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for Environment & Decommissioning

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Net Zero North Sea Storage (Ltd): Northern Endurance Partnership CO_2 Storage Development Teesside Pipeline

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1 INTRODUCTION

Council Directive 92/43/EC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) aim to ensure the long-term survival of certain habitats and species in Europe, by protecting them from the adverse effects of plans and projects.

The Habitats Directive aims to restore and maintain Europe's biodiversity by protecting habitats and species of European importance. It achieves this through the designation of protected sites known as Special Areas of Conservation (SACs). The goal is to ensure that these species and habitats are maintained or restored to a Favourable Conservation Status.

The Birds Directive aims to protect all naturally occurring wild bird species and their most important habitats, including rare, vulnerable, and migratory bird species. Along with the Habitats Directive, the Birds Directive also contributes to the designation of protected sites, known as Special Protection Areas (SPAs).

SPAs and SACs collectively form the United Kingdom (UK)'s national site network.

In the UK, a Habitats Regulations Assessment (HRA) is triggered for oil and gas activities (including Carbon Capture, Utilisation, and Storage (CCUS) projects) based on specific legislation:

- The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended); and
- The Conservation of Offshore marine Habitats and Species Regulations 2017 (known as the Offshore Marine Habitats Regulations).

The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended) transpose the Habitats and Birds Directives into UK law for oil and gas activities carried out wholly or partly in the UK continental shelf (including CCUS projects). The regulations set down obligations for assessing the impact of offshore oil and gas activities (including gas and carbon dioxide unloading and storage) on habitats and species protected under the Habitats Directive and Birds Directive.

The Conservation of Offshore marine Habitats and Species Regulations 2017, which apply to broader marine activities (not just oil and gas or CCUS), work alongside the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 to protect European sites. These "Habitats Regulations" serve as the governing legislation for implementing several other requirements contained in the Directives. Whilst the 2001 Regulations focuses on assessing impacts of oil and gas activities (including CCUS), the Habitats Regulations provide a broader framework for conservation in offshore marine environments. While the specific mention of CCUS projects isn't explicit, the Habitats Regulations apply broadly to any activity that could impact European sites.

Since the departure of the UK from the European Union (EU), the requirements under the Habitats Regulations remain largely unchanged with any amendments made under the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019, which ensure that these regulations continue to

work upon the UK's exit from the EU. In the UK, the Habitats Regulations created a new national site network that replaced the EU's Natura 2000 ecological network. European sites, formerly Natura 2000 network, are now part of the UK's National Site Network. The term "European site" has been retained in accordance with guidance issued by the UK Government on the 2019 (EU Exit) Regulations (Defra, 2021).

The following European sites are protected by the Habitats Regulations and any proposals that could affect them will require an HRA:

- Special Areas of Conservation (SACs) including proposed SACs; and
- Special Protection Areas (SPAs) including potential SPAs.

Under the Habitats Regulations, all competent authorities must consider whether any plan or project could affect a European site before authorising or carrying it out. This includes assessing whether it will have a "Likely Significant Effect" (LSE) on a European site, either alone or in-combination with other plans or projects. If such an effect is anticipated or cannot be ruled out, they must conduct an "Appropriate Assessment" (AA) to determine the implications for a site's integrity and conservation objectives. Such a plan or project may only be agreed after ascertaining that it will not adversely affect the integrity of a European Site unless there are imperative reasons of overriding public interest for carrying out the plan or project.

Regulation 5(1) of the 2001 Regulations provides that: *The Secretary of State shall, before granting any Petroleum Act licence, any consent, any authorisation, or any approval, where he considers that anything that might be done or any activity which might be carried on pursuant to such a licence, consent, authorisation or approval is likely to have a significant effect on a relevant site, whether individually or in-combination with any other plan or project, including but not limited to any other relevant project, make an appropriate assessment of the implications for the site in view of the site's conservation objectives.*

An application for a Storage Permit under the Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 was received by the North Sea Transition Authority (NSTA) from Net Zero North Sea Storage Ltd (NZNSS) for the NEP Transportation and Storage Project (hereafter 'the Development'). The Storage Permit was issued in 2024.

An Environmental Statement documenting the assessment of environmental impacts of the proposed Development was submitted to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) under the Offshore Oil and Gas Exploration, Production, Unloading and Storage (Environmental Impact Assessment) Regulations 2020. The Environmental Statement was approved in December 2024. Further to the Environmental Statement, certain component parts of the Development, such as the pipeline construction are subject to a further consenting and approvals process., which considers those aspects of the development in more detail This Appropriate Assessment is has been written to account for an EIA Screening Direction which has been submitted to

OPRED in support of a pipeline works authorisation (PWA) submitted by NZNSS to the NSTA in February 2026.

This is a record of the Appropriate Assessment in the form of a HRA undertaken by the Secretary of State for The Department for Energy Security and Net Zero (DESNZ) in respect of the proposed Development.

The proposed Development is not directly connected with, or necessary to, the management of any National sites but it may affect them. The purpose of this HRA is to determine whether the proposed Development will adversely affect the integrity of any UK National Site Network designated site.

Defra (2021) guidance outlines that the HRA process can have up the three stages, as outlined below, where the outcome of each successive stage determines whether a further stage in the process is required:

Screening - to check if the proposal is likely to have a significant effect on the site's conservation objectives.

Appropriate Assessment - to assess the likely significant effects of the proposal on the integrity of the site and its conservation objectives and to consider ways to avoid or minimise any effects.

Derogation - to consider if proposals that would have an adverse effect on a European site qualify for an exemption, subject to three legal tests being satisfied (i.e. alternative solutions, imperative reasons of overriding public interest and compensatory measures).

2 DEVELOPMENT DESCRIPTION

The purpose of the Development is to develop the Endurance Store for the injection and storage of Carbon Dioxide (CO_2), enabling CO_2 to be captured from industrial centres in Teesside, and transported to a permanent geological storage site below the southern North Sea. The Development is one component of the East Coast Cluster (ECC), a strategic initiative that aims to deliver the UK's first zero carbon industrial cluster with an ambition to capture 23 million tonnes per annum of CO_2. The Development represents the initial phase (Phase 1) of the ECC which is designed to capture an initial 4 million tonnes per annum while facilitating subsequent development phases.

The Development is described within Section 3 of the applicant's Environmental Statement (bp 2023a) and within the Environmental Assessment Justification (document (EAJ) for the Screening Direction for pipeline works, PL/2543/2, (bp 2026) and includes the installation, testing, commissioning, operation, maintenance and monitoring of equipment and infrastructure required to meet this purpose.

An overview of the Development is provided here. Further particulars necessary for assessing specific impacts are described in subsequent sections of the HRA.

The Endurance storage site, for which the applicant holds a Storage Licence issued under the Storage of Carbon Dioxide (Licensing etc.) Regulations 2010, is within the Endurance saline aquifer, located in waters of between 40 m and 65 m depth below lowest astronomical tide (LAT) approximately 63 km east from the nearest coastline at Flamborough Head. The location of Development infrastructure is shown in Figure 1.

CO_2 will be transported offshore to the Endurance Store via a 28" pipeline, originating at Teesside (*c.* 142 km in length from Mean Low Water Spring (MLWS)). An electric power and fibre-optic communications control cable will run from Teesside to the subsea infrastructure at the Endurance Store. At the Endurance Store, all installed infrastructure will be subsea. The subsea facilities will consist of two manifolds which combine, distribute, control, and monitor flow of CO_2 to five injection wells. A sixth well will be used to monitor CO_2 within the Endurance Store. Infield flowlines will connect the five injection wells to the manifolds and power and communication cables will connect all six wells to the manifolds.

The proposed Development can be summarised as follows:

- Installation, connection to subsea infrastructure and commissioning of a CO_2 export pipeline from the Teesside industrial cluster (MLWS) to the Endurance Store;
- Installation of subsea infrastructure at the Endurance Store including two manifolds, infield flowlines and an infield pipeline;
- Drilling of five CO_2 injection wells, one monitoring well and installation of six subsea trees;
- Operations and maintenance of subsea infrastructure and pipelines;
- Monitoring and management of the Endurance Store during and after CO_2 injection in accordance with relevant regulatory consents; and
- Installation, commissioning and operation and maintenance of cables;

- One electric power and fibre-optic communications control cable running from Teesside to the subsea infrastructure at the Endurance Store; and
- One electric power and fibre-optic communications control cable between the two manifolds and six cables from the manifolds to each of the wells.

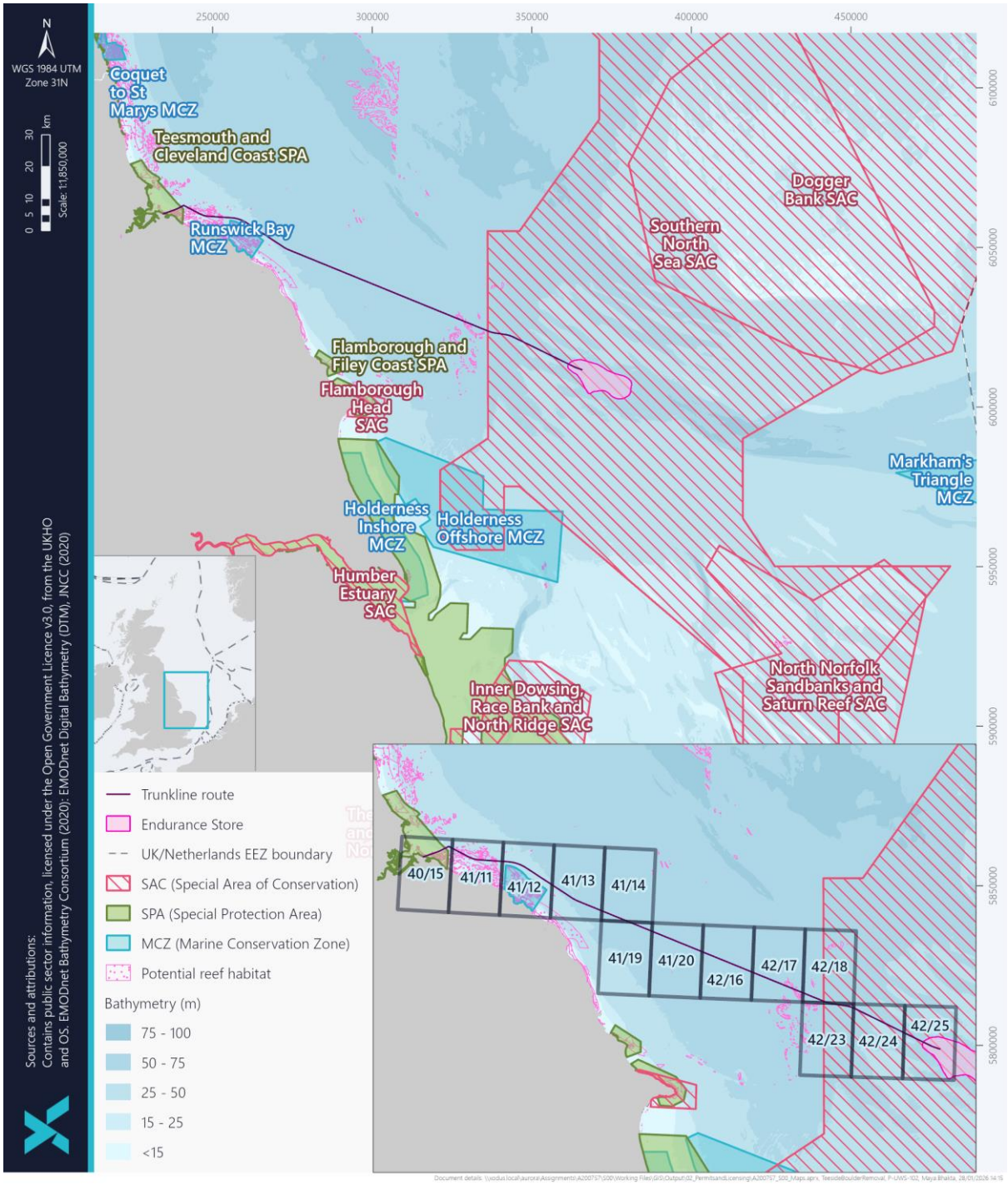


Figure 1: Map of the pipeline routing and infrastructure locations.

3 HRA STAGE 1: LIKELY SIGNIFICANT EFFECTS TEST

Under regulation 63 of the Habitats Regulations the Secretary of State must consider whether a development is likely to have a likely significant effect (LSE), either alone or in combination with other plans or projects on any European site (UK National Site Network designated site). Where significant effects are likely and are not directly connected with or necessary to the management of that site, an AA is required of the implications of the plan or project for that site in view of its conservation objectives. The purpose of this section is to identify any LSEs on European sites and to record the Secretary of State's conclusions on the need for an AA and his reasons for including activities, sites or plans and projects for further consideration in the AA.

The Secretary of State has applied a coarse filter to identify LSEs in keeping with English Nature guidance (English Nature, 1997). He considers that any impact on a European site, from the Project alone or in-combination with other plans or projects, should be classified as an LSE unless impacts have been demonstrated to be trivial and inconsequential. All sites considered for LSE along with their qualifying features and the potential impact that could cause an LSE is provided in the relevant subsections below. All the impacts listed have the potential to arise from the Project alone and in-combination with other plans and projects.

In developing the short list of relevant sites, the Secretary of State has had regard to the following:

- Sites which the Development will directly intersect with;
- SPAs for which established foraging ranges of qualifying features intersect with any element of the Development;
- Sites for which qualifying features could potentially be affected by sources of percussive sound generated by Development activities following propagation either through air or water;
- Sites for which qualifying features or habitats on which they depend, or their prey could be affected by the mobilisation, dispersion and/or resettlement of sediments;
- Sites for which qualifying features, or their prey could be affected by sources of contamination caused by the Development;
- Sites for which qualifying features might reasonably be anticipated to be disturbed by the physical presence of people or vessels connected with the Development.

In view of the evidence presented to him, the Secretary of State has identified five sites for which LSE cannot be ruled out and therefore have been considered for Appropriate Assessment. These sites are:

- Teesmouth and Cleveland Coast SPA;
- Flamborough and Filey Coast SPA; and
- Southern North Sea SAC.

3.1 Special Protection Areas

The potential for LSE to features of SPAs as a result of activities associated with the Development has been considered in a stepwise manner.

Firstly, SPAs have been identified based on connectivity to the Development.

Secondly, features of those identified SPAs have been screened to determine those that may be present in areas impacted by the Development.

Thirdly the sensitivity for screened features to be affected by impacts resulting from Development activities has been considered to determine whether the potential for LSE can be ruled out.

3.1.1 SPAs for which LSE has been Considered

The physical footprint of the Development overlaps with one SPA.

A further eleven SPAs have been considered to determine whether the foraging ranges of any of their seabird features overlap with the Development footprint. These are discussed in section 3.1.1.2 and 3.1.1.3 below.

3.1.1.1 SPAs overlapping the Development footprint

The Teesside pipeline is planned to make landfall to the north of Redcar on the Redcar and Cleveland coast. The landfall location is within the Teesmouth and Cleveland Coast SPA and consideration of the potential for LSE to features of this SPA has therefore been undertaken.

The Teesmouth and Cleveland Coast SPA is designated to protect certain seabird species and a number of intertidal and terrestrial bird species.

The intertidal and terrestrial features of the Teesmouth and Cleveland Coast SPA include avocet (*Recurvirostra avosetta*), knot (*Calidris canutus*), redshank (*Tringa tetanus*), ruff (*Calidris pugnax*) and a non-breeding waterbird assemblage which includes as main components, gadwall (*Mareca strepera*), shoveler (*Spatula clypeata*), sanderling (*Calidris alba*), wigeon (*Vanelus vanelus*) and lapwing (*Mareca Penelope*). and black-headed gull (*Chroicocephalus ridibundus*).

Of these species, information on the long-term changes in bird usage of the Tees Estuary provided in Ward *et al.* (2003) indicates that only knot, redshank and sanderling may utilise areas that may be affected by impacts associated with the Development.

The seabird features of the Teesmouth and Cleveland Coast SPA include:

- Little tern (*Sternula albifrons*) and common tern (*Sterna hirundo*) in the breeding season;
- Sandwich tern (*Thalasseus sandvicensis*) during passage; and
- An assemblage of wintering seabirds, including herring gull (*Larus argentatus*)

3.1.1.2 Other SPAs for which seabird species are features

Due to their long foraging ranges some seabird features of many other SPAs may utilise parts of the sea which could be impacted by the Development and consideration of the potential for LSE to such features has also been undertaken.

Of the seabird species which breed regularly in Britain and Ireland, fulmar (*Fulmar glacialis*), cormorant (*Phalacrocorax carbo*), shag (*Phalacrocorax aristotelis*), gannet (*Morus bassanus*), three species of auk, six species of gull and five species of tern breed around the North Sea coast of England (DTI, 2001). Seabird colonies support nationally and internationally important populations at the Farne Islands, Coquet Island, the coastline from Scremerston near Berwick-Upon-Tweed in the north to Blyth in the south and at Flamborough Head and Bempton Cliffs.

As a preliminary step towards determining the SPAs for which there may be connectivity between the Development and qualifying features, a list of those SPAs within 100 km of the Development has been compiled.

Lindisfarne SPA has not been included for consideration due to it being outwith the 100 km distance and the distance from the project far exceeding the foraging ranges of any of the features of the site.

Seabird features of SPAs that are within 100 km of the Development are listed in Table 1.

Consideration of LSE has also been given to the following breeding seabird species which have foraging ranges exceeding 100 km:

- Part of the Development area is within the foraging range of puffin, kittiwake and guillemot from the Farne Islands SPA, for which puffin is a listed species of the qualifying breeding seabird assemblage.
- Part of the Development area is also within the foraging range of kittiwake (*Rissa tridactyla*) from the St Abbs Head to Fast Castle SPA, for which kittiwake is a breeding feature, and the Farne Islands SPA, for which kittiwake is a listed species of the qualifying breeding seabird assemblage.

For foraging ranges of seabirds, the principal source of information has been those derived from a comprehensive set of studies as analysed in Woodward *et al*. (2019).

Table 1: SPAs within 100 km of the Development and their designated seabird features

SPA	Breeding Species	Non-Breeding Species
North Norfolk Coast	Sandwich tern (*Thasseleus sandvicensis*) Common tern (*Sterna hirundo*) Little tern (*Sternula albifrons*)	
Greater Wash	Sandwich tern (*Thasseleus sandvicensis*) Common tern (*Sterna hirundo*) Little tern (*Sternula albifrons*)	Little gull (*Hydrocoloeus minutus*)
The Wash	Common tern (*Sterna hirundo*) Little tern (*Sternula albifrons*)	
Gibraltar Point	Little tern (*Sternula albifrons*)	
Humber Estuary	Little tern (*Sternula albifrons*)	
Flamborough and Filey Coast	Puffin (*Fratercula arctica)* Herring Gull (*Larus argentatus)* Fulmar (*Fulmarus glacialis)* Kittiwake (*Rissa tridactyla*) Gannet (*Morus bassanus*) Guillemot (*Uria aalge*) Razorbill (*Alca torde*) Assemblage including fulmar (*Fulmarus glacialis*)	
Teesmouth and Cleveland Coast	Common tern (*Sterna hirundo*) Little tern (*Sternula albifrons*) Avocet (*Recurvirostra avosetta*)	Sandwich tern (*Thasseleus sandvicensis*) Assemblage including herring gull (*Larus argentatus*) and black headed gull (*Chroicocephalus ridibundus*) Knot (*Calidris canutus*), Redshank (*Tringa totanus*) Ruff (*Calidris pugnax*)
Coquet Island	Sandwich tern (*Thasseleus sandvicensis*) Common tern (*Sterna hirundo*) Arctic tern (*Sterna paradisaea*) Roseate tern (*Sterna dougallii*) Assemblage including puffin (*Fratercula arctica*) and black headed gull (*Chroicocephalus ridibundus*) Puffin (*Fratercula arctica)* Kittiwake (*Rissa tridactyla)* Herring Gull (*Larus argentatus)* Lesser Black Backed Gull (*Larus fuscus)* Fulmar (*Fulmarus glacialis)* Guillemot (*Uria aalge)*	

Northumbria Coast	Arctic tern (*Sterna paradisaea*) Little tern (*Sternula albifrons*) Purple sandpiper (*Calidris maritima*) Turnstone (*Arenaria interpres*)	

3.1.1.3 SPAs excluded from consideration

Seabird features of other more distant SPAs have been excluded from consideration of LSE as follows:

- Part of the Development area is within the foraging range of gannet from the Forth Islands SPA for which gannet is a breeding feature. However, foraging areas of gannets are essentially specific to each colony, with little overlap (Wakefield *et al*. 2013). As such gannets from the Forth Islands SPA are not expected to forage within the Development area, which is foraging grounds for gannet of the Flamborough and Filey Coast SPA.
- The foraging range for fulmar is quoted as 542.3 km (+/- 657.9 km) which, to seaward, stretches across the North Sea basin. Fulmar is a listed species of the qualifying breeding assemblage of the Flamborough and Filey Coast SPA. It is not a feature of any other SPA within at least 300 km of the Development area and, given the extremely large area over which fulmars could forage, their dependence on the Development area is not considered significant. Consequently, fulmars from colonies in more distant SPAs are not considered prone to LSE from the Development.
- The Northumberland Marine SPA covers areas of the sea with the characteristics typical of areas used most heavily for foraging by breeding terns at existing colonies that are features of abutting sites (Northumbria Coast SPA, Farne Islands SPA and Coquet Island SPA). The site is consequently not included in Table 1 since potential for connectivity of the Development with species foraging within the site is determined in relation to the sites at which the relevant features breed. Screening of features for potential presence in the Development area

3.1.2 Secondary Screening

Secondary screening of features and sites of the preliminary list for connectivity with the Development has utilised information drawn from departmental briefs for relevant SPAs, where available, and form the following studies on the observed distribution of seabirds as well as their foraging ranges.

- Waggitt *et al.* (2019)
- Bradbury *et al*. (2014)
- Kober *et al*. (2010)
- Stone *et al*. (1995)

- Woodward *et al.* (2019)
- Lawson *et al.* (2015)
- Wilson *et al.* (2014)
- Parsons *et al.* (2015)
- Wakefield *et al.* (2013)
- Cleasby *et al*. (2020)

This has served to refine the understanding of potential for connectivity between the Development and the qualifying species of the SPAs listed in Table 1, plus puffin and kittiwake of the Farne Islands SPA and kittiwake of the St Abbs Head to Fast Castle SPA.

Fulmar (*Fulmarus glacialis*)

Fulmar, have a large mean-maximum foraging range (542.3 km +/- 657.9 km; Woodward *et al*., 2019) meaning that they may forage across much of the North Sea basin.

Whereas the Development is within foraging range of fulmar from a number of breeding colonies, including within the Flamborough and Filey Coast SPA, for which this species forms part of the breeding assemblage for which the site qualifies, the density layers associated with Waggitt *et al*. (2019) suggest that offshore sea areas through which the pipeline will pass and the sea area in which the Endurance Store is located are not of importance to fulmar in the breeding and non-breeding seasons.

No LSE are anticipated for fulmar due to lack of connectivity with the Development.

Gannet (*Morus bassanus*)

Tracking data presented in Wakefield *et al*. (2013) suggest that the sea areas through which the pipeline will pass and the sea area in which the Endurance Store is located are of importance for gannet in the breeding season.

Consideration is therefore required to determine whether there could be LSE to gannet of the Flamborough and Filey Coast SPA.

Guillemot (*Uria aalge*)

The density layers associated with Waggitt *et al.* (2019) suggest that the sea areas through which the pipeline will pass and the area in which the Endurance Store is located are of importance for common guillemot outside of the breeding season.

Cleasby *et al.* (2020) also suggests that the Development will pass through sea areas within the utilisation distribution of common guillemot from Flamborough and Filey Coast SPA in the breeding season.

The generic mean-maximum foraging range, plus one standard deviation, of common guillemot is 95.2 km (Woodward *et al.*, 2019) and means that the Development is within the foraging range of common guillemot from the Flamborough and Filey Coast SPA.

Consideration is therefore required to determine whether there could be LSE to guillemot of the Flamborough and Filey Coast SPA.

Razorbill (*Alca torde*)

The density layers associated with Waggitt *et al.* (2019) suggest that inshore sea areas through which the pipeline will pass and the sea area in which the Endurance Store is located are of importance for razorbill outside of the breeding season.

Cleasby *et al.* (2020) also suggests that the Development will pass through sea areas within the utilisation distribution of razorbill from Flamborough and Filey Coast SPA in the breeding season.

The generic mean-maximum foraging range, plus one standard deviation, of razorbill is 122.2 km (Woodward *et al.*, 2019) and means that the Development is within the foraging range of razorbill from the Flamborough and Filey Coast SPA.

Consideration is therefore required to determine whether there could be LSE to razorbill of the Flamborough and Filey Coast SPA

Puffin (*Fratercula artica*)

The generic mean-maximum foraging range, plus one standard deviation, of puffin is 265.4 km (Woodward *et al.*, 2019) and means that the Development is within the foraging range of puffin from the Coquet Island SPA and the Farne Islands SPA (Teesside Pipeline).

Whereas the density layers associated with Waggitt *et al.* (2019) suggest that inshore sea areas through which the Teesside Pipeline will pass are of importance for puffin outside of the breeding season, they indicate no connectivity in the breeding season between birds from these SPAs and the sea areas in which the Development will be located.

No LSE are anticipated for puffin due to lack of connectivity with the Development.

Kittiwake (*Rissa tridactyla*)

The density layers associated with Waggitt *et al.* (2019) suggest that offshore sea areas through which the pipeline will pass are of importance for kittiwake throughout the year. In addition, the sea areas in which the Endurance Store is located are of importance for kittiwake in the nonbreeding season.

The generic mean-maximum foraging range, plus one standard deviation, of kittiwake is 300.6 km (Woodward *et al.*, 2019) and means that the Development is within the foraging range of breeding kittiwake from the Flamborough and Filey Coast SPA and smaller colonies on the north-east coast of England.

Cleasby *et al.* (2020) also suggests that the Development will pass through sea areas within the utilisation distribution of breeding kittiwake from Flamborough and Filey Coast SPA in the breeding season.

Consideration is therefore required to determine whether there could be LSE to kittiwake of the Flamborough and Filey Coast SPA, the Farne Islands SPA, and/or the St Abbs to Fast Castle SPA.

Arctic tern (*Sterna paradisaea*)

The density layers associated with Bradbury *et al.* (2014) suggest that offshore sea areas through which the pipeline will pass are of importance for Arctic tern during the breeding season.

The closest breeding colony of Arctic tern to the Development pipeline are at Coquet Island.

Both breeding colonies are beyond the maximum site-specific (data available for Coquet Island only) (Wilson *et al.*, 2014) and generic foraging ranges (40.5 km; Woodward *et al.*, 2019) reported for Arctic tern. It is therefore unlikely that breeding birds will be present in the sea areas through which the Development will pass with birds that are present more likely to be non-breeding or immature birds.

The months incorporated into the seasons (Furness, 2015) used when modelling the density layers associated with Bradbury *et al.* (2014) are also likely to result in an overlap between the presence of breeding birds at colonies and the pre-breeding and post-breeding movements of birds. This can lead to certain sea areas appearing to be of importance in the breeding season with these areas actually representing the pre- and/or post-breeding movements of birds.

No LSE are anticipated for arctic tern due to lack of connectivity with the Development.

Common tern (*Sterna hirundo*)

The density layers associated with Bradbury *et al*. (2014) suggest that offshore sea areas through which the Teesside pipeline will pass are of importance for common tern in the breeding season.

The closest breeding colonies to the pipeline is at the Teesmouth and Cleveland Coast SPA. Common tern breeding colonies associated with the Greater Wash SPA are more distant, at Blakeney Point and Scolt Head on the Norfolk coast, approximately 90 km from the Development.

The generic mean-maximum foraging range, plus one standard deviation, of common tern (26.9 km; Woodward *et al.*, 2019) suggests connectivity between the Teesmouth and Cleveland Coast SPA and the Development.

Consideration is therefore required to determine whether there could be LSE to common tern of the Teesmouth and Cleveland Coast SPA.

Little tern (*Sternula albifrons*)

The density layers associated with Bradbury *et al.* (2014) do not suggest that the sea areas through which the pipeline will pass are of importance for little tern in the breeding or non-breeding seasons of the species.

Whereas the Teesside pipeline is located close to little tern breeding colonies which are part of the Teesmouth and Cleveland Coast SPA, site-specific foraging range data presented in Wilson *et al.* (2014) suggests no connectivity between little terns from the Teesmouth and Cleveland Coast SPA and the Teesside Pipeline. The little tern colony within the SPA has been located at Seaton Carew since 2019 having been previously located at Crimdon Dene to the north of Hartlepool. The Teesside Pipeline is beyond the site-specific foraging range of little tern from both breeding locations.

Site-specific foraging data for little tern from the Humber Estuary SPA indicates birds forage up to 6 km along the shore from the site of the little tern colony at the Lagoons Site of Special Scientific Interest (Parsons *et al.*, 2015). .

Consideration is therefore required to determine whether there could be LSE to little tern of the Teesmouth and Cleveland Coast SPA.

Roseate tern (*Sterna dougallii*)

Roseate tern is not included in the analyses presented in Waggitt *et al.* (2019), Bradbury *et al*. (2014), Kober *et al.* (2010) or Stone *et al.* (1995). The closest breeding colony to the Development is located at Coquet Island SPA. The mean-maximum foraging range, plus one standard deviation, of roseate tern is 23.2 km (Woodward *et al*., 2019) which suggests the Development is beyond the foraging range of the species from Coquet Island SPA which is more than 80 km from the Development area.

No LSE are anticipated for roseate tern due to lack of connectivity with the Development.

Sandwich tern (*Thalasseus sandvicensis*)

The density layers associated with Bradbury *et al.* (2014) suggest that inshore sea areas through which the Teesside Pipeline will pass are of importance for Sandwich tern in the breeding season.

The closest extant breeding colony is to the north of the Teesside cable at Coquet Island although generic foraging range data (57.5 km; Woodward *et al.*, 2019) suggests no connectivity between this colony and the Teesside Pipeline.

It is therefore unlikely that breeding birds will be present in the sea areas through which the Development will pass, with birds that are present more likely to be immature birds or non-breeding and passage birds. Non-breeding sandwich terns are a designated feature of the SPA.

The months incorporated into the seasons (Furness, 2015) used when modelling the density layers associated with Bradbury *et al.* (2014) are also likely to result in an overlap between the presence of breeding birds at colonies and the pre-breeding and post-breeding movements of birds. This can lead to certain sea areas appearing to be of importance in the breeding season with these areas actually representing the pre- and/or post-breeding movements of birds.

An LSE is possible for Sandwich tern due to a potential interaction with the installation works and the non-breeding/passage population of sandwich terns.

Little gull (*Hydrocoloeus minutus*)

The maps presented in Kober *et al.* (2010) suggest that the inshore areas of the Teesside pipeline are not of importance for little gull in the breeding season.

The closest SPA at which little gull is a designated feature is the Greater Wash SPA, where the species is a feature in the non-breeding season, with the main concentration of little gull within the SPA in the sea areas adjacent to The Wash (Lawson *et al.*, 2015).

Little gull occurs in UK waters during the non-breeding season and it is therefore unclear the distribution maps in Kober *et al*. (2010) suggest there are important areas in UK waters for little gull in the breeding season.

There is no evidence to suggest that the sea areas through which the Development will pass are of importance for little gull during the non-breeding season when bird will be present in UK waters.

No LSE are anticipated for little gull due to lack of connectivity with the Development.

Herring gull (*Larus argentatus*)

The offshore areas through which the Teesside Pipeline passes are important in the breeding season. The Development is beyond the foraging range of herring gull from those SPAs at which herring gull is a designated breeding feature (85.6 km; Woodward *et al.*, 2019).

Herring gull are a listed part of the non-breeding assemblage of Teesmouth and Cleveland Coast SPA

The density layers associated with Waggitt *et al.* (2019) suggest that inshore sea areas through which both the pipeline will pass are of importance for herring gull outside of the breeding Season.

Consideration is therefore required to determine whether there could be LSE to herring gull of the Teesmouth and Cleveland Coast SPA.

Red-throated diver (*Gavia stellata*)

The density layers associated with Bradbury *et al.* (2014) suggest that inshore sea areas through which Teesside Pipeline will pass is not of importance for red-throated diver in the non-breeding season.

Red-throated diver does not breed in England and the foraging range of the species from breeding locations in Scotland does not interact with the sea areas in which the Development is located (Woodward *et al.*, 2019).

No LSE are anticipated for red-throated diver due to lack of connectivity with the Development.

Common scoter (*Melanitta nigra*)

The maps presented in Stone *et al*. (1995) do not suggest that the sea areas associated with the Development are of importance for common scoter at any point during the year. Since Stone *et al*. (1995), there has been no evidence of substantial changes in the distribution of common scoter in recent years to suggest that the Development will interact with areas of high density for this species. This is

supported by the survey data underpinning the designation of the Greater Wash SPA which suggests important areas for common scoter occur in the outer reaches of The Wash (Lawson *et al.*, 2015) rather than further north toward the Development area.

No LSE are anticipated for common scoter due to lack of connectivity with the Development.

3.1.3 Qualifying features for LSE determination

The following features of the named SPAs have connectivity with the Development and have consequently been identified for consideration of LSE in respect to each of the impact mechanisms identified for the Development.

Flamborough and Filey Coast SPA

- Gannet (*Morus bassanus*)
- Guillemot (*Uria allge*)
- Razorbill (*Alca torde*)
- Kittiwake (*Rissa tridactyla*)

Farne Islands SPA

- Kittiwake (*Rissa tridactyla*)

St Abbs Head to Fast Castle SPA

- Kittiwake (*Rissa tridactyla*)

Teesmouth and Cleveland Coast SPA

- Knot (*Calidris canutus*)
- Redshank (*Tringa totanus*)
- Sanderling (*Calidris alba*)
- Common tern (*Sterna hirundo*)
- Herring gull (*Larus argentatus*)
- Sandwich tern
- Little tern
- Waterbird assemblage

Humber Estuary SPA

- Little tern (*Sternula albifromns*)

Greater Wash SPA

- Little tern (*Sternula albifromns*)
- Red throated diver (*Gavia stellata*)

3.1.4 LSE Determination

The Development may have potential to impact features of SPAs by causing a reduction in the extent and/or quality of their foraging areas via the following mechanisms from planned activities:

- Reduction in prey density due to temporary displacement of prey as a response to physical disruption of the seabed for the installation of subsea infrastructure and pipelines, including shoreline crossings;
- Reduction in prey density due to temporary displacement of prey as a response to increased sediments in the water column following their suspension during installation activities;
- Temporary avoidance by birds of an area where underwater visibility is reduced because of high sediment suspension caused by seabed disturbance during e.g. pipeline installation;
- Temporary avoidance by birds of areas as a response to the physical presence of installation vessels and associated noise and light sources;
- Temporary removal of substratum and relocation;
- Reduction in prey density due to mortality of prey from disturbance of the seabed; and
- Reduction in prey density due to the permanent loss of seabed habitat on which prey species are reliant where Development structures are laid.

The potential for activities to result in LSE has been screened on the basis of the sensitivity of each feature for which connectivity has been established to the mechanisms of impact.

In relation to disturbance, the sensitivity scores presented in Wade *et al*. (2016) are used and, if not included in Wade *et al*. (2016), the sensitivity scores presented in Bradbury *et al*. (2014), are used. It is noted that the sensitivity scores presented in Wade *et al*. (2016) are based upon impacts associated with offshore wind farms and therefore the application of them to the Development is considered to be precautionary, with any equivalent impacts from the installation and operation of the Development considered to be lower in magnitude as the equivalent impacts associated with offshore wind farms involve larger spatial and temporal scales.

For habitat loss and effects on prey, the habitat flexibility scores provided in Wade *et al*. (2016) are used.

3.1.4.1 Reduction in prey availability in foraging areas

Little tern and common tern are largely restricted to foraging in shallower, nearshore waters and, if these habitats are impacted, have relatively limited opportunity to forage in other areas. There could be potential for LSE to little tern and common tern from Development activities that result in temporary or permanent reduction in prey from foraging areas. Such activities being those associated with the

installation of the Teesside pipeline, including its landfall, which cause disturbance of the seabed within the foraging range of little tern from the Seaton Carew colony of the Teesmouth and Cleveland Coast SPA during the breeding season. Common tern nest at several locations across the SPA. The This project has the potential to obstruct connectivity between foraging areas and nesting colonies. The mean of recorded maximum foraging ranges for common tern is 18.0 km, whilst the maximum reported foraging range is 30 km (Woodward et al., 2019). These activities alter the seabed habitat and give rise to increased suspended sediment concentrations.

Conversely, gannet, guillemot, razorbill and puffin are not restricted to foraging in shallow, nearshore water and therefore have negligible sensitivity to impacts from the temporary or permanent reduction in prey from foraging areas due to altering of the seabed habitat and increased suspended sediment concentrations (Snow and Perrins, 2008). The impact to opportunistic and surface feeding seabirds such as kittiwake are also negligible.

The Development will not result in reduction of prey in foraging areas of waders such as knot, sanderling and redshank of the Teesmouth and Cleveland Coast SPA since these species forage in the inter-tidal zone. The direct pipe construction method utilised at Teesside will not disturb the sands landward of MLWS. The drilling will be under the intertidal zone and will emerge at the punch out location 1.3 km seaward of MLWS.

It is concluded that LSE can be ruled out for gannet, guillemot, razorbill and puffin due to negligible sensitivity to a temporary reduction in prey from their foraging areas.

It is concluded that LSE can be ruled out for waders such as knot, sanderling and redshank of the Teesmouth and Cleveland Coast SPA due to the lack of impact to the inter-tidal zone.

It is concluded that LSE cannot be ruled out to little tern or common tern from the temporary reduction in prey density in certain parts of their foraging areas due to disturbance of the seabed and/or increased suspended sediment in the water column.

3.1.4.2 Disturbance of birds from their foraging areas

Development activities may directly disturb birds leading to displacement from foraging or loafing areas, causing birds to move elsewhere, potentially affecting breeding productivity or survival rates at an individual or population level. A single, localised disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance events could lead to displacement affecting the survival and productivity of a bird.

Disturbance may be either in response to light, noise or visual triggers from vessels or human activity or in response to increased suspended sediments in the water column making underwater foraging less favourable.

Installation of the Development will require the presence and activity of vessels at multiple work fronts within all parts of the Development offshore area including at pipeline landfall.

The sensitivity of a species to disturbance events varies. Those species and species groups that are less sensitive to vessel movements include fulmar and gulls, opportunistic scavengers that will forage within tens of metres of machinery and moving vessels.

Of the species identified as SPA features with connectivity to the Development, guillemot, razorbill, redshank, sanderling and knot are identified as being vulnerable to disturbance.

During foraging, knot utilise the intertidal zone at the Coatham Sands and Redcar Rocks areas of the Teesmouth and Cleveland Coast SPA (Natural England, 2018). Sanderling are found on the sandy beaches at Redcar and Coatham Sands with smaller numbers in Hartlepool Bay. Redshank can be found feeding on the intertidal mudflats, saltmarsh areas and intertidal rocky shores within the SPA. When roosting, for example at high tide when the intertidal zone is covered, all three species utilise areas away from the proposed landfall location (Ward et al., 2003).

The intertidal area at the Teesside landfall will not be exposed to significant disturbance during the shoreline crossing as the application does not propose any pipeline excavation on the intertidal foreshore i.e. the entry and exit pits for buried pipeline landfall are either in the shallow subtidal or inland. There will be no piling within the SPA as a result of the project and as such noise from trestle piling can be scoped out of the assessment.

Given the vulnerability to disturbance, there could be potential for LSE to the following:

- Guillemot of the Flamborough and Filey Coast SPA due to vessel activity associated with installation of the offshore parts of the Teesside pipeline; and
- Razorbill of the Flamborough and Filey Coast SPA due to vessel activity associated with installation of all parts of the Development and associated with the operation of the Store;
- Impact to Tern species from changes in suspended solids (water clarity) leading to temporary effective loss of foraging habitat from sediment plumes. Impacts to qualifying features from impacts to coastal processes and habitat structure changes due to the temporary removal of substratum.

3.1.4.3 Mortality to prey

Adult fish on which seabirds' prey are highly mobile and there is little likelihood of direct mortality from direct seabed impacts to adult and sub-adult fish from either crushing or smothering. Fish are generally highly mobile and sensitive to pressure changes and visual stimuli, and it is therefore expected that the majority of fish in the path of the proposed operations will avoid physical damage. Given the wide area of similar habitat available and the temporary nature of the operations it is expected that fish will move outside the area of disturbance while installation activities are ongoing, and the Development area will be rapidly re-colonised following the cessation of installation activities.

Conversely, fish eggs cannot actively avoid impact.

Offshore installation works may coincide with spawning periods for herring, lemon sole, sprat, plaice, whiting, and *Nephrops* (nearshore part of Teesside Pipeline route only; Coull *et al*., 1998). The majority of these species spawn in the water column over large areas, therefore the proposed operations are expected to affect only a small proportion of the eggs, spawn and juveniles of each affected species.

Sandeel and herring spawning are considered more vulnerable to seabed disturbance because these species spawn on the seabed and have very specific and limiting benthic habitat requirements. 'Preferred' herring spawning potential has been identified by offshore surveys for the Development at only four locations on the Teesside Pipeline route, with no stations meeting the full criteria for suitable herring spawning areas (Gardline, 2022).

Pipeline installation activity, is expected to overlap with the expected herring spawning period of August to October. Given the low potential for herring spawning in the Development area and, the small area of potential herring spawning ground that would be affected compared to the total area available regionally, it is considered unlikely that the Development will have a significant direct impact on herring spawning.

Sediment suitability for sandeel spawning differs from herring requirements as sandeel prefer sandier substrates. During the most recent surveys of the Endurance Store area a sandeel spawning assessment was conducted (Gardline, 2022b. In order to be classified as 'Prime' or 'Sub-Prime' for sandeel spawning, the sediment must be composed of >85% or >70% sand (≥63 µm, <2 mm), respectively, with little mud (<1-4%; <63 µm; Gardline, 2022b). The western end of the Endurance Store area exhibits some suitability for sandeel spawning (Gardline, 2022b). Along the trunkline route, seabed was assessed as being 'Prime', 'Sub-Prime' or 'Suitable' for sandeel spawning at several stations distributed along the route, most consistently between ENV-77 to ENV-84 (Gardline, 2022b).

It is highly unlikely that the localised and temporary direct or indirect impacts associated with installation activities would result in any significant effects on sandeel spawning or adult populations along the CO_2 export pipeline. Seabed sweeping undertaken prior to pipeline and flowline installation may result in localised disturbance through the flattening of sandwaves, with the potential for short-term effects on sandeel in the immediate vicinity. However, sediments are expected to be naturally redistributed over time under prevailing bottom current conditions. As sandeel are well adapted to such dynamic seabed environments, no significant adverse effects are anticipated. Taking into account the small, localised extent of any long-term habitat loss, the temporary and short-term nature of direct and indirect effects, and the naturally dynamic offshore regime, any impacts on sandeel are expected to be negligible.

The shellfish identified as being present in the area are also generally mobile, although brown crab, lobster and scallops are less capable of moving rapidly away from disturbance and may therefore tend to be subject to crushing or smothering. Individuals that are unearthed from the sediment or buried under sediment are likely to survive and re-establish themselves. Given the wide area of similar habitat available and the ongoing fishery activities in the area (which in themselves suggest reasonable rates

of recovery), the proposed operations are not expected to have a significant direct impact on fish or shellfish populations.

LSE to seabird features of SPAs resulting from mortality to prey due to Development activities is consequently not deemed credible.

3.1.4.4 Permanent loss of prey habitat

The Development will install structures on the seabed that will cover a combined footprint estimated to be 2.92 km^2. This includes pipelines, cables, wellheads, manifolds, monitoring equipment, and protective rock cover, mattresses and concrete. This will result in a permanent loss of seabed habitat.

This represents a negligible proportion of the regional habitat supporting the production of fish, shellfish and benthic organisms that form the food chain of seabirds.

Boulders removed from the pipeline routes to allow installation will be moved to a 10-50 m corridor either side of the pipeline installation corridor.

Ahead of construction, boulder clearance operations along the pipeline corridor will involve the relocation of approximately 6,350 boulders from the pipeline route to locations outwith the pipeline corridor, either 10 m or 50 m either side of the pipeline route.

. This area will be subject to some degree of change to its present habitat type but remain a productive area for supporting prey species of seabirds.

There will be no LSE to seabird features of SPAs due to changes in prey resulting from permanent loss of seabed.

3.1.5 In-combination Effects

A large number of projects have been identified that will be contemporaneous with the Development and which could in-combination exacerbate any effects of disturbance or changes to prey availability on the features for which LSE cannot be ruled out.

The in-combination effects for these mechanisms of impact require consideration as part of the Appropriate Assessment.

3.1.6 Conclusions of LSE to Features of SPAs

Following completion of the Stage 1 assessment, the Secretary of State concludes that an appropriate assessment is required to determine whether the Development could adversely affect the integrity of the, the Flamborough and Filey Coast SPA. or the Teesmouth and Cleveland Coast SPA.

The assessment is required in relation to the potential for features listed in Table 2 to be impacted through the mechanisms identified in that table due to the Development activities stated for each mechanism.

Table 2: Mechanisms of potential impact to features of SPAs for which appropriate assessment is required.

SPA	Species	Impact	Activity
Flamborough and Filey Coast	Guillemot Razorbill	Disturbance by physical presence of vessels Disturbance by physical presence of vessels	Teesside PL installation
Teesmouth and Cleveland Coast	Common tern Little tern Sandwich tern Waterbird assemblage	Reduced extent/value of foraging area Disturbance by physical presence of vessels	Teesside PL installation

3.2 Special Areas of Conservation

The **Southern North Sea SAC** (SNS SAC) has been designated due to its importance as habitat for harbour porpoise (*Phocoena phocoena*) during both the summer and winter months (JNCC, 2019). The Endurance Store, and the pipeline route, is partly located within the summer habitat for the species.

No other SACs are directly intersected by the Development infrastructure. However, there is a site located within 50 km of the Development:

- Dogger Bank SAC is located *c.* 21 km north-northeast of the Endurance Store, designated for Annex I 'Sandbanks which are slightly covered by seawater all the time'.

The only SAC which is considered to have a potential LSE is the SNS SAC. A summary of all SACs considered for LSE is provided in Table 3, including a justification for those that have been ruled out.

Table 3 Stage 1 screening results for LSE of SACs considered.

European Site	Distance from the Project (km)	Features	Potential Impact	LSE	Reasoning
Southern North Sea SAC	0	Harbour porpoise (*Phocoena phocoena*)	Injury and disturbance to harbour porpoise and fish (as prey species) through underwater noise from piling, seismic surveys, drilling, vessels and clearance of UXO (if required) across the Development area. An initial desk based UXO assessment was undertaken (see Section 3.2.3.1 of the ES). NZNSS have undertaken UXO identification surveys and have encountered one UXO within the SAC. The UXO will be cleared using deflagration and will be assessed within a separate HRA assessment covering the MCAA Marine License which licenses the removal. Therefore, sound associated with UXO clearance is not considered further in this HRA. Seabed disturbance impacts on supporting habitat and prey species. Impacts to prey species from discharges to sea.	Yes	Within the project boundary.

European Site	Distance from the Project (km)	Features	Potential Impact	LSE	Reasoning
Dogger Bank SAC	21	Annex I 'Sandbanks which are slightly covered by seawater all the time'	At these distances from the Development, the only potential seabed disturbance impact would be temporary indirect disturbance due to the suspension of sediments during installation activities.	No	There will be no direct impact to any of these features. The suspension of sediments during installation activities will be too far from these features for resettlement of sediments to cause significant effects on the habitats or benthos and fish associated with them.

3.2.1 Conclusions of LSE to Features of Southern North Sea SAC

Appropriate assessment is required to consider potential direct and indirect impacts from the proposed Development alone and in-combination with other projects on the harbour porpoise qualifying feature of the SNS SAC.

Fish species are not qualifying features of the SNS SAC (JNCC, 2019); however, they are the main prey for harbour porpoise, and it is therefore important to understand potential impacts to these species to assess potential impacts on the SAC's integrity.

The AA will consider the following specific impacts (LSEs):

- Seabed disturbance impacting on prey species;
- Underwater sound injury and disturbance to harbour porpoise;
- Discharges to sea impacting on prey species; and
- Collision risk to harbour porpoise.

4 HRA STAGE 2: APPROPRIATE ASSESSMENT

The purpose of this AA is to determine whether or not an adverse effect on the integrity of the features of the sites identified can be ruled out as a result of the Development, alone or in combination with other plans and projects, in view of the site's conservation objectives and using the best scientific evidence available.

Whereas the LSE screening process establishes that a link exists between a source of impact and the conservation features of interest, and that this would likely result in significant impact, the AA considers whether the scale of impact is such that the integrity of the site would be adversely affected. The AA also takes account of relevant features of the project or measures envisaged to avoid, prevent, reduce or offset significant effects which will be subject to conditions of the Storage Permit Consent if granted by the North Sea Transition Authority (NSTA).

The AA for each site is provided separately in the following subsections.

5 APPROPRIATE ASSESSMENT FOR TEESMOUTH AND CLEVELAND COAST SPA

There could be potential for LSE to the common tern and little tern and waterbird assemblage features of the Teesmouth and Cleveland Coast SPA during installation of the Teesside pipeline across the shoreline. The mechanisms which could result in effects on these features are:

- Reduced access to preferred foraging areas in response to being disturbed by the physical presence of vessels associated with the installation of the Development;
- Localised reduction in prey density where prey selectively avoid areas where their food chain is impacted by disturbance of the seabed by activities related to the installation of the Development; and
- Reduced foraging effectiveness in areas where sediment loading in the water column is increased by activities related to the installation of the Development which cause disturbance of the seabed thereby reducing visibility when diving.

Further consideration has been given to this source of impact to assess whether they have the potential to adversely affect the integrity of the site.

5.1 Conservation objectives

The site objectives established for the Teesmouth and Cleveland Coast SPA is that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The populations of each of the qualifying features; and
- The distribution of qualifying features within the site.

5.2 Assessment of the Development Alone

The Teesside pipeline passes through the SPA for a distance of 6 km. The first 1.3 km is to be installed using the direct pipe technique whereby the pipeline will pass underground to a punchout location 1.3 km from MLWS. Beyond this point seabed sweeping will be required to KP3.3. Seabed sweeping will be undertaken using a variety of vessels including: Backhoe dredger; split hopper barge; grab dredger; trailing suction hopper dredger. These vessels will be used to create a recovery pit for the Tunnel Boring Machine and establish a pre-cut shore approach trench. The pre-cut shore approach trench will transition from approximately 2.8 m deep at the TBM recovery location (KP1.3) to seabed level (located

at around KP3.3). From KP3.3 to KP7.3, the trunkline will be post-lay trenched to 2.8m depth using the Beluga system. The pipeline trench will be 40 m wide x 3,700 m long (0.4 km x 3.7 km long).

The SPA protects significant areas of intertidal sand and mudflat, saltmarsh and freshwater grazing marsh, saline lagoons, sand dunes and shingle, rocky shore and shallow coastal waters which support a number of nationally and internationally important bird species. The Teesmouth and Cleveland Coast SPA is designated to protect breeding populations of avocet, common tern and little tern, non-breeding populations of knot, redshank, ruff and Sandwich tern and a waterbird assemblage which includes as main components, gadwall, shoveler and sanderling A number of features do not utilise areas below MHWS (avocet, ruff, gadwall and shoveler) and therefore no connectivity is identified. A review of existing survey data, and predicted foraging and ranges has identified that sandwich tern and common tern are likely to be forage and utilise the waters around the nearshore pipeline, however it is not predicted to be a location of specific importance or intense foraging. Sandwich tern and common tern have both been identified as not vulnerable to disturbance and have moderate habitat flexibility (Wade *et al.,* 2016). Construction associated with the landfall will be completed ahead of the wintering period, when the presence of waterfowl at the SPA will be highest. Analysis of little tern foraging ranges does not show the construction area is likely to be utilised significantly by little tern. This assumes that little tern largely breed at Denemouth beach and Seaton Care as these are the breeding sights flagged in the NE conservation advice. These breeding sites are greater than >4km from the pipeline installation which is greater than the mean max foraging range for little gull (+1SD) as described by Thaxter et al; 2012)

5.2.1 Disturbance due to physical presence of vessels

Development activities may directly disturb birds leading to displacement from foraging or loafing areas, causing birds to move elsewhere, potentially affecting breeding productivity or survival rates at an individual or population level. A single, localised disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance events could lead to displacement affecting the survival and productivity of a bird.

Disturbance may be either in response to light, noise or visual triggers from vessels or human activity or in response to increased suspended sediments in the water column making underwater foraging less favourable.

Installation of the Development will require the presence and activity of vessels at multiple work fronts within the Teesmouth and Cleveland Coast SPA.

The sensitivity of a species to disturbance events varies. Those species and species groups that are less sensitive to vessel movements include fulmar and gulls, opportunistic scavengers that will forage within tens of metres of machinery and moving vessels. Whilst there is evidence to demonstrate that gannet are displaced by structures, evidence suggests they are not disturbed by vessels (Wade *et al*., 2016).

The intertidal area at the Teesside landfall will not be exposed to significant disturbance during the shoreline crossing as the application does not propose any pipeline excavation on the intertidal foreshore. The pipeline will pass under the intertidal zone and punch out at KP1.3. Given the only supporting habitat for the waterbird assemblage feature within the remit of this application is the shallow coastal waters and the punch out point being 1.3 km from MLWS it can be concluded that that there would be no adverse effect to the waterbird assemblage feature of the Teesmouth and Cleveland Coast SPA from the physical presence of vessels.

As the pipeline will pass underneath the intertidal zone, birds which forage in this area intertidal zone such as redshank will not be impacted and . It is consequently concluded that there would be no adverse effect to either knot or redshank features of the Teesmouth and Cleveland Coast SPA from the physical presence of vessels.

Common tern and sandwich tern forage within the River Tees channel and shallow coastal waters covered by this application during breeding and non-breeding season. These areas are subject to considerable industry and boat traffic, with regular piling, dredging and vessel movements. However, common tern are relatively tolerant of human activities and vessels, and can be seen foraging close to industry. However construction and piling activities have the potential to cause disturbance for this species. Given the relatively small footprint of the construction and the fact it will occur outwards from KP1.3 it can be concluded that there would be no adverse effect to the common tern or sandwich tern feature of the Teesmouth and Cleveland Coast SPA from the physical presence of vessels.

Site-specific foraging data for little tern from the Humber Estuary SPA indicates birds forage up to 6 km along the shore from the site of the little tern colony at the Lagoons Site of Special Scientific Interest (Parsons *et al.*, 2015). Whereas the Teesside pipeline is located close to little tern breeding colonies which are part of the Teesmouth and Cleveland Coast SPA, site-specific foraging range data presented in Wilson *et al.* (2014) suggests no connectivity between little terns from the Teesmouth and Cleveland Coast SPA and the Teesside Pipeline. The little tern colony within the SPA has been located at Seaton Carew since 2019 having been previously located at Crimdon Dene to the north of Hartlepool. The Teesside Pipeline is beyond the site-specific foraging range of little tern from both breeding locations.

It can be concluded that disturbance due to the physical presence of vessels will not lead to an adverse effect on site integrity (AEOI).

5.2.2 Impact on Coastal Processes

There is the potential for alteration to coastal processes arising from linear berms of external pipeline / cable protection from pipeline operations. The first 1.3 km of the pipeline within the SPA will not be impacted as the pipeline will be drilled under the SPA. As the pre-cut shore approach trench will transition from approximately 2.8 m deep at the punchout point (KP1.3) to seabed level (located at around KP3.3) it can be assumed there will be no long term impacts to coastal processes.

Between KP3.3 and KP7.3, the pipeline will be progressively welded and laid within the defined anchor corridor. Post-lay trenching works will then be undertaken using Saipem's Beluga mechanical trenching system deployed from a Multi Service Vessel. The trunkline will be buried to 2.8 m. Following the installation the seabed will be returned to near pre installation conditions.

It can be concluded that there will be no impact to coastal processes from the works which could lead to an adverse effect on site integrity (AEOI).

5.2.3 Changes in suspended solids

There will be some increase in suspended solids as a result of the works and as a result temporary avoidance by birds of an area where underwater visibility is reduced. This will be limited in nature however with areas of disturbance of sediments focused on the area that the sweep / dredging will be occurring at that time. NZNSS have provided an assessment of dredging and it's potential extent giving a range of 20 m to 200 m for the trenching activities, stating that this is conservative. Using the higher figure of 200m and using this as a radius to calculate the impact area would give 0.126 km2 or 0.1% of the SPA. This is a conservative estimate as the plume would not spread out in every direction. In response to concerns raised by Natural England, the developer updated the EAJ to provide further explanation regarding the likely fate of suspended sediments, taking account of anticipated settling rates and the local tidal regime. This clarified that any significant increases in suspended sediment concentrations are expected to be spatially limited, extending only tens to several hundred metres from the works. While a precise prediction of plume extent is not possible due to the range of variables influencing plume behaviour (including tidal conditions, weather, and construction activity), the dredging-related plume formation will be short-lived and temporary in nature. Suspended sediment concentrations are anticipated to return to baseline levels within several hours and, in any case, within a single tidal cycle. Furthermore, the nearshore trenching works will be completed within a period of approximately two months, such that any changes in suspended solids will not constitute a chronic or persistent effect on the receiving environment. Given these aspects and the foraging ranges of tern species of up to 30 km it can be concluded that there will be minimal impact to tern species from changes in suspended solids as a result of the pipeline works.

Furthermore, the developer has described that the existing baseline environment of the SPA, being a shallow, nearshore open-coast location at the mouth of a large estuary, is characterised by regular increases in suspended sediments and turbidity. This is further exacerbated by the intensive and routine maintenance dredging programme undertaken by the ports of Tees and Hartlepool, which occurs year-round within and adjacent to the SPA. There is no indication that increases in suspended sediments resulting from these human-induced or natural variations are having an adverse effect on the feeding behaviour or condition of terns or other qualifying bird features of the SPA. Indeed, it is considered likely that terns will continue to forage in waters subject to elevated turbidity and suspended sediment concentrations, and this conclusion is supported by studies presented within the EAJ. It is therefore reasonable to conclude that the short-lived and localised increases in suspended sediments generated

by the proposed trenching works are unlikely to represent a material change to the baseline environment sufficient to result in significant changes to prey availability, distribution, or feeding behaviour.

Settling of suspended material may result in limited smothering of benthic epifauna and infauna. However, these indirect effects are anticipated to be localised, short-term, and reversible, with deposited sediments rapidly assimilated into the ambient sediment transport regime over subsequent tidal cycles. Deposition thicknesses are expected to be indistinguishable from baseline conditions over timescales of days to weeks.

There will be some reduction in prey as a response to increased sediments in the water column following their suspension during installation activities however as previously described this impact will be temporary in nature and any localised increase in sediment is likely to be reincorporated into the local sediment regime. There will be no AEOI as a result in the reduction of prey.

5.2.4 Permanent loss of seabed habitat

There will be no permanent loss of the seabed habitat with no rock or concrete mattresses being laid within the SPA and the pipeline being buried within the SPA. Some of the qualifying features of the SPA will forage in the marine area impacted by the deposit of materials outwith the SPA however this represents a small area and as a result will not have a significant impact on the availability of foraging area for the features.

It can be concluded that there be no AEOI as a result of the permanent loss of seabed habitat from the operations.

5.2.5 Seabed disturbance

There will be some reduction in prey due to mortality and displacement and the temporary removal of substratum. As previously discussed seabed disturbance will be temporary in nature with the seabed being returned to close to normal post installation. Sweeping and dredging activities within the SPA will occur for up to two months.

The proposed operations will not result in any impact on the freshwater grazing marsh and sand dunes which are protected within the Teesmouth and Cleveland Coast SPA as these habitats are predominantly freshwater and/or terrestrial. Due to the use of the direct pipe technique and the punch out location being beyond the intertidal zone the operations will not result in any long term direct impact on the protected intertidal habitats (i.e. intertidal sand and mudflat, saltmarsh, and/or shingle, rocky shore habitats) within the Teesmouth and Cleveland Coast SPA.

The operations including temporary anchor corridor; pre-cut shore approach trench and sweeping to the punch out point will result in a temporary short-term, direct impact of 7.53 km^2, which is 6 % of the SPA. Sediments in the area are uniform and due to the nature of the benthic communities inhabiting these sediments, it is anticipated that the direct impacts from installation operations will cause short-lived and

recoverable levels of disturbance to the benthic communities affected. No deposits e.g. rock protection, are planned within the Teesmouth and Cleveland Coast SPA, therefore there is no anticipated long-term impacts to the Teesmouth and Cleveland Coast SPA. The extent and distribution of the intertidal habitats of the qualifying features are not expected to be impacted and any impacts to the subtidal habitats would be temporary in nature.

The installation will utilise a jack-up vessel stabilised by 3 spud-cans the anticipated seabed impression from a single spud-can is approximately 2.9 m² (1.7 m × 1.7 m) and there will be approximately 350 spud-can placements over the nearshore pipeline installation. The nearshore spud-can placements will be within infralittoral and circalittoral fine sands and any spud can depressions are expected to be temporary seabed features in the mobile sediment environment present at the landfall. Natural sediment transport processes (tidal currents and wave action) are expected to result in gradual infilling of depressions and reinstatement of the surrounding seabed morphology over relatively short timescales. and are not expected to result in long-term habitat alteration within the Teesmouth and Cleveland Coast SPA.

Impacts to seabed habitats will be short term and not significant. This reduction in prey will occur over 6% of the SPA although this will not be all at once meaning the reduction in prey at any time will be less than this. Tern species have a foraging range of up to 30 km and as a result have the ability to forage in other areas of the SPA during this temporary reduction in prey. Similarly, the waterbird assemblage feature of the SPA have the ability to forage in other areas within and outwith the SPA.

It can be concluded that a reduction in prey as a result of temporary seabed disturbance within the SPA will not result in a AEOI.

5.2.6 Sediment and Water Quality changes

The EAJ presents detailed sediment quality data from nearshore and landfall survey stations within and adjacent to the Teesmouth and Cleveland Coast SPA, derived from site-specific environmental surveys. The results indicate that concentrations of contaminants of potential concern, including metals, hydrocarbons and organic compounds, are generally low and consistent with background levels typical of the Southern North Sea. Although some isolated exceedances of screening thresholds were identified at specific locations further offshore, no widespread or elevated contamination was recorded within sediments relevant to the SPA. In particular, contaminant concentrations within the nearshore and intertidal environment were below levels considered likely to result in adverse ecological effects, indicating an absence of any legacy or project-related contamination that could adversely affect water or sediment quality within the SPA.

The EAJ further explains that sediments encountered along the nearshore section of the pipeline route are dominated by sands and sandy gravels with low fine sediment content, limiting the potential for contaminant binding and remobilisation. As a result, any temporary disturbance of seabed sediments

during trenching or associated installation activities is not expected to mobilise contaminated material at concentrations that could affect the water column or sensitive receptors. Given the low baseline contaminant levels demonstrated by the sediment sampling programme, any short-term, localised increases in suspended sediments would comprise predominantly clean material and would rapidly disperse and settle under prevailing hydrodynamic conditions.

On this basis, and taking account of the transient nature of the works and the absence of significant contamination in baseline sediment samples, it is concluded that the proposed pipeline installation activities will not result in significant impacts on water or sediment quality within the Teesmouth and Cleveland Coast SPA.

It is concluded therefore that there would be no adverse effects on the integrity (AEOI) of the Teesmouth and Cleveland Coast SPA due to water or sediment quality changes alone and in-combination with other developments.

5.3 Assessment in combination with other projects

5.3.1 Net Zero Teesside Onshore Works

Construction of the Net Zero Teesside (NZT) combined cycle gas power generation plant and compression facilities on land to the south of the Coatham Sands is planned to overlap with the landfall construction for the Teesside pipeline.

The Secretary of State has published an assessment of the potential impacts of the NZT development (DESNZ, 2024) which concludes that there will be no adverse effect on integrity of the Teesmouth and Cleveland Coast SPA due to noise impacts.

5.3.2 Changes in suspended solids from dredging

The PD Teesside Limited Tees and Hartlepool Maintenance Dredge Disposal licence (L/2025/00366/1) was issued on the 5th November 2025 allowing for deposition of silt and sand material from maintenance dredge programmes at the Tees Bay A disposal site. The area to be maintained is approximately 1 km from the planned installation route and the disposal site, approximately 1.6 km away. The Operator has provided an assessment of the potential interaction between plumes from the Teesside maintenance dredge and the NEP pipeline operations. It is concluded that dispersion will return to backround levels rapidly and within the area of seabed disturbance. Due to the spatial separation between the two area it is not anticipated that the plumes will join. With the relatively small area impacted by suspended solids from the pipeline operations it can be concluded that no cumulative impact will lead to AEOI within the SPA.

5.3.3 Other plans and Projects

Other projects/infrastructure have been identified as having the potential to act in combination effects and have been considered

- Teesside Offshore Wind Farm and export cable
- Sofia Offshore Wind Farm export cable (installed)
- Dogger Bank C cable (installed)
- CATS pipeline

Port and harbour infrastructure, including:

- Redcar Bulk Terminal
- South Gare Harbour
- Hartlepool Dock

5.3.4 Disturbance due to physical presence of vessels

The Teesside Offshore Windfarm, located 1.5 km from shore is also located within 1 km of the trunkline route at the closest point. The proposed operations are located in an area of high vessel traffic, in an area which experiences between 2 and 100+ hours of vessel activity km2/month (EMODnet, 2024).

The impact is likely to be of a temporary and short-term duration, occurring intermittently for short periods of time and at low intensity. Any cumulative impact associated with disturbance from vessel movements is not considered to have the potential to lead to AEOI.

5.3.5 In-combination assessment summary

The in-combination assessment considered the pipeline installation alongside other relevant plans and projects identified in the EAJ that could interact spatially or temporally with the Teesmouth and Cleveland Coast SPA. These include routine and capital dredging activities associated with the ports of Tees and Hartlepool, ongoing coastal and estuarine maintenance works, existing offshore infrastructure and cable installations, and other consented or reasonably foreseeable marine construction activities within the wider Tees estuary and nearshore environment. The SPA is located within a highly active industrial and navigational setting, where periodic seabed disturbance, elevated turbidity, and vessel presence already form part of the established baseline.

The potential impact pathways relevant to the SPA in an in-combination context principally temporary increases in suspended sediments, localised seabed disturbance, and short-term vessel activity are all transient in nature and spatially limited. Importantly, sediment quality data demonstrate the absence of widespread or elevated contamination within nearshore sediments, such that any re-suspension occurring from the proposed works, whether alone or cumulatively with other activities, would predominantly involve clean sediment. In combination with the naturally high-energy hydrodynamic

regime and the frequent occurrence of similar disturbances associated with ongoing port operations and maintenance dredging, cumulative effects on water and sediment quality are not expected to persist or magnify beyond baseline variability.

Taking account of the scale, duration and location of the proposed works, together with the nature and timing of other relevant plans and projects, it is clear that no significant in-combination effects on the conservation objectives of the Teesmouth and Cleveland Coast SPA are anticipated. In particular, there is no reasonable mechanism by which the proposal would contribute to cumulative impacts affecting prey availability, foraging conditions, or habitat quality for the SPA's qualifying bird features.

It is concluded that there would be no adverse effects on the integrity of the Teesmouth and Cleveland Coast SPA due to impacts changes to suspended solids alone and in-combination with other developments.

6 APPROPRIATE ASSESSMENT FOR FLAMBOROUGH AND FILEY COAST SPA

There could be potential for LSE to the guillemot and the razorbill features of the Flamborough and Filey Coast SPA due to activities for the installation of the Development at any time of year.

The mechanism which could result in effects on guillemot and razorbill is:

- Reduced access to preferred foraging areas in response to being disturbed by the physical presence of vessels associated with the installation of the Development;

Further consideration has been given to this source of impact to assess whether it has the potential to adversely affect the integrity of the site.

6.1 Conservation objectives

The site objectives established for the Flamborough and Filey Coast SPA is that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The populations of each of the qualifying features; and
- The distribution of qualifying features within the site.

6.2 Assessment of the Development Alone

Disturbance from vessel activity may displace birds from an area of sea, effectively amounting to habitat loss during the period of disturbance (Drewitt and Langston, 2006). Development activities may directly disturb birds leading to displacement from foraging or loafing areas, causing birds to move elsewhere and potentially affecting breeding productivity or survival rates at an individual or population level. A single, localised disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance events could lead to displacement affecting the survival and productivity of a bird.

The foraging ranges for guillemot and razorbill (Woodward *et al*, 2019) suggest connectivity of both species with all parts of the Development.

The density layers associated with Waggitt *et al*. (2019) suggest limited usage of the Endurance Store area by guillemot and razorbill in those months during which installation activities will occur with the exception of August and September when fledged birds and their accompanying adults are dispersing away from breeding colonies.

More detailed utilisation data, presented as part of Cleasby *et al*. (2020) does suggest that the pipelines will run through areas of moderate to high usage for both species, although the Cleasby *et al*. (2020) data shows no connectivity with the Endurance Store.

Disturbance could also occur in the non-breeding season, with a large proportion of the regional population of guillemot remaining in the southern North Sea during that period and a smaller, but still significant proportion of the regional razorbill population also doing so.

The Development is located in an area highly utilised by existing shipping with a total of 49,320 AIS vessel movements recorded across the study area for the NRA between March 2021 and February 2022 (Xodus Group, 2023a).

The total number of vessels to be used during the construction and installation phase of the Development has been planned and was presented in the ES and updated in the Screening Direction. However, not all of these vessels will be present at the same time and will be focussed on specific parts of the pipelines at any given time. Construction activity is likely to proceed at several work fronts with clusters of vessels operating at pipeline landfalls, at points along pipeline route and at the Endurance store.

At landfall, Installation of PL6549 at Teesside will be via a direct pipe construction method. Direct pipe is a trenchless installation technique whereby a Tunnel Boring Machine (TBM) advances from an onshore launch pit while steel casing is simultaneously installed behind the cutter head using a pipe-jacking system. Up to five vessels, including a nearshore pipelay vessel (Castoro 10), will potentially be on station for 21 days.

During pipeline installation, vessel activity will occur in discrete sections of the pipeline corridors while large areas of each pipeline route will be undisturbed for prolonged periods of time during the overall construction programme.

Of the activities occurring at the Endurance Store, drilling activities will be undertaken for 210 days per well and will require four vessels totalling 395 vessel days although activity will be focused in a small area.

The effects of disturbance on both guillemot and razorbill during the installation of infrastructure within the marine environment is unclear from published records.

During construction surveys at the Lynn and Inner Dowsing OWF there appeared to be no significant patterns of change in guillemot abundance between the OWF and control sites (ECON, 2012). Leopold *et al*. (2010) found indications of disturbance to auks during some surveys at Egmond aan Zee (Netherlands) but numbers were too low to reach statistical significance.

It is noted that activity at an OWF during construction is significantly greater than that associated with the installation of pipelines, involving many more vessels across much larger spatial and temporal scales

and therefore it can be expected that if limited disturbance has been noted during construction of an OWF, then it is highly unlikely that significant disturbance will be noted during the installation of pipelines.

Wade *et al*. (2016) report that auks may be disturbed by boats at several hundreds of metres distance although survey vessels have often approached to less than ten of metres before eliciting an evasion response, for example many birds are recorded within fifty metres during boat-based surveys at OWFs.

If, for example, the presence of vessels at a work front were to cause displacement of auks from a 500 m radius around the activity it may reduce the available foraging area by approximately 0.8 km^2. With a foraging range of 95.2 km (Woodward *et al*, 2019), razorbill could have a seaward area of over 14,000 km^2 available for foraging. Even assuming multiple work fronts, the combined area of displacement would constitute a negligible fraction of the foraging area available to razorbill. Guillemot, having a longer foraging range, would be displaced from an even smaller proportion of their foraging grounds.

As a result, it is considered unlikely that disturbance events on guillemot and razorbill that may result from activities associated with the Development will result in an adverse effect on the integrity of the Flamborough and Filey Coast SPA.

6.3 Assessment in combination with other projects

The reported vessel movements quoted for 2021/2 across the Development area would largely be made up of goods transport fleets, fishing fleets, passenger and vehicle ferries and marine industry and supply shipping. On top of this would be an increment of vessels for developments being constructed at that time, and which would most likely be completed before construction of the Development begins.

The Applicant identified, in the ES and Screening Direction, a list of developments that could be in construction or being operated at the time of construction of the Development. Whether these, in-combination with the Development, will lead to an overall increase in vessel activity in the area from present baseline levels is unclear, there being limited information on the vessel routes for these other developments in the area. If there were a net increase in vessel activity, it is not likely to be a significant increase and would not give rise to a significant increase in the proportions of foraging areas from which razorbill or guillemot are displaced.

Colonies of razorbill and guillemot on the east coast of England generally show high breeding success and populations at the SPA have shown increasing population trends in recent decades, implying that foraging opportunities are good.

If any increased vessel activity in the Development area, due to construction of the Development in-combination with other developments, were to cause displacement of razorbill and guillemot from very small parts of their foraging areas, it is unlikely to cause significant pressure on their foraging success if foraging opportunities are generally favourable.

Vessel activity associated with construction of the Development is therefore not considered likely to give rise to an adverse effect on the integrity of the Flamborough and Filey Coast SPA either alone or in-combination with other developments.

7 APPROPRIATE ASSESSMENT FOR SOUTHERN NORTH SEA SAC

There could be potential for LSE to the harbour porpoise feature of the Southern North Sea SAC due to activities for the installation of the Development.

Fisheries bycatch, underwater noise and pollution have been identified as the main threats to harbour porpoise (JNCC, 2019, 2020; IAMMWG *et al.,* 2015). The widescale distribution of harbour porpoise prey species can also be affected by trends associated with climate change (IAMMWG *et al.*, 2015).

The mechanisms which could result in effects on harbour porpoise as a result of the proposed Development are:

- Killing or injuring harbour porpoise (directly or indirectly).
- Preventing harbour porpoise use of significant parts of the site (disturbance / displacement).
- Significantly damaging relevant habitats.
- Significantly reducing the availability of prey.

Further consideration has been given to these sources of impact to assess whether they have the potential to adversely effect the integrity of the relevant site.

7.1 Conservation objectives

Conservation Objectives constitute a necessary reference for identifying site-based conservation measures and for carrying out HRAs of the implications of plans or projects (JNCC and NE 2019). They outline the desired state for any European site, in terms of the features for which it has been designated. If these features are being managed in a way which maintains their nature conservation value, they are assessed as being in a 'favourable condition'. An adverse effect on the integrity of a site is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation (English Nature, 1997).

The purpose of an AA is to determine whether a plan or project adversely affects a site's integrity. The critical consideration in relation to site integrity is whether the plan or project affecting a site, either individually or in-combination, affects the site's ability to achieve its conservation objectives and favourable conservation status (JNCC 2015).

The Southern North Sea SAC was designated as a SAC in 2019. The site covers an area of 36,951 km^2 and is designated for harbour porpoise.

Harbour porpoises are also protected throughout European waters under the provisions of Annex IV and Article 12 of the Habitats Directive. Harbour porpoise in UK waters is considered part of a wider European population and the mobile nature of this species means that the concept of a 'site population' is not thought to be appropriate for this species. Site based conservation measures therefore aim to complement wider ranging measures that are in place for the harbour porpoise (JNCC and NE 2019).

The Conservation Objectives for Southern North Sea SAC are:

To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status for Harbour Porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that:

- Harbour porpoise is a viable component of the site,
- There is no significant disturbance of the species, and
- The condition of supporting habitats and processes, and the availability of prey is maintained.

Harbour porpoises are considered to be a 'viable component' of the site if they are able to survive and live successfully within it. The first Conservation Objective aims to minimise the risk from activities that cause unacceptable levels of impact on harbour porpoise using the site, specifically those that could impact on the Favourable Conservation Status of harbour porpoise (JNCC and NE, 2019).

The '*integrity of the site*' is not defined in the Conservation Objectives. However, UK Government guidance defines the integrity of a site as ''*the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified*' (Defra 2012). Therefore, the integrity of the site applies to the whole of the site, and it is the potential impacts across the whole of the site that are required to be appropriately assessed. Pressures that would affect site integrity include:

- killing or injuring harbour porpoise (directly or indirectly),
- preventing their use of significant parts of the site (disturbance / displacement),
- significantly damaging relevant habitats,
- significantly reducing the availability of prey (JNCC and NE 2019).

The second Conservation Objective states that there should be '…*no significant disturbance of the species'* and that '*Disturbance is considered significant if it leads to the exclusion of harbour porpoise from a significant portion of the site'* (JNCC and NE 2019).

'Supporting habitats and processes' relate to the seabed and water column along with the harbour porpoise prey.

JNCC advise that it is not appropriate to use the site population estimates in any assessments of effects of plans or projects (i.e. HRAs), as it is necessary to take into consideration population estimates at the Management Unit (MU) level to account for daily and seasonal movements of the animals (JNCC 2017c; JNCC and NE 2019).

There are no formal thresholds at which impacts on site integrity are considered to be adverse. However, a threshold of 1.7% of the relevant harbour porpoise population above which a population decline is

inevitable has been agreed with Parties to the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS), with an intermediate precautionary objective of reducing the impact to less than 1% of the population (Defra 2003; ASCOBANS, 2015). This threshold relates to impacts from fisheries by-catch on harbour porpoise where the impact on the harbour porpoise is permanent, i.e. up to 1.7% of the population may be caught as by-catch before a population decline is inevitable. An equivalent level of impact from disturbance, which is temporary and non-lethal, on a population will have a lower level of impact on the population compared to that from a fisheries by-catch.

The lack of agreed population thresholds either at the MU level or site level, below which evidence demonstrates there would not be an adverse effect, does not prevent objective judgements to be made on site integrity.

Thresholds to assess and manage the effects of noise on site integrity have been proposed by the JNCC and NE (JNCC 2017d, 2017e; JNCC and NE 2019; JNCC 2020). The proposed approach is not based on a population level impact but is instead based on a temporal and spatial level where a proportion of the area within the SAC may be affected over a period of time.

The JNCC and NE advice is that *'noise disturbance within the site should not exclude harbour porpoise from more than 20% of the site on any given day. Over a season, the advice is that an average loss of access to more than 10% of the SAC should be considered significant, recognising that within the SAC the abundance of harbour porpoise per unit habitat is generally higher than the equivalent sized habitat in the rest of the relevant Management Unit. Management of temporary habitat 'loss' to below defined area/time thresholds is therefore designed to ensure that it continues to contribute in the best possible way to the maintenance of the species at Favourable Conservation Status (FCS).'* (JNCC, 2020).

The potential extent of noise causing disturbance that would meet these proposed thresholds and therefore impact on the integrity of the site is presented in Table 4. The results indicate that should the impact occur wholly inside the SAC that, within the 'summer' area a sound source alone or in-combination causing disturbance for one day over an area of 7,390 km^2 would risk impacting site integrity. This is equivalent to a circular radius of noise out to 41.5 km. To exceed the threshold for the 'winter' area, noise in any one day should not extend over an area of more than 2,537 km^2: equivalent to a circular radius of 28.4 km.

Over the course of a season the total extent of potential disturbance on average per day should, in the 'summer' area, not extend over an area of more than 3,695 km^2; equivalent to a radius of noise of 29.3 km and in the 'winter' area should not extend over an area of more than 1,269 km^2, equivalent to a radius of 20.1 km.

Table 4: Estimated extent sound levels capable of causing displacement disturbance occur in order to impact on site integrity.

Site	Area (km^2)	1 day threshold		Seasonal threshold	
		20% of area (km^2)	Distance to threshold (km)	10% of area (km^2)	Distance to threshold (km)
Southern North Sea SAC	36,951	7,390	48.5	3,695	34.3
'summer' area April - September	27,028	5,406	41.5	2,701	29.3
'winter' area October - March	12,696	2,539	28.4	1,270	20.1

The 'Distance to threshold' presumes sound propagation is circular in shape, i.e. the distance is the equivalent to a radius of circular noise.

Unlike the daily threshold, the area of the SAC that can be affected over the course of a season is an average over the season. The seasonal average is calculated by summing the proportion of the site impacted (for the relevant season) over the number of days the impact will occur and then averaging across the total number of days within that season, i.e. 183 days in the summer period and 182 days in the winter period. This provides a seasonal average spatial effect.

This assessment is based on both the potential impact on the North Sea MU population using both the ASCOBANS thresholds and the proposed SNCB threshold approach.

In order to undertake any meaningful assessment using the threshold approach, accurate information on the timing, duration and extent of activities being undertaken is required. Where this information is lacking or where speculative 'worst-case' scenarios are used there is little or no confidence that the results will bear any resemblance to the true extent of impact within the SAC on any single day or across the course of a season.

The HRA has been carried out in light of best scientific knowledge with reference to the Conservation Objectives of the SAC and the potential impacts on the integrity of the site (EC, 2018).

7.2 Species Accounts

7.2.1 Harbour porpoise

The harbour porpoise is the smallest and most abundant cetacean species in UK waters. They occur widely across shelf waters predominantly either individually or in small groups, but larger aggregations have been reported (Department for Environment Food and Rural Affairs (Defra) 2015), with group sizes varying with season (Clark 2005). Harbour porpoises have a very broad distribution occurring predominantly over the continental shelf. Higher densities occur in areas of up welling and strong tidal currents and in water depths of predominantly between 20 and 40 m (Clark 2005, Whaley 2004). Their distribution may also be strongly correlated with seabed type, with areas of sandy gravel being preferred

and this may be linked to prey availability (Clark 2005). Harbour porpoises occur widely across the North Sea.

The latest estimated harbour porpoise population for the northeast Atlantic region is 409,244 (CV 298,194 – 578,505) (Gilles *et al.,* 2023) and has remained relatively stable since at least 1994 (Hammond *et al*., 1995, Hammond *et al.,* 2017, Hammond *et al*., 2021). Within this region, the North Sea itself is considered as a separate management unit (MU) for which the latest harbour porpoise population estimate is 346,601 individuals (IAMMWG, 2022). This figure has been used for this assessment.

There may be some evidence to suggest a southward shift in the distribution of harbour porpoise in the North Sea, possibly attributed to changes in prey availability (IAMMWG *et al.* 2015).

The Southern North Sea SAC is an area of importance for harbour porpoise, supporting an estimated 7.5% of the UK North Sea MU population (JNCC, 2023).

Harbour porpoise densities vary seasonally and across the Southern North Sea SAC (Evans and Teilmann, 2009). Site-specific surveys undertaken by wind farm developers have shown considerable variation in the spatial and temporal distribution of harbour porpoises across years (e.g. Forewind 2013, SMart Wind 2017). Typically, peak abundance has been reported to occur between May and July at sites across the Dogger Bank area and between September and April at sites further south (e.g. Forewind 2014, SMart Wind 2015, EAOWL 2015). Lowest reported abundance across nearly all wind farm surveyed areas occurs between November and February, although the poorer survey conditions that occur predominantly during the winter months may be a contributing factor in the lower number of harbour porpoise recorded during this period.

Highest densities in the central and northern area of the SAC occur during the summer period with modelled harbour porpoise densities greater than 3.0 per km^2 occurring widely (Paxton *et al.,* 2016). During the winter period the distribution of harbour porpoise in the southern North Sea changes, with reduced densities over the central and northern area but an increase in densities in nearshore waters and the southern part of the SAC (Heinänen and Skov 2015).

Alternative estimates of densities have been derived from other survey data (Gilles *et al.* 2023, TKOWFL 2011; SMart Wind 2017) but none provide conclusive evidence to divert from the JCP value.

Tagging studies undertaken in Denmark indicate that harbour porpoises are highly mobile and range widely in the North Sea, with individuals tagged in the Skagerrak travelling up to 100 km per day, with a mean distance of 24.5 km per day (Sveegaard, 2011).

Harbour porpoise swimming speeds vary with the highest recorded swimming speeds being 4.3 m/s (Otani *et al.,* 2000). Mean recorded speeds are typically around 1 m/s (Otani *et al.,* 2000, Kastelein *et al.,* 2018). When disturbed by noise harbour porpoise can increase swimming speeds with increasing sound levels. Studies using playback experiments of pile-driving sounds have reported increases in

swimming speed from an average of 1.2 m/s to 2.0 m/s at sound levels of 154 dB re 1 µPa that were sustained for at least 30 minutes (Kastelein *et al*., 2018).

Although harbour porpoises may dive to depths of up to 226 m and remain submerged for up to five minutes, they more frequently undertake relatively shallow dives of a short duration, with a mean depth of 14 m and duration of 44 seconds (Santos and Pierce 2003; Otani *et al*., 1998, 2000). Studies undertaken on 14 tagged harbour porpoise in Danish and adjacent waters reported that on average harbour porpoise spend 55% of the time in the upper 2 m of the surface waters.

Harbour porpoise use echolocation to detect and track individual prey and are opportunistic feeders, foraging close to the seabed or near the sea surface, preying on a wide range of fish species including, herring (*Clupea harengus*), whiting (*Merlandius merlangus*), Gadoids spp. sprats (*Sprattus sprattus*), gobi (*Pomatoschistus minutus*) and sandeels (*Ammodytes* spp.), and their prey will vary during and between seasons (DeRuiter 2008; Santos and Pierce 2003; IAMMWG *et al.,* 2015). The prey of harbour porpoise may change over time with a reported long-term shift in prey from clupeid species to sandeels and gadoid species (IAMMWG *et al*., 2015), indicating that harbour porpoise may be opportunistic feeders capable of feeding on a variety of species.

Studies undertaken in Denmark indicate that their local distribution may be correlated with prey availability (Sveegaard, 2011). Due to the relatively high metabolic rate of harbour porpoise and the relatively small size of their predominant prey it has been suggested that harbour porpoise require a reliable source of food and frequent food consumption in order to maintain their body weight, with increased consumption in cooler environments (Kastelein *et al*., 1997; Wisniewska *et al*., 2016; 2018).

Harbour porpoise have a maximum life expectancy of 24 years, with an average life expectancy of around 12 years in UK waters (Lockyer 2003; Learmouth *et al.,* 2014). Females become sexually mature at between three and five years old (Lockyer 2003; Learmouth *et al*., 2014). Breeding is thought to occur primarily during the summer months between May and September, particularly in August, with calving 10 months later. Calves are nursed for eight to ten months but may remain with the mother until a new calf is born (Defra 2015, Lockyer 2003, Weir *et al*. 2007).

The range at which marine mammals, including harbour porpoise, may be able to detect sound arising from offshore activities depends on the hearing ability of the species and the frequency of the sound. Other factors that can affect the potential impact include ambient background noise, which can vary depending on water depth, seabed topography and sediment type. Natural conditions such as weather and sea state and existing sources of human produced sound can also reduce the auditory range.

Porpoises are generally considered to be ‘high frequency’ or ‘very high frequency’ specialists with a relatively poor ability to detect lower frequency sounds (Southall *et al.* 2007, 2019). Studies undertaken on captive harbour porpoises indicate that porpoises have a functional hearing range of between 250 Hz and 180 kHz with their best hearing between 16 to 140 kHz and their maximum sensitivity between 100

and 140 kHz. It is within the frequency range of 130 to 140 kHz that harbour porpoise echolocates (Miller and Wahlberg 2013).

Their ability to detect sound below 16 kHz or above 140 kHz falls sharply (Kastelein *et al.* 2012, 2015, Southall *et al*. 2007). Harbour porpoise are therefore most sensitive to sound sources between 16 to 140 kHz and, although potentially audible, they are unlikely to be sensitive to sound either above or below those frequencies.

Reported sound levels produced by harbour porpoise for echolocation, to communicate and to detect prey range from between 166 to 194 re: 1 µPa (rms SPL) and between 178 and 205 dB re. 1 µPa (peak – peak SPL), with a mean level of 191 dB re. 1 µPa (peak – peak SPL) and within the peak frequency range of 110 to 150 kHz (Villadsgaard, *et al*. 2007, Miller and Wahlberg 2013, MMO 2015).

7.2.2 Prey species

Fish are not qualifying species for the Southern North Sea SAC, however, potential impacts on fish that are prey for harbour porpoise could affect the integrity of the site by reducing their prey base (JNCC and NE 2019).

Sandeels are one of the main prey items for harbour porpoise and are also an important prey species for predatory fish such as whiting, cod and haddock, some of which may also be prey for harbour porpoise (Greenstreet *et al*., 2006).

Sandeels are one of the most abundant fish in the North Sea occurring widely over suitable sandy substrates where, once the larvae have settled, they remain in the area (Heath *et al.,* 2011). Although widespread, sandeel distribution is highly substrate specific as they depend on seabed habitat comprising a high proportion of medium and coarse sands (particle size 0.25 - <2 mm) with low silt content (Holland *et al*., 2005).

Between September and April sandeels remain largely buried in the seabed except when spawning during December and January (Greenstreet *et al.,* 2006, Van der Kooij *et al*., 2008).

Within the Southern North Sea SAC sandeels occur across the site with their main spawning area over the Dogger Bank and have a wider nursery area across most of the SAC (Judd *et al.* 2011).

Fish hearing is based on detecting particle motion directly stimulating the inner ear. However, those with swim bladders are also able to detect pressure waves and can detect a wider range of frequencies and sounds of lower intensity than fishes without swim bladders (Popper, 2003). Fish with swim bladders that possess a coupling mechanism between the swim bladder and the auditory system, e.g. herring and sprats, are recognised to be hearing specialists. Fish that have swim bladders but lack a mechanised coupling mechanism or do not have swim bladders, e.g. sandeel spp. are considered hearing generalists and have a relatively lower sensitivity to sound than fish that have swim bladders and a coupling mechanism.

Studies on the behaviour of fish in response to noise, largely using play-back experiments, have reported a range of behavioural responses including avoidance behaviour, changes in swimming speed and direction (e.g. Hawkins *et al.,* 2014; Mueller-Blenkle *et al.,* 2010) and reduced antipredator responses (Everley *et al.,* 2016).

Sandeels are not considered to have sensitive hearing (Popper *et al.,* 2014). Studies undertaken using airguns indicate that sandeels have distinct but weak reactions to seismic airguns with initial startle responses reducing in frequency with on-going noise, and no increased mortality was detected (Hassel *et al.,* 2004).

There are limited studies assessing potential impacts on eggs and larvae. Results indicate that there is potential for increase in mortality when larvae are exposed to an airgun sound source with peak sound pressure levels of 220-242 dB re 1 μPa^2 (unknown measure), but only within 5 m of the airgun (Popper *et al*., 2014).

7.3 Potential impacts

7.3.1 Seabed disturbance impacting on prey species

The maintenance of supporting habitats and processes contributes to ensuring that prey is maintained within the site and is available to harbour porpoises using the site. Habitat degradation, increased levels of suspended sediments and sedimentation may affect epibenthic and infaunal communities, leading to indirect effects on harbour porpoise through changes in prey availability. However, these effects are not generally considered to present a significant pressure on the conservation objectives, and the relative level of risk to the SAC from these types of impact is low.

Since the potential impacts on benthos and fish arising from the planned construction and installation activities are temporary and not expected to be significant, this section focusses on the long-term placement of structures (rock protection) on the seabed.

There will be several subsea equipment and protection structures that will have a permanent seabed footprint, including a 6 km long pipeline, rock placement, a wellhead tree, concrete mattresses, concrete plinths, and seabed landers. In addition, approximately 32.9 km of the Teesside Pipeline will lie within the SNS SAC; this section will be surface laid. Within the SAC, the Teesside Pipeline route and Teesside – Store cable route cross the Langeled gas pipeline and the cable corridor for the proposed Dogger Bank A transmission asset; these crossings will be covered by protective rock berms. The installation of subsea infrastructure and protection structures will introduce additional hard substrata to the predominantly sandy seabed in this area.

The seabed footprint for the structures proposed to be installed on the seabed within the SAC amounts to a worst case of 0.1683 km^2, representing 0.0006% of the overall Summer SAC seabed area. Given the relatively small areas affected and the very widespread distribution of similar habitat type within the SAC, no significant negative effects are expected to occur on the supporting habitats or the availability of sandeel or any other harbour porpoise prey species.

Overall, the minor changes to the seabed substratum associated with the Development are on a small scale and not likely to have a significant effect on any of the harbour porpoise prey species and will not affect the ability of prey species to reproduce. The presence of the structures on the seabed may result in minor changes to benthic epifauna and fish distribution, which could be negative or positive. It is unlikely that the Development would result in any loss of benthic biomass or availability of prey for fish species, or in turn to any reduction in the availability or distribution of harbour porpoise prey species.

In-Combination Effects

The applicant has identified four proposed developments for which there may be potential for impacts related to permanent changes to seabed habitats in the SNS SAC in-combination with the Development. The in-combination developments are:

- Kumatage gas field development (projected first gas in September 2028 but currently in an early stage of engineering development);

- Proposed Dogger Bank A transmission asset;
- Existing Langeled gas export pipeline; and
- Proposed Hornsea Project Four OWF (In May 2025, a decision was made to discontinue Hornsea Project Four in its current form. Ørsted will evaluate options for development of Hornsea Project Four at a future date (Ørsted, 2025).

The extent of seabed disturbance within the SNS SAC from these developments is currently not published. If these are to be extensive they will be subject to appropriate assessment, alone and in-combination with the NEP Development, at the time of their submission.

Given the extremely low proportion of the seabed of the SAC that will be permanently changed due to the Development alone, it is not expected to significantly increase any impact conclusions from the in-combination developments identified.

As the Development will cause no significant change to the habitats of the SNS SAC alone and will not cause a significant increase to any change caused by other developments, **the supporting processes of these habitats and availability of prey species for harbour porpoise will not be adversely affected by the Development alone or in-combination.**

7.3.2 Underwater sound

There is a substantial volume of literature describing the potential effects of sound on marine mammals, and summarised in e.g. Thomsen *et al.* (2006), Southall *et al.* (2007, 2019), and OSPAR (2009).

There are four main types of potential effect from noise that are recognised within the marine environment:

- *Fatal effects* caused by significant levels of noise in close proximity to the receptor.
- *Physical injury*, specifically hearing impairment, which can be permanent or temporary. These effects can impact on the ability of marine mammals to communicate, forage or avoid predators.
- *Behavioural effects* such as avoidance, resulting in displacement from suitable feeding or breeding areas, and changes in travelling routes.
- *Secondary impacts* caused by the direct effects of noise on potential prey causing a reduction in prey availability.

The range at which marine mammals may be able to detect sound arising from offshore activities depends on the hearing ability of the species and the frequency of the sound. For example, pinnipeds (seals) are potentially more sensitive to low frequency sounds than cetaceans and harbour porpoise may be more sensitive to relatively high frequencies. Other factors which may affect the potential impact of sound on marine mammals includes ambient background noise, which can vary depending on water

depth, seabed topography and sediment type. Natural conditions such as weather and sea state and other existing sources of human produced sound, e.g. shipping, can also reduce the auditory range.

Fatal effects

If source peak pressure levels from the proposed operations are high enough there is the potential for a lethal effect on marine mammals. Studies suggest that potentially lethal effects can occur to marine mammals when the peak pressure level is greater than 246 or 252 dB re. 1 µPa (Parvin *et al*. 2007). Damage to soft organs and tissues can occur when the peak pressure level is greater than 220 dB re. 1 µPa.

Physical injury

Underwater sound has the potential to cause hearing damage in marine mammals, either temporarily resulting in a shift in hearing threshold (Temporary Threshold Shift, TTS) or permanently (PTS). The potential for either of these conditions to occur is dependent on the hearing bandwidth of the animal, the duty cycle of the sound source and duration of the exposure (Southall *et al*., 2019, OSPAR 2009).

There are two primary and different metrics for measuring the effect of sound on marine mammals: sound pressure level (SPL) and sound exposure level (SEL).

SPL is the result of the pressure variations in the water achieved by the sound waves. Sound travels through the water as vibrations of the fluid particles in a series of pressure waves. The waves comprise a series of alternating compressions (positive pressure variations) and rarefactions (negative pressure fluctuations). In water the sound source strength is defined by its SPL in dB re 1µPa, referenced back to a representative distance of 1 m from an assumed (infinitesimally small) point source. This allows calculation of sound levels in the far-field.

SEL is used as a measure of the total sound energy of an event or a number of events (e.g. over the course of a day) and is normalised to one second. This allows the total acoustic energy contained in events lasting a different amount of time to be compared on a like for like basis, meaning multiple events can be taken into account.

Behavioural Change

Potential changes in behaviour may occur depending on the sound source levels and the species and individuals' sensitivities. Behavioural changes can include changes in swimming direction, diving duration, avoidance of an area and reduced communication.

Masking effects may also cause changes in the behaviour as the level of sound may impair the detection of echolocation clicks and other sounds that species use to communicate or detect prey, thus causing them to alter their behaviour.

Secondary Effects

There is potential for impacts on prey species to affect marine mammals, in particular possible impacts of noise on fish species.

Effective Deterrent Radius / Range

The Effective Deterrent Radius / Range (EDR) is proposed by the Statutory Nature Conservation Bodies (SNCBs) as a means to measure potential impacts on harbour porpoise within the SAC (JNCC, 2017d, 2017e; JNCC, 2020). The EDR is an empirically derived generic distance within which deterrence, i.e. displacement, of harbour porpoise is predicted to occur. The EDR are based on published studies that have monitored the effects on harbour porpoise from various activities and reflects the overall loss of habitat if all animals vacate the area (e.g. Defra 2015). It is an area of displacement as opposed to disturbance, which may be greater.

The published precautionary EDRs are presented in Table 5 (JNCC, 2025). Relevant to the assessment of the proposed Development are the EDRs for pin-pile activities and seismic surveys which are published as being 20 km and 10 km, respectively.

Other EDR in Table 5 have been used in the assessment of the impact of the Development in combination with other activities taking place within the SAC.

The SNCBs recognise that future data may require the suitability of the EDR to be reconsidered if it is found to be inappropriate (JNCC 2017e).

Table 5: Precautionary Effective Deterrent Ranges (EDR) (Source: JNCC, 2020).

Activity	Effective Deterrent Range (km)
Monopile	20
Unexploded Ordnance	20
Pin-pile [1]	20
Monopile with noise abatement	11
Conductor piling	5
Seismic survey	10
High Resolution Geophysical Surveys	3

[1] Pin-piles are '*smaller diameter piles that secure jacket structures'* although no definition as what diameter a pin-pile should be has been provided in published advice (JNCC 2020).

Noise Modelling

The following activities associated with the proposed Development have been identified as key sound sources:

- Piling during installation of:
  - Manifolds in the Endurance Store area;
- Seismic surveys as part of monitoring activity during the life cycle of the Development;
- Seabed preparation, pre-lay and post-lay surveys during subsea installation;

- Presence of the jackup vessels during drilling of the wells, landfall construction and installation of subsea infrastructure;
- Dredging activities through the use of Back Hoe Dredger (BHD), grab dredger, trailing head suction dredger, cut suction dredger, plough and jet trencher; and
- Vessels.

Of the activities listed above, only piling activities (manifolds), during installation of the Development, and the use of seismic sources (4D), during the operational phase, are considered to have the potential to impact on the hearing of sensitive marine species as they represent the greatest sound sources in both power (i.e. pressure levels) and in character (i.e. as an impulsive sound).

The sound levels emitted by the equipment for the pre and post-lays surveys (i.e. MBES, SSS etc.) will be highly directional, with sound levels transmitted perpendicularly from the beam which are typically 25 to 35 dB lower than sound emitted by airguns (Lurton and DeRuiter, 2011). Therefore, the pre and post-lay surveys are not anticipated to have any adverse effect on the local environment and in particular marine mammals. In addition, based on the frequency of the sound emitted by typical MBES and SSS, it is unlikely fish species will be affected by these surveys. JNCC (2017a) considers that sound emitted by MBES (and SSS) in shallow waters (i.e. < 200 m) typically fall outside of the hearing frequency of cetaceans. The sound produced is likely to attenuate quickly due to the high frequencies of the sounds. For this reason, piling and seismic activities constitute the worst-case activities which form the focus of this assessment.

These activities will be undertaken during different periods of the Development and at discrete intervals, i.e. piling will be undertaken during the installation phase, while seismic surveys, will be undertaken during the operational phase of the Development. Seabed preparation and pre/post-lay surveys are planned to occur during the installation phase.

For the purposes of noise modelling, survey parameters used for piling are shown in Table 6.

Table 6 Modelled piling parameters

Hammer energy (kJ)	Duration (minutes)	Strike rate (blows/minute)	Source level	
			Zero-to-peak sound pressure level (SPL) (dB re 1 µPa-m)	Sound exposure level (SEL) (dB re 1 µPa^{2}s-m)
Manifold piling				
24	**20**	44	200.0	226.3
120	**100**	44	207.2	233.2

The survey parameters used for modelling of seismic surveys are shown in Table 7.

Table 7 Modelled seismic equipment parameters

Parameter		480 cu in array
Array elements		Six 1900-LLXT airguns
Total volume		480 cu in.
Source level	Zero-to-peak sound pressure level (SPL)	247.7 dB re 1 µPa-m
	Peak-to-peak SPL	253.2 dB re 1 µPa-m
	SEL	220.6 dB re 1 μPa^2s-m
Peak frequency		*c.* 80 Hz
[1] Source levels have been computed using Gundalf array modelling software (Oakwood Computing, 2022) over a frequency range of 0 – 50 kHz.		

Noise Modelling Results

Physical Injury

Underwater sound has the potential to cause hearing damage in marine mammals, either temporarily resulting in a shift in hearing threshold (Temporary Threshold Shift, TTS) or permanently (PTS). The potential for either of these conditions to occur is dependent on the hearing bandwidth of the animal, the duty cycle of the sound source and duration of the exposure (Southall *et al.,* 2019, OSPAR 2009).

There are two primary and different metrics for measuring the effect of sound on marine mammals: sound pressure level (SPL) and sound exposure level (SEL).

SPL is the result of the pressure variations in the water achieved by the sound waves. Sound travels through the water as vibrations of the fluid particles in a series of pressure waves. The waves comprise a series of alternating compressions (positive pressure variations) and rarefactions (negative pressure fluctuations). In water the sound source strength is defined by its SPL in dB re 1µPa, referenced back to a representative distance of 1 m from an assumed (infinitesimally small) point source. This allows calculation of sound levels in the far-field.

SEL is used as a measure of the total sound energy of an event or a number of events (e.g. over the course of a day) and is normalised to one second. This allows the total acoustic energy contained in events lasting a different amount of time to be compared on a like for like basis, meaning multiple events can be taken into account.

Noise modelling undertaken by the applicant for piling, in the ES, showed the potential to injure harbour porpoise (HF cetaceans) was limited to a maximum injury range of 360 m . The assessment using the cumulative SEL thresholds determined that when soft-start was applied, impacts to marine mammals over a 24 hour period were still acceptable as they are limited to within the 500 m monitoring zone.

Similarly, the underwater sound modelling determined that the potential injury from seismic surveys is very limited and will be mitigated by the implementation of mitigation measures. The worst case injury

range was assessed as 150 m for HF cetaceans (zero-to-peal SPL). This means that the application of mitigations, including a soft-start procedure, and the inclusion of an MMO and PAM for pre-operational and operational monitoring of a 500 m zone will negate the risk of injury to harbour porpoise.

NZNSS, as operator of NEP, is committed to implementing the JNCC protocols for piling and seismic surveys, which both include soft-start.

The SCANS-IV density for harbour porpoise within the Development area is 0.6027 individuals per km^2 in SCANS block NS-C (Gilles *et al.,* 2023). Harbour porpoise density estimates from Heinänen and Skov (2015) suggest that densities in the vicinity of the Development could be higher than those from SCANS-IV data. Harbour porpoise densities according to Heinänen and Skov (2015) are 3 individuals per km^2. Based on densities reported by Gilles *et al.,* 2023, less than one animal is likely to be within encountered within the 500 m monitoring zone at any given time, further decreasing the likelihood of injury impacts to harbour porpoise from the piling or seismic activities associated with the Development. Using the higher Heinänen and Skov (2015) estimates, 2.3 animals may be within the monitoring zone.

Considering the small number of individuals estimated to be within the injury range and the proposed mitigation measures, no injury impacts to harbour porpoise are expected to result in LSE on harbour porpoise at this SAC from either piling or seismic activities. Underwater sound associated with the Development is not expected to lower the reproductive capacity or survivability of harbour porpoise (Thompson *et al.,* 2013; Nabe-Nilsen *et al.,* 2018) and as such, are not expected to adversely affect Conservation Objective 1 of the SAC.

Behavioural Disturbance

Potential changes in behaviour may occur depending on the sound source levels and the species' and individuals' sensitivities. Behavioural changes can include changes in swimming direction, diving duration, avoidance of an area and reduced communication.

Masking effects may also cause changes in the behaviour as the level of sound may impair the detection of echolocation clicks and other sounds that species use to communicate or detect prey, thus causing them to alter their behaviour.

To manage disturbance impacts on harbour porpoise associated with the SNS SAC, guidance provided by the JNCC (2020a) proposes an assessment of number of individuals disturbed as well as an assessment of temporary habitat loss via sound deterrence. Subsea installation is expected to take place in Q2/Q3 2026 and, as a worst case, seismic surveys are assumed to occur during the summer. As such, potential disturbance is assessed herein for piling and seismic activities (generating impulsive sound to which cetaceans are most sensitive) taking place during the spring/summer months (when highest abundances of harbour porpoise occur) in order to present a worst-case scenario. When considering if any significant disturbance could arise from the piling and seismic activities, constituting as going against Conservation Objective 2 for this site, it is necessary to assess whether the disturbance caused by the piling and seismic activities could result in an exclusion of harbour porpoise from either:

- 20% of the relevant area (summer or winter areas) in any given day; or
- An average of 10% of the relevant area of the site over a season.

For the purpose of the assessment, the potential loss of habitat from the sound emissions have been assessed against the SNS SAC's entire area (36,951 km^2) (JNCC, 2019) and against the SNS SAC's summer area (27,028 km^2) (JNCC, 2020). Piling operations are likely to each be completed within two to three days. Each seismic surveys are expected to occur over a period of 75 day (including downtime). Therefore, loss of habitat from piling and seismic activities should be both considered over a day but also over an entire season.

Piling

Piling could occur at the store due to the installation of the manifoldsIt should be noted that subsea installation is planned in Q2/Q3 2026. The summer area is defined as April to September (inclusive) and the winter area is from October to March (inclusive) (JNCC, 2020).

It is recommended that a conservative disturbance range (i.e. EDR) of 20 km be used when considering impacts to harbour porpoise from piling activities in the SNS SAC (Graham *et al*., 2019; JNCC, 2020). Within the 20 km EDR, there is the potential for up to 837 – 2,827 harbour porpoises to be disturbed during manifold piling, based on measured densities across the Development. When considering the population of the North Sea MMMU (i.e. 346,601 individuals), this equates to a maximum of 0.816% of the MMMU population

The 20 km EDR is considered highly conservative as only 25% of harbour porpoise were found to be deterred across this radius (Graham *et al.,* 2019). Rather, it is likely that disturbance impacts would be limited to within 3.8 km – 7.2 km from the piling activities (worst case), based on the sound modelling data.

For the SNS SAC, the daily and seasonal disturbances have been calculated by comparing the modelling result with the NOAA 'Level B harassment' (NMFS, 2018) and Tougaard (2015) threshold for disturbance to marine mammals, as well as using the 20 km EDR suggested by JNCC (2020a). The disturbance associated with the Development's piling operations alone will not exceed the daily and seasonal thresholds for the SAC suggested by JNCC (2020a).

The 20 km EDR would equate to a worst case (i.e. manifold piling as shown above) impact of 3.49% over a day and 0.039% of the Summer SAC area over an entire season. This percentage is lower than the maximum loss of habitat threshold for significant disturbance, as established by the JNCC (2020a) and stated above. In addition, based on the timing and character of the piling activities, the potential area of exclusion for harbour porpoise is expected to be considerably lower than this estimate. It is therefore considered that there is no potential for underwater sound associated with the piling activities alone to result in significant disturbance to harbour porpoise, that would result in a LSE to the SAC's designated feature or adversely affect the SAC's Conservation Objectives.

Seismic

For the seismic survey in the SNS SAC, daily and seasonal disturbances have been calculated by comparing the modelling result with the NOAA 'Level B harassment' (NMFS, 2018) and Tougaard (2015) threshold for disturbance to marine mammals, as well as using the 12 km EDR (since the submission of the ES the suggested EDR for seismic surveys has been reduced to 10 km however the 12 km EDR has been retained in this assessment as a worst case assessment) suggested by JNCC (2020a). It is predicted that the disturbance associated with the Development's survey operations alone will not exceed the daily and seasonal disturbance thresholds for the SAC suggested by JNCC (2020a).

To estimate potential disturbance to marine mammals over a 24-hour period, the survey vessel has been modelled completing two seismic lines spaced approximately 8 km apart. The two lines were selected to be two of the longest lines in the survey area and will be indicative of the maximum disturbance area that could occur over a 24-hour period. The single-pulse SELs have also been aggregated over all source points over the entire survey area to demonstrate the cumulative disturbance areas over the entire survey duration.

The 12 km EDR would equate to 7.86% of the SAC impacted on a single given day and 2.41% impacted over a season. As the seismic survey will be transient, with the survey vessel covering several kilometres per day at least, it is important to consider the maximum area to be surveyed in a day in association with the EDR, both over a single day and over the season. The area to be surveyed by each survey during the life cycle of the Development is currently not known, therefore a recent survey undertaken by NZNSS at the NEP Endurance Store area has been used as a comparison.

It has been assumed, for the purpose of this assessment, that the survey area reported in DESNZ (2022) and the findings are applicable to this assessment. DESNZ (2022) assessed the area in which harbour porpoise could experience disturbance using the daily and seasonal threshold, with the following assumptions/areas:

- Three survey lines of 41 to 78 km will be surveyed per day, equating to an area of 2,190 km^2 assuming a 12 km EDR; and
- The survey will last up to 92 days, during which airguns would be used for 64 days.

It was concluded that the maximum area of daily impact from the survey on the seasonal on the daily threshold represented 8.1% of the summer area of the SAC, with up to 1,945 harbour porpoises potentially experiencing disturbance, so 0.56% of the North Sea MMMU. Based on the seasonal threshold, it was concluded the survey represented between 2.9% and 4.2% of the summer area of the SAC during the summer period (DESNZ, 2022).

Both the modelling results and the JNCC (2020) EDR methodology suggest that the seismic surveys or piling associated with the Development on their own will not result in impact areas being above the thresholds suggested by the JNCC (2020) guidelines. Similarly, the AA assessment undertaken by DESNZ (2022) for a bp survey at the Store concluded that the operations were not affecting the Conservation Objectives of the SAC and did not result in LSE.

However, the thresholds could potentially be exceeded if other activities occur in the area at the same time as seismic survey or piling. This conclusion is believed to be applicable and similar to each of the six surveys NZNSS, as operator of NEP, is planning to undertake over the life cycle of the Development. Prior to undertaking either the seismic surveys or piling activities a geological survey application or Marine License will need to be submitted to the Department to further assess the impact of the work. Through this process a cumulative impact assessment will be undertaken with up-to-date information on other activities in the area. The assessment will reveal if the daily or seasonal thresholds have the potential to be exceeded cumulatively. If it is needed coordination of activities will ensure that the SAC thresholds are not exceeded.

Whilst there may be temporary effects on behaviours (as demonstrated by the underwater sound modelling and subsequent assessment of impact), there is not expected to be a change as a result of the proposed activities in the long-term functioning or status of any populations to which they belong.

Overall impact

The manifold piling locations are located within the ‘Summer Area’ of the SNS SAC.

The predicted daily percentages of the SNS SAC and the average percentages of the SNS SAC impacted over the season are shown in Table 8 for the manifold piling. The daily and seasonal disturbances have been calculated by comparing the modelling result with the NOAA ‘Level B

harassment' (NMFS, 2018) and Tougaard (2016) threshold for disturbance to marine mammals, as well as using the 20 km EDR suggested by JNCC (2020). It is predicted that the NEP CCS Project piling operations will not exceed the daily and seasonal thresholds for the SAC suggested by JNCC (2020).

Table 8 Predicted areas of the SNS SAC that may be impacted by the NEP CCS Project piling operations

Method	Predicted Daily Disturbance Area (km^2) [1]	Daily % of SNS SAC Impacted [2]	Average % of SNS SAC Impacted Over the Season [3]
Manifold piling at Endurance			
Comparison of modelling results with NOAA 'Level B harassment' threshold for disturbance to marine mammals	45	0.17%	0.002%
Comparison of modelling results with Tougaard (2016) threshold for disturbance to marine mammals	163	0.60%	0.007%
JNCC (2020) 20 km EDR	942	3.49%	0.039%

[1] The predicted daily disturbance areas refer to the areas of the SNS SAC impacted over 24 hours.

[2] The percentage of the SNS SAC 'Summer Area' impacted (which is applicable to the manifold piling) has been calculated based on the predicted disturbance areas for each disturbance threshold and an area of 27,028 km^2 for the SNS SAC 'Summer Area' as per the JNCC (2020) guidance.

[3] The average percentage of the SNS SAC impacted over the season (183 days) has been calculated assuming that the manifold piling will be completed within two days. For example, for the manifold piling assessment using the
20 km EDR disturbance threshold, the average percentage of SNS SAC impacted over the season is calculated as 3.49*2/183 = 0.039%.

Prey Availability

There is the potential for the prey species of harbour porpoise (fish) to be impacted by underwater sound.

The most relevant criteria for the potential impact on fish from seismic airguns and pile driving activities are considered to be those provided in the Sound Exposure Guidelines for Fishes and Sea Turtles (Popper *et al*., 2014).

In relation to the potential for physical injury or behavioural effects, fish species are grouped into categories defined by a number of factors such as their anatomy for detecting sound pressure and particle motion, the use of sound during navigation or mating and the presence or absence of a swim bladder. Swim bladders, and their anatomical location within the body, make fish more susceptible to adverse sound impacts than species lacking swim bladders. Thresholds for fish mortality, injury and disturbance are provided in Popper *et al.* (2014).

Piling

The modelling, within the ES, predicts that sound levels will be below threshold values associated with injury to fish species beyond a maximum distance of 80 m from the piling location (zero-to-peak SPL at HDD trestle piling at Teesside(HDD trestle piling is no longer a part of the project however this figure has been retained as a worst case). It is expected that the soft-start of the hammer during piling will likely disperse any mobile fish away from the piling locations to further distances where injury impacts are unlikely to occur. However, fish eggs and larvae that cannot move away from the source array are more susceptible to injury. For static eggs and larvae, injury is estimated within a maximum of 240 m from the piling location (SEL cumulative, HDD trestle piling at Teesside).

The radius of potential injury from the piling source using the Popper *et al*. (2014) criteria is relatively small and range between 10 m and 80 m depending on the type of hearing mechanism of the fish and piling activities. Based on this, it can be concluded that the piling activities will not result in any significant effect on fish populations within the Development area. Any effects will be short-term and highly localised.

There are no quantitative threshold criteria for assessing behavioural disturbance on fish from sound sources. The qualitative criteria established by Popper *et al.* (2014) suggest that any disturbance to fish species from piling will likely be localised with higher levels of disturbance only occurring in regions near to the piling location (e.g. within a few hundred metres). At further distances from the piling locations (e.g. beyond one kilometre), the risk of behavioural disturbance to fish is likely to be low.

Seismic surveys

The modelling predicts that sound levels will be below threshold values associated with injury to the most sensitive fish beyond a maximum distance of 80 m (zero-to-peak SPL) from the source arrays. Predicted distances are lower for less sensitive fish species. It is expected that the soft -start of the source arrays will likely disperse any mobile fish away from the sound source to distances where injury impacts are unlikely to occur.

Fish eggs and larvae are static, cannot move away from the source array, and are more susceptible to injury. The modelling predicts that fish eggs and larvae that cannot move away from the seismic source may by injured at distances of 400 m from the source.

The qualitative criteria established by Popper *et al*. (2014) suggest that any disturbance to fish species will likely be localised with higher levels of disturbance only occurring in areas near to the source (e.g. within a few hundred metres). At further distances from the source (e.g. beyond one kilometre), the risk of behavioural disturbance to fish is likely to be low.

Overall impact on prey availability

Injury impacts on fish species resulting from underwater sound generated by activity associated with the Development are highly localised and will not result in an impact at population level. Piling activities will be of short duration and the seismic survey vessel will be constantly moving. Fish eggs and larvae will

not be able to move away from the piling location or the airgun array and will therefore be more susceptible to injury. It is unlikely that fish will be displaced from the Development area during either piling or seismic activities. Given the small, predicted areas where fish eggs and larvae may suffer damage, relative to the large spawning areas across the North Sea, it is not expected that the piling or seismic survey will have a significant effect on spawning fish. In addition, DESNZ (2022) also concluded that impacts on fish from seismic surveys indicate that the disturbance would be localised and temporary and that any impacts would be inconsequential.

Any impacts on prey availability are therefore considered to be very limited and would not affect the Conservation Objectives of the SAC.

In-combination effects

The Applicant has identified four developments that could be undergoing construction at the same time as the Development and which could contribute to the in-combination noise effects on harbour porpoise of the SNS SAC.

Consideration of these is given below.

The Hornsea Project Four OWF was scheduled to start construction in 2026 and included piling for the foundations of 180 turbines. In May 2025, a decision was made to discontinue Hornsea Project Four in its current form. Ørsted will evaluate options for development of Hornsea Project Four at a future date (Ørsted, 2025). The potential project has been retained within this assessment. The OWF would partially overlap with the Endurance store although construction will no longer be concurrent with the Development. The maximum seasonal average area of disturbance from piling for the Hornsea Project Four OWF has been presented as being 7.87% of the summer area of the SNS SAC.

The Hornsea Project Four Transmission Asset project will install an electricity cable linking the OWF to shore, with landfall near Bridlington. The project includes installation of a High Voltage cable(?) Whereas this is located outside of the SNS SAC it may be possible that installation noise, for example from piling, may penetrate into the SNS SAC and thereby contribute to noise impacts on harbour porpoise within the SAC.

The Sofia Transmission Asset project will install an electricity transmission cable from the Sofia OWF to shore close to Redcar. Noise generating activities in the SNS SAC are limited to vessel activity and therefore not deemed to have an effect on harbour porpoise.

Piling at the Development is considered to represent as a worst case 0.029% of the SNS SAC over a season. In combination with noise from installation of the Hornsea Project Four OWF this would not exceed the seasonal threshold for disturbance of Harbour Porpoise.

The noise modelling undertaken by the Applicant demonstrates that piling for the Development alone will not cause exceedance of the daily threshold.

In order to enable activities to be undertaken in a way which does not cause an adverse effect on the integrity of the Southern North Sea SAC, OPRED and the MMO have introduced requirements which mean that operators must demonstrate that they only undertake their permitted activities in such a way that the daily threshold will not be exceeded.

The threshold verification will be achieved through inter-operator liaison which will plan activities such that the major sources of impulsive noise do not take place at the same time causing an exceedance of the thresholds.

This co-ordination takes place via a cross sector, industry led, simultaneous operations (sim ops) working group where all operators producing impulsive noise within the SAC meet regularly. The record of daily activity and cumulative disturbance will be displayed on a live, shared document visible to industry and overseen by the relevant regulators.

Adherence to the liaison, planning and reporting requirements of this scheme is a mandatory requirement included in the permitting of installation activities.

7.3.3 Discharges to sea impacting on prey species

Harbour porpoises are not expected to be impacted by discharges to sea (such as drill cuttings, mud and pipeline chemicals) or by the Formation Water displacement. Impact on prey availability is considered in this section.

Drilling discharges

Sandeel individuals present within the immediate vicinity of the well may be impacted by smothering. However, the modelling of cuttings and discharges above demonstrate that the maximum spread of thickness of cuttings above 10 mm is restricted to 550 m from the well locations, which represents a minute portion of the SNS SAC. While localised impact to fish species is expected at the well locations from the drill cuttings and mud discharges, **it can be concluded that any impacts on prey availability is considered to be very limited and would not result in a LSE or affect the Conservation Objectives of the SNS SAC.**

Aqueous discharges

In terms of discharges of pipeline chemicals, it was concluded that changes to water quality will be localised. In particular, the modelling indicated that the dilution required to achieve a PEC/PNEC of less than 1 for the pipeline chemicals is predicted to be achieved within a maximum of 568 m from the discharge location. With the dynamic environment at the Development, it is therefore unlikely that fish species will be impacted by these discharges. **As such, discharges of chemicals during the pipeline dewatering are not expected to affect the designated features of the SAC and no LSE is expected.**

Outcrop formation water displacement

Displacement of formation water would occur at the Bunter Sandstone Outcrop. Modelling was conducted to assess impacts from Formation Water displacement, concluding that a localised increase in metals and salinity may be detected; however, this was limited to 150 m from the displacement location. In addition, the majority of metals were expected to remain in the sediment and any metals passing through the sediment are expected to remain in solution which limits the potential for impacts to fish species via changes to water quality. Formation water displacement is spatially limited, and it is believed the majority of metals would be retained within the sediments. **Therefore, impacts would be limited to a very small portion of the SNS SAC and are not expected to affect the designated features of the SAC. No LSE is therefore expected.**

7.3.4 Collision risk

Increased vessel traffic during installation and construction presents an increased risk of collision with marine mammals. Vessels travelling at 7 m/s or faster are those most likely to cause death or serious injury (Wilson *et al*., 2007). Vessels involved in the Development are likely to be travelling considerably slower than this, and therefore collision risk is expected to be lower than that posed by commercial shipping activity.

The Development will not result in long-term changes to the functioning of any marine mammal population. The risk of collision arising from the Development is expected to be greatest during the construction phase. However, vessels will likely be travelling at slow speeds, meaning the collision risk is low. **Considering the area already contains moderate levels of vessel traffic, this is not expected to result in any LSEs on the harbour porpoise population designated in the SNS SAC.**

In-combination effects

Considering the fact that the any collision risk to marine mammals will be highly localised to the vicinity of the Development, there is expected to be a limited potential for cumulative impacts with other projects to arise, when the mitigations are considered. It is expected that projects will implement similar mitigations in order to reduce any potential collision risk or disturbance to marine mammals (e.g. Vessel Management Plan) to reduce any potential collisions with marine mammals.

With regards to disturbance during the drilling and installation works, there is the potential that cumulative impacts could arise with other projects in the vicinity of the Development with overlapping construction timelines. It is expected that vessel routes to and from nearby projects will already be well used, and therefore, there will not be a discernible increase in the potential disturbance caused. Furthermore, construction vessels will likely be moving slowly, reducing the potential impacts to marine mammals. **Considering this, in combination with the short-term nature of the disturbance caused, the potential for a significant cumulative impact to arise is low.**

8 APPROPRIATE ASSESSMENT - CONCLUSIONS

The Secretary of State has carefully considered all of the information available in order to undertake a Habitats Regulations Assessment. The Secretary of State considers that the proposed NEP Development to have the potential to cause a Likely Significant Effect alone and in-combination with other plans or projects on the qualifying species of the following sites:

- Flamborough and Filey Coast SPA
- Southern North Sea SAC

The Secretary of State has undertaken an Appropriate Assessment in respect of the sites' Conservation Objectives to determine whether the project, either alone or in-combination with other plans or projects, will result in an adverse effect on integrity.

The Secretary of State has undertaken a robust assessment using all of the information available.

Having considered all of the information available, the Secretary of State has concluded that the proposed NEP Development alone or in-combination with other plans and projects will not have an adverse effect on the integrity of the sites considered.

Having concluded that there will be no adverse effect on the integrity of any site no further assessment is required.

9 Annex 1

Statutory Nature Conservation Body (SNCB) Consultation

SNCB	Section Number	Comment	Advice	OPRED Response	Further NE Comments	Further OPRED Response
NE	2	Development description states that the full description of the development is in the following documents: “Environmental Statement (bp 2023a) and within the Environmental Assessment Justification (document (EAJ) for the Screening Direction for pipeline works, PL/2543/2, (bp 2026)” These documents are not within the reference section of the HRA, have not been provided with the HRA. Due to there being multiple versions of these documents, we do not wish to assume we are reading the correct version from our records.	We advise that the correct versions of these documents are provided to us with the revised HRA. Furthermore, pertinent aspects of those documents should be included in the HRA eg installation methodologies. Note that should the EAJ change again, the HRA will need to be updated. We advise that all aspects of the project are included in the project description and associated methodologies provided. We have yet to be provided with sufficient information on the HDD trestle piling and on the installation of the DCFO cables.	The link to the Environmental Statement and updated EAJ have been sent to NE for review along with version 2 of the appropriate assessment. This HRA covers the aspects of the project covered within the Screening Direction. Assessment of the total project was undertaken during the ES HRA. HDD trestle piling was included in the original ES but this installation method is not being used. Assessment of DCFO cable installation will be included in future submissions.	We thank OPRED for providing the updated EAJ (dated 24 April 2026). Natural England advises that in future all supporting documents should be clearly referenced and, where relevant, made available at the point of consultation, to enable meaningful and effective review. We repeat our advice that an HRA should consider all aspects of a project (see our advice of 9th March 2026, our ref 541569).	Noted. No further action required.
NE	Fig 1	Map of Pipeline	We advise that a “zoomed in” map is required to be able to assess impacts to the Teesmouth and Cleveland Coast SPA. This should include detailed biotope mapping. We require any maps to be provided as figures within the HRA and as GI shape files.	Included in updated EAJ in Figure 4-4 and included in HRA.	We are unable to locate a biotope map in the HRA or the updated EAJ. Fig 4-4 of the EAJ shows “potential reef” but does not show any other habitats. This information should be available from the applicant’s habitat surveys. We thank OPRED for sending GI files which were received on 6th May 2026 but these are not sufficient for assessment of effects. The files appear to contain no biological data and do not match maps within the HRA and EAJ. We provide 2 examples of inconsistencies in Appendix 2.	OPRED believe the information provided is sufficient for an assessment to be undertaken. The EAJ includes results and discussion of a site specific survey of the pipeline route. This has informed the EAJ and HRA. A biotope map was provided in the EAJ Fig 5-4. A higher resolution version of this has now been reproduced in the appendix of the HRA (this is sourced from the Northern Endurance Environmental statement). For clarify the biotopes found in the pipeline corridor in the Teesmouth and Cleveland Coast SPA

					We advise OPRED confirms the accuracy of mapping and provides that in and along-side the next revision of the HRA.	are infralittoral fine sand and circalittoral fine sand. Further mapping has not been judged to be necessary. No further action required.
NE	3.1.1	States that a further 13 SPAs have been considered, but it is not clear which these sites are.	We advise that these 13 sites are listed along with all the features of those sites. Furthermore, we advise the reasons for including or excluding those 13 sites and features are detailed ie what are the criteria for considering sites for LSE.	This is a typo and should have said 11 SPAs, the reasons are discussed in sections 3.1.1.2 and 3.1.1.3. HRA amended.	Natural England acknowledges the correction; however, clarity regarding which sites are being considered, and the rationale for their inclusion or exclusion, has not yet been adequately provided. Natural England reiterates its previous advice that a clear list of sites and relevant features should be presented, alongside explicit justification for their inclusion or exclusion from further consideration within the assessment. While Sections 3.1.1.2 and 3.1.1.3 partially address this advice, they do not provide sufficient detail or transparency to enable a clear understanding of which sites and features have been considered, nor to confirm that they have been subject to appropriate and proportionate consideration.	3.1.1.2 lists the SPAs and their features and discusses those which have been excluded from consideration with justification provided as to why. 3.1.2 then lists the features with connectivity to the sites and these features are further considered. No further action required.
NE	3.1.1.1	States that Wade et al 2003 has been used as a data source for bird usage of the site.	We advise that this data is inappropriate to use on its own for this analysis. We advise that the primary data source for assessing birds impacts should be site specific and less than 5 years old. 2 years of site-specific survey data obtained by the applicant through dedicated surveys should be used. If this is not available, we advise that more recent alternatives are provided. We would expect to be consulted by the	We accept the concern raised by NE regarding the old age of the Ward et al 2003 resource. We have chosen to accept the use of this resource as it used to provide information on the general background usage of the intertidal foreshore and the birds likely to be found there. As there are no intertidal impacts, birds utilising the foreshore are not likely to be affected and there would be little benefit to obtaining updated site-specific survey data.	This appears to contradict the position set out in Section 3.1.1.1, which states that “knot, redshank and sanderling may utilise areas that may be affected by impacts associated with the Development.” If it is considered that there will be no impacts to intertidal foreshore habitats or associated qualifying species, this should be stated explicitly and supported by clear justification. This could be achieved by addressing the previous comments and	There is no contradiction. The HRA states knot, redshank and sanderling may utilise areas that may be affected by the development however it is later stated that ‘The Development will not result in reduction of prey in foraging areas of waders such as knot, sanderling and redshank of the Teesmouth and Cleveland Coast SPA since these species forage in the inter-tidal zone. The direct pipe construction method utilised at Teesside will not disturb the sands

			applicant under a DAS contract to discuss the suitability of data.		setting out the criteria used to determine which sites and features are taken forward for Likely Significant Effect (LSE) consideration, including how potential impact pathways to intertidal areas and functionally linked supporting habitats have been screened out. Furthermore, there is still a lack of site-specific seabird data.	landward of MLWS. The drilling will be under the intertidal zone and will emerge at the punch out location 1.3 km seaward of MLWS.' It is not clear what is meant by site specific seabird data but we have appraised the level of risk associated with activity and are confident that level of seabird data presented is adequate to inform the assessment. The assessment assumes terns are present in the construction area and scopes in birds as being present in the operational area if their likely foraging ranges overlap. The assessment would not be materially different with the additional of further site-specific survey data. No further action required.
NE	3.1.1.2	States "Part of the Development area is within the foraging range of puffin (Fratercula arctica) from the Farne Islands SPA"	Natural England advises that guillemot from the Farne islands and breeding birds from Coquet Island also have foraging ranges which may interact with the development. We advise that these species are considered in the next revision of the HRA for consistency. For clarity, we advise that foraging ranges of the following seabirds of the Farnes, Coquet and Flamborough overlap with the development: Flamborough and Filey Coast Puffin Flamborough and Filey Coast Kittiwake	AA document 3.1.1.2 amended to include these recommendations	Recommendations have been used to amend Table 1; however, it remains unclear how, or whether, these recommendations have been carried forward to inform the wider assessment. In particular, the assessment does not clearly demonstrate how the amended recommendations have been considered in the supporting text, screening conclusions, or subsequent impact assessment sections.	The species listed by Natural England were considered within the HRA. No further action required.

			Flamborough and Filey Coast Guillemot Flamborough and Filey Coast Herring gull Flamborough and Filey Coast Fulmar Flamborough and Filey Coast Gannet Flamborough and Filey Coast Razorbill Coquet Island Puffin Coquet Island Kittiwake Coquet Island Herring gull Coquet Island Lesser black-backed gull Coquet Island Fulmar Farnes Islands Puffin Farnes Islands Kittiwake Farnes Islands Guillemot Where foraging range is based on Woodward 2019 (Mean-Max+1Standard Deviation) We do not anticipate Adverse Effect on Integrity to the above species but we advise that OPRED justify and confirm this within a revised HRA.			
NE	3.1.2.2	States “Part of the Development area is also within the foraging range of kittiwake (Rissa tridactyla) from the St Abbs Head to Fast Castle SPA”	This site is in Scottish waters and we defer to NatureScot for advice on this.	Noted – no action taken as it will not change to scope of the assessment	Noted	No further action required.

NE	3.1.2.2	States “For foraging ranges of seabirds, the principal source of information has been those derived from a comprehensive set of studies as analysed in Woodward et al. (2019).”	It is not clear what foraging ranges are used in this HRA as Woodward presents a range of ranges. Natural England advise that the foraging ranges used in this assessment are included within the HRA. For breeding seabirds we advise Mean-Max+1Standard Deviation is used.	Noted – the EAJ has been updated with a more comprehensive examination of tern foraging ranges (p110-p111)	We welcome the addition of mean-max+1SD foraging ranges to the updated HRA. We are satisfied that there is unlikely to be an Adverse Effect on Site Integrity to any SPA EXCEPT Teesmouth and Cleveland Coast SPA. We therefore make no further comment on SPAs other than Teesmouth and Cleveland Coast SPA.	No further action required.
NE	3.1.1.3	States that Northumberland Marine SPA has been scoped out	Natural England agree that Northumberland Marine can be scoped out. However, Northumberland Marine protects the foraging area for seabirds of the Farne Islands, Coquet Island and Lindisfarne SPA. Northumberland Marine overlaps Northumbria Coast SPA but is not related. We advise this error is corrected in the next revision of the HRA. We do not anticipate Adverse Effect on Integrity to this site but we advise that OPRED justify and confirm this within a revised HRA.	AA document amended to make the distinction clear	The stated amendment does not appear to have been fully implemented. Northumbria Coast SPA remains listed in error, and Lindisfarne SPA has not been added as indicated. In addition, the accompanying text states that “The site (Northumberland Marine SPA) is consequently not included in Table 1”; however, Table 1 has since been updated to include Northumberland Marine SPA. Such inconsistencies are evident throughout the HRA document and should be addressed and corrected to ensure factual accuracy, internal consistency, and confidence in the robustness of the assessment and its conclusions.	Northumberland Marine SPA removed from Table 1. Lindisfarne SPA has been scoped out due to the distance to the project far exceeding the foraging ranges of any of the features of the site. Text added to Section 3.1.1.2 to clarify this. No further action required.
NE	LSE - Little tern	This section draws no conclusion on LSE for this species from Teesmouth and Cleveland Coast SPA.	Natural England advise that there is LSE for little tern of the Teesmouth and Cleveland Coast SPA as the development runs through approximately 6km of the site designated for this species.	Section 6.4.1 – states “It is concluded that LSE cannot be ruled out to little tern or common tern from the temporary reduction in prey density in certain parts of their foraging areas due to disturbance of the seabed and/or increased suspended sediment in the water column” Text added to Little tern section to make it clear there could be LSE to Little tern.	The comment is applicable to Section 3.1.3.1. However, Section 6.4.1 does not appear in the document provided for review. The amendment to the little tern section provides additional clarity; however, little tern is not included as a qualifying feature for Likely Significant Effect (LSE) determination for the Teesmouth and Cleveland Coast SPA in Section 3.1.2. This omission creates uncertainty regarding	Little tern added to Section 3.1.2. No further action required.

					whether little tern has been appropriately screened and considered within the assessment and should be addressed to ensure consistency and transparency.	
	LSE - Sandwich tern	This section concludes no LSE for this species from Teesmouth and Cleveland Coast SPA. Much of the text considers breeding Sandwich terns but the site is designated for non-breeding Sandwich terns. We also note that the bird data cited is all dated prior to the site being extended for terns in 2020.	Natural England advise that there is LSE for Sandwich tern of the Teesmouth and Cleveland Coast SPA as the development runs through approximately 6km of the site designated for this species.	The AA has been amended accordingly	Natural England welcomes this	No further action required.
	3.1.3 and 3.1.4	States “The following features of the named SPAs have connectivity with the Development and have consequently been identified for consideration of LSE in respect to each of the impact mechanisms identified for the Development.”	LSE should be concluded. “If you cannot rule out the risk of the proposal having a significant effect, you will need to do an appropriate assessment.” (Habitats regulations assessments: protecting a European site - GOV.UK) LSE is normally determined at a high level and the pressures or impacts are assessed within the appropriate assessment. Natural England advise that the detail in section 3.1.4 would sit more appropriately in the Appropriate Assessment.	Noted. It is felt that the level of detail in the LSE is adequate and appropriate	Natural England’s advice remains unchanged. A detailed assessment of potential impacts should be undertaken at the Appropriate Assessment stage, rather than at the screening stage; therefore, the information currently presented in Section 3.1.4 would be more appropriately located within that stage of the assessment. Structuring the assessment in this way supports a clear and consistent application of the staged HRA process across projects and organisations and is consistent with the requirements of the Conservation of Habitats and Species Regulations 2017. We advise OPRED reviews and applies the guidance, which was provided in our previous response1.	The advice is noted. In future HRAs we will amend the structure however the current HRA document will remain unchanged as the assessment conclusions and rationale remain unaffected. No further action required.
	3.1.4.2	States “There will be no piling within the SPA as a result of the project and as such noise from	This contradicts the 2024 HRA. Natural England seek clarification that there will be no trestle piling and	The project has been updated since the 2024 application. NZNSS have confirmed that there will be no piling within the SPA.	Accepted	No further action required.

		trestle piling can be scoped out of the assessment."	no cofferdam piling or any other piling in the SPA.			
	3.1.5	States "A large number of projects have been identified ... which could in-combination... "	Natural England advise that these are listed for clarity.	In combination assessment completed as part of AA. Projects listed within this section of HRA.	No further comment	No further action required.
	5	States there is potential for LSE to common and little tern. This contradicts table 2 which includes Sandwich tern and waterbird Assemblage.	Natural England advise that an appropriate assessment should be carried out for the following features: - Little tern - Common tern - Sandwich tern - Waterbird assemblage OPRED have identified disturbance, suspended sediment, prey availability and visibility as impact pathways to terns. We advise the following pressures are assessed: - Changes in suspended solids (water clarity) - Visual disturbance The development site is in close proximity to the Tees Estuary which is know to be heavily contaminated. We advise that OPRED assess the risk of mobilising contaminated sediments when dredging the pipe trench. This may require sediment sampling and analysis. The following pressures should be included in a revised HRA: - Hydrocarbon & PAH contamination	3.1.2 updated to include sandwich tern and waterbird assemblage. Terns have been considered in the AA along with suspended solids/turbidity. Further information on seabed contaminants has been sourced from the operator and is included in the updated EAJ and AA. The assessment concludes there are not likely to be significant levels of any contaminant mobilised or released.	Section 3.1.2 has been updated to include sandwich tern and the waterbird assemblage, as previously requested; however, little tern has not been included. Further update is therefore required. Additional information regarding seabed contaminants, presented within the AA section of the consultation document, is limited. We have examined the information in the EAJ which provides more information. Contaminant levels are provided in the EAJ (24 April 2026) for sampling stations ENV-01, ENV-02, NS-GS06, NS-GS04, NS-GS07 and NS-GS02, the GI provided infers that there were four other sampling stations (ENV-03, ENV04, ENV05 and DC-06). We query the contaminant levels at those other four stations. We note the levels of contaminants presented and, on the proviso that levels at the remaining four stations are similar, we consider the conclusion of no AEoI from contaminants to be likely. We advise that the HRA should be able to be read as a stand-alone document or at least have very clear sign-posting to particular sections of other referenced and provided documents.	Little tern are included in Section 3.1.2. They had been left out of the list of qualifying features of the Teesmouth and Cleveland Coast SPA. This has been amended. Provided contaminant data sufficient to conclude no AEOI for HRA. NZNSS have confirmed that they were unable to undertake sediment sampling at the other four locations due to issues including the presence of static fishing gear, proximity to the CATS pipeline and the grab being unable to obtain enough sample to complete chemical analysis. No further action required.

			- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) We advise our Conservation Advice, Advice on Operations is used to assess the project. This should include all activities including capital dredging, cable lay and pipelines.			
	5.3.1	HRA uses bird distribution data from 2014 and 2019, prior to the SPA extension to assess disturbance.	Natural England advises that site-specific data less than 5 years old is used to carry out HRAs. The SPA offshore extension was designated in 2020, after the majority of the bird data referenced in this section. The extension was designated as this is an area used by foraging terns. Therefore we would consider there is an LSE. OPRED should provide recent (<5year old) data to support the conclusion of non-use of the development area, or conclude LSE and take the Teesmouth and Cleveland Coast terns forward to Appropriate Assessment for this pressure.	Terns have been considered in the Appropriate assessment.	(Note: reference to Section 5.3.1 now relates to Section 5.2.1) Additional text has been included regarding terns, which states that, “A review of existing survey data, and predicted foraging and ranges has identified that sandwich tern and common tern are likely to be forage and utilise the waters around the nearshore pipeline, however it is not predicted to be a location of specific importance or intense foraging.” It is unclear what survey data are being referred to, and no further detail is provided to support the stated conclusion. Additionally it is stated that, “Analysis of little tern foraging ranges does not show the construction area is likely to be utilised significantly by little tern” It is unclear what foraging range information or analytical approach has been used to reach this conclusion, or how this analysis has been applied to assess tern use of the construction area.	Foraging ranges are discussed in Section 3.1.2 and this is the basis for the statements highlighted by NE. With regard to little tern – the HRA has been amended to include the following clarification “*This assumes that little tern largely breed at Denemouth beach and Seaton Care as these are the breeding sights flagged in the NE conservation advice. These breeding sites are greater than >4km from the pipeline installation which is greater than the mean max foraging range for little gull (+1SD) as described by Thaxter et al; 2012)* “. No further action required.

					Further clarification is therefore required to ensure transparency regarding the data sources, assumptions, and methodology used to assess tern foraging behaviour and to support the conclusions presented.	
	5.3.1	This section concludes no LSE.	There should be a conclusion on LSE in the screening section of the HRA. The Appropriate Assessment should be determining whether or not there is Adverse Effect on Integrity.	Amended accordingly	Accepted	No further action required.
	5.3.2	States *"Following the installation the seabed will be returned to near pre installation conditions."*	Natural England advise that pre-lay and post-lay surveys are required and remedial action taken if seabed is not returned to pre-lay state. NE request consultation on survey design (through DAS with the developer), results and any remediation requirements.	Monitoring will be considered as requested but is not critical the outcome of the HRA.	Accepted	No further action required.
	5.3.2	This section concludes no LSE.	There should be a conclusion on LSE in the screening section of the HRA. The Appropriate Assessment should be determining whether or not there is Adverse Effect on Integrity.	Amended accordingly.	Accepted	No further action required.
	5.3.3	States "NZNSS have provided an assessment of dredging and it's potential extent giving a range of 20 m to 200 m for the trenching activities, stating that this is conservative. Using the higher figure of 200m and using this as a radius to calculate the impact area would give 0.126 km2 or 0.1% of the SPA."	This impact area appears to be smaller than expected given that we have seen sediment plume modelling from less intrusive works in areas of lower current flow with larger "radius" impacts. Natural England request sight of the sediment plume modelling produced by NZNSS to understand the conclusions drawn here. We also require an understanding of the	Extra information added to Section 5.3.2 to address this point following variation to the permit.	(Note: reference to Section 5.3.3 now relates to Section 5.2.3) Section 5.2.3 has been updated to note that the developer has revised the EAJ. The pertinent quantitative information in the EAJ should be included in the HRA. On examination of the EAJ information, we note that sediment may take up to 15 minutes to settle and may settle up to 353m from the works. This has been classed as short-term and temporary, quantified as two months.	The information has been summarised in the HRA and is felt sufficient. No further action required.

			timing of the trenching – time of year.		Given this quantification of the sediment plume, we consider the conclusion of no AEoI from changes to suspended solids to be likely.	
	5.3.3	This section concludes no LSE.	There should be a conclusion on LSE in the screening section of the HRA. The Appropriate Assessment should be determining whether or not there is Adverse Effect on Integrity.	Amended accordingly	No further comment	No further action required.
	5.3.4	This section concludes no LSE.	There should be a conclusion on LSE in the screening section of the HRA. The Appropriate Assessment should be determining whether or not there is Adverse Effect on Integrity.	Amended accordingly	No further comment	No further action required.
	5.3.5	States “Sediments in the area are uniform and due to the nature of the benthic communities inhabiting these sediments, it is anticipated that the direct impacts from installation operations will cause short-lived and recoverable-levels of disturbance to the benthic communities affected.”	We advise this statement is justified with mapped survey data. We require GI layers of biotopes and habitats from survey to be able to advise on this pressure. We note that the pipe does go through some areas of potential reef and require GI for all habitats which may be impacted by the project, including far-field effects such as sediment deposition.	Further GI information has been provided to NE to support these findings	The referenced GI information does not appear to have been provided with the consultation materials. Consequently, Natural England have been unable to review or take account of this as part of this consultation response.	The survey data provided along with referenced data is sufficient to undertake the assessment. No further action required.
	5.3.5	States *“Impacts to seabed habitats will be short term and not significant. This reduction in prey will occur over 6% of the SPA”*	Natural England advise that this time period is quantified. Given the reliance on the offshore area of the SPA for critical breeding and wintering foraging, we may advise a seasonal restriction on works within the SPA.	A seasonal restriction is not required and would be excessive as the assessment has concluded the impacts would not cause adverse effects. Further information has been provided on the duration and persistence of the suspended sediment plumes in the updated AA and EAJ	Agree given the further information provided elsewhere in the HRA and EAJ.	No further action required.

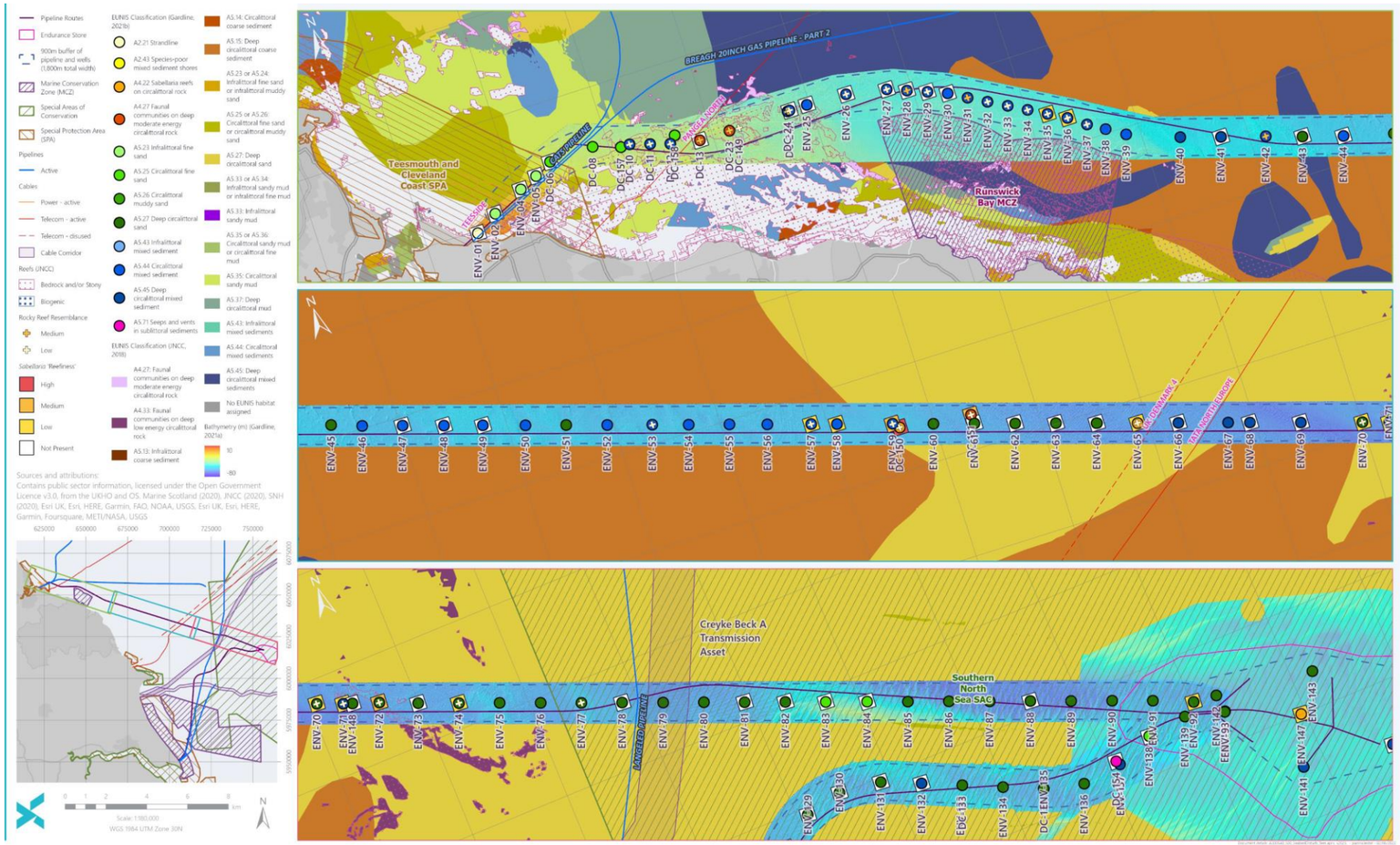
	5.3.5	States *"spud can depressions are expected to be temporary seabed features"*	Spud can depressions can last longer than 2 years, we do not consider this to be a short-term or temporary change to the sea bed. We require detail on the location and extent of spud can depressions and any measures required to avoid or reduce the impact. Lincs offshore windfarm – 10 year JUV depressions ·Dudgeon offshore windfarm – 2 years ·Triton knoll offshore windfarm – 2+ years We recognise the above examples are from different vessels to that which will be used by Net Zero North Sea Storage. We expect the NZNSS depressions will fill in over time but it is not clear what they will fill with and the time it will take for complete ecological recovery. We advise the amount of impact from spud can depressions is provided and assessed. We may advise monitoring and reporting within 2 years and until depressions are recovered.	The Department acknowledges there is some uncertainty regarding the length of time spud can depressions will require to infill. This uncertainty is deemed acceptable in the context of this HRA as the site has a relatively low sensitivity to this pressure. Surficial seabed sediments within the SPA are dominated by fine to medium sand. Under prevailing wave and tidal conditions, these sediments are frequently mobilised, with finer fractions resuspended during higher wave energy and spring tidal phases. In the shallow waters of the SPA, sediment entrainment thresholds are regularly exceeded, reflecting a naturally dynamic and turbid coastal environment. The seabed in this part of the SPA provides the supporting habitat for terns, which are dip-feeding/surface feeding birds, with little direct interaction with the seabed or benthic species. There is an indirect connection between an altered benthic environment and species higher in the water column but this connection is not sufficiently strong that depressions in the sediment could significantly alter fish and pre availability for terns.	Our query on the quantification of impact remains.	The information provided is sufficient given the sites low sensitivity to this pressure. Some further clarity on spud can dimensions has been provided in 5.2.5 of the HRA, note each spud can is 2.9 m². No further action required.
	5.4	In-combination assessment. This section assessed the impact of the NZNSS project alongside: -Noise from Net Zero Teesside -Suspended solids from Tees and Hartlepool dredge disposal	Natural England advise that the in-combination assessment requires considerable additions. It appears that only three activity-pressure combinations have been assessed.	AA/EAJ Amended accordingly.	The in-combination assessment remains insufficient. While the list of plans and projects considered in-combination has been expanded, there is little explanation how the assessment conclusions have been derived. In particular, there is no clear evidence that conclusions are informed by	The assessment considers increases in suspended sediments, localised seabed disturbance, and short term vessel activity as these are the impact pathways by which the project could act in-combination to affect the site .

		-Disturbance due to vessels at Teesside windfarm	All projects that impact the SPA should be considered. As an example, you note that 6% of the SPA is affected by short-term temporary prey reduction. This need to be assessed in combination with other short-term temporary prey reductions. Eg from dredging, quay installation, cable installation, ports maintenance. We advise OPRED consults the MMO and other stakeholders on what activities are planned in the Tees and in Tees Bay. All pressures arising from the pipeline and cable installation should be assessed in-combination, not just noise, suspended solids and disturbance.		empirical data, monitoring results, or assessment outcomes from other projects or regulators. The section culminates in a conclusion of no Adverse Effect on Integrity (no AEOI) that appears to rely solely on potential effects associated with changes in suspended sediment concentrations, and therefore does not demonstrate that all relevant impact pathways and pressures have been adequately assessed in-combination. This concern is compounded by a broader lack of clarity and detail throughout the document regarding which pressures and receptors are being considered at each stage of the assessment, and how these have informed screening, in-combination assessment, and subsequent conclusions. As presented, the assessment does not provide sufficient transparency to support confidence in the in-combination conclusions.	The loss of seabed in combination with the other projects listed is low which is clear given the nature of the projects. There will be no permanent loss of the seabed habitat with no rock or concrete mattresses being laid within the SPA and the pipeline being buried within the SPA. Some of the qualifying features of the SPA will forage in the marine area impacted by the deposit of materials outwith the SPA however this represents a small area and as a result will not have a significant impact on the availability of foraging area for the features. Vessel activity is considered however the majority of the projects considered are already installed and as a result have lower vessel numbers. Suspended sediments is considered and the conclusion reached of no Adverse Effect on Integrity. No further action required.
JNCC	7.3.2	The disturbance thresholds (daily and seasonal) have the potential to be breached when both the seismic survey and piling are considered in-combination with other projects planned to occur within the same season, and not just the seismic surveys as stated in the assessment (page 55).		Comment acknowledged and section updated accordingly.	No further comment.	
JNCC	7.3.2	We also question the statement that potential for cumulative impacts was '*considered to be*		Comment acknowledged and section updated accordingly.	No further comment.	

		minor' (page 55) as no in-combination assessment has been undertaken to demonstrate thresholds won't be breached. However, we note it is stated (page 55) that prior to undertaking any seismic survey or piling activities, a geological survey application will need to be submitted to the Department to further assess the impact of the work, which will incorporate up-to-date information on other activities planned at the time. We also note (page 59), reference to inter-operator liaisons to ensure daily thresholds are not breached, adherence to which is a mandatory requirement. JNCC are content with this approach with respect to Conservation Objective 2 provided both these requirements are secured in any consent awarded at this time.				
JNCC	7.3.2	We would also like confirmation the geophysical survey permit will be the approach for assessing piling activities, as in our experience, piling is not usually considered in such permits.		The piling would not be covered by a geophysical survey permit but instead a Marine License or Screening Direction. AA updated accordingly.	No further comment.	

Appendix

1. Biotope Map of Teesside Pipeline Route – Source Environmental Statement Northern Endurance



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