</p>
	Aggregate extraction and dredging (Section 10.3.4.3)	<p>Aggregate extraction and dredging projects screened in for harbour porpoise are:</p> <ul style="list-style-type: none"> <li>• Goodwin Sands</li> <li>• Greenwich Light East</li> <li>• Median Deep</li> <li>• Off Great Yarmouth</li> <li>• West Wight</li> <li>• East Orford Ness</li> <li>• EEC 5 South</li> <li>• Lowestoft Extension</li> <li>• West Bassurelle Extension</li> </ul>
	Oil and gas seismic surveys (Section 10.3.4.7)	<p>Unknown It is therefore assumed, as a worst-case scenario, that there could potentially be up to two seismic</p>



Impact	Potential for Cumulative Impact	Projects
		surveys in the North Sea at any one time, during construction of SEP and DEP.
	Subsea cable and pipelines (Section 10.3.4.8)	Subsea cables and pipelines projects screened in for harbour porpoise are: <ul style="list-style-type: none"> <li>• AQUIND Interconnector</li> <li>• Atlantic Super Connection</li> <li>• Carradale - Arran 1 replacement</li> <li>• Gridlink</li> <li>• VikingLink Corridor</li> <li>• Hewett Depleted Gas</li> </ul>
	UXO clearance (Section 10.3.4.11)	Unknown It is assumed UXO clearance would use low-order technique. However, as a worst-case scenario, CIA includes potential for one UXO high-order detonation (no mitigation) in the North Sea at the same time as piling at SEP or DEP.

154. **Table 10.3.12** summarises the activities and types of projects screened out of the CIA.

*Table 10.3.13: Summary of Activities and Types of Projects Screened out of the CIA*

Impact	Potential for Cumulative Impact	Activities and types of projects screened out
Disturbance from underwater noise	No	The activities and types of projects screened out of the CIA, as no potential for significant contribution to underwater noise cumulative impacts during SEP and DEP construction, are: <ul style="list-style-type: none"> <li>• Operational OWFs</li> <li>• Maintenance of operational OWFs</li> <li>• Decommissioning of OWFs</li> <li>• Marine renewable (wave and tidal) developments</li> <li>• Licensed disposal sites</li> <li>• Shipping</li> <li>• Oil and gas installation (construction, operation and decommissioning)</li> <li>• Gas storage, offshore mines and carbon capture</li> <li>• Commercial fisheries</li> </ul>



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<p>Cheesman, S. (2016). Measurement of operational wind turbine noise in UK waters. In Popper A N, Hawkins A (eds) The Effects of Noise on Aquatic Life II. Advances in Experimental Medicine and Biology, Vol. 875, pp 153-160. DOI 10.1007/975-1-4939-2981-8_18.</p>
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