

 	Document name: Trent Jackets and Riser Sections Decommissioning Programmes – Environmental Appraisal	Revision date: 03-08-2026
	Document number: DECOM-2026-TREN-DP-Q-023	Revision Number: 02

Trent Jackets and Riser Sections Decommissioning Programmes

Environmental Appraisal (EA)

3rd August 2026 (Consultation version)

Prepared by Petrodec B.V. on behalf of Perenco UK Ltd.

Review and Approval

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Amendment Summary

Revision Date	Revision Number	Amendment	Prepared By
03-08-2026	02	Consultation version.	N. Mearns
10-06-2026	01	Addressed OPRED comments.	M. Masterson
03-03-2026	00	For issue.	A. Gleeson
29-01-2026	00B	For PUK review.	A. Gleeson
13-01-2026	00A	For Petrodec review.	A. Gleeson

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Abbreviations

Abbreviation	Definition	Abbreviation	Definition
ALARP	As Low As Reasonably Practicable	MBES	Multibeam Echosounder
AL	Action Level	MCZ	Marine Conservation Zone
AON	Apparently Occupied Nest	MEI	Major Environmental Incident
BAC	Background Assessment Concentration	MMO	Marine Management Organisation
BEIS	Department for Business, Energy, and Industrial Strategy	MOAB	Mobile Offshore Barge
BGS	British Geological Survey	MPA	Marine Protected Area
BOEPD	Barrels Of Oil Equivalent Per Day	MU	(Marine Mammal) Management Unit
BTO	British Trust for Ornithology	NATS	National Air Traffic Services
CCS	Carbon Capture Storage	NE	Natural England
CEFAS	Centre for Environment, Fisheries and Aquaculture Science	NEP	Northern Endurance Partnership
CIEEM	Chartered Institute of Ecology and Environmental Management	NFFO	National Federation of Fishermen's Organisation
CIP	Communication and Interface Plan	NIFPO	Northern Ireland Fish Producers Organisation
CPI	Carbon Preference Index	NSTA	North Sea Transition Authority
CTL	Consent to Locate	NSTF	North Sea Task Force
DDC	Drop Down Camera	NUI	Normally Unattended Installation
DEFRA	Department for Environment, Food and Rural Affairs	NZNSS	Net Zero North Sea Storage
DESNZ	Department for Energy Security and Net Zero	OEL	Ocean Ecology Limited
DP	Decommissioning Programme	OEUK	Offshore Energies UK
EA	Environmental Appraisal	OPEP	Oil Pollution Emergency Plan
EC	European Commission	OPRED	Offshore Petroleum Regulator for Environment & Decommissioning
EEA	European Environment Agency	OSPAR	Oslo and Paris Convention
EIA	Environmental Impact Assessment	P&A	Plug and Abandon
EMODnet	European Marine Observation and Data Network	PAHs	Polycyclic Aromatic Hydrocarbons
EMT	Environment Management Team	PDEC	Petrodec BV
ENVID	Environmental Hazard Impacts Identification	POMS	PUK Operating Management System
EPS	European Protected Species	PUK	Perenco UK Limited
ERL	Effect Range Low	ROV	Remotely Operated Vehicle
ERM	Effect Range Medium	SAC	Special Area of Conservation
ERRV	Emergency Response and Rescue Vessel	SCANS	Small Cetacean Abundance of the North Sea
ESAS	European Seabirds at Sea	SCI	Sites of Community Importance
ETS	Eagles Transport System	SCOS	Special Committee on Seals
EU	European Union	SEA	Strategic Environmental Assessment
EUNIS	European Nature Information System	SEMS	Safety and Environmental Management System



FCS	Favourable Conservation Status	SFF	Scottish Fishermen's Federation
gAFDW	Grams of Ash-Free Dry Weight	SMU	Seal Management Unit
GHG	Greenhouse Gas	SNH & HES	Scottish Natural Heritage and Historic Environment Scotland.
GWP	Global Warming Potential	SNS	Southern North Sea
HCS	Hydrocarbon Safe	SOSI	Seabird Oil Sensitivity Index
HLV	Heavy Lift Vessel	SPA	Special Protection Areas
HSEx	Health and Safety Executive	SSS	Side Scan Sonar
HSSE	Health, Safety, Security and Environment	SSSI	Sites of Special Scientific Interest
IAMMWG	Inter-Agency Marine Mammal Working Group	TC	Trent Compression Platform
ICES	International Council for the Exploration of the Sea	THC	Total Hydrocarbons
IEMA	Institute of Environmental Management and Assessment.	TOC	Total Organic Carbon
IPCC	International Panel on Climate Change	TORS	Garrow and Kilmar gas fields
INNS	Invasive Non-Native Species	TP	Trent Production Platform
ISO	International Organisation for Standardisation	TPH	Total Petroleum Hydrocarbons
IUCN	International Union for Conservation of Nature	UK	United Kingdom
IWS	International Waste Shipment	UKCS	UK Continental Shelf
JNCC	Joint Nature Conservation Committee	UKHO	UK Hydrographic Office
MARPOL	International Convention for the Prevention of Pollution from Ships	UKOOA	UK Offshore Operations Association
MarESA	Marine Evidence based Sensitivity Assessment		

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Non-Technical Summary

In accordance with Section 29 of the Petroleum Act 1998, the notice holders of the Trent TP and TC installations (here after referred to as Trent), are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval of the *Trent Jackets and Risers Decommissioning Programmes* (DP) (PUK, 2026) for removal of the two Trent jackets, risers, and a subsea drilling template.

The removal of the two Trent topsides, the connecting bridge, and the riser sections connected to the topside is covered by the *Trent 43/24a Topsides and Riser Sections Decommissioning Programmes* (PUK, 2025).

This Environmental Appraisal (EA) report has been produced to support the *Trent Jackets and Risers Decommissioning Programme*. The EA assesses the significance of potential environmental impacts associated with the preferred decommissioning option activities of removal of the infrastructure by means of heavy lift. The removal activity will be carried out utilising a Heavy Lift Vessel (HLV).

The Trent installations are located in the Southern Basin of the United Kingdom Continental Shelf (UKCS) in Block 43/24a in the Southern North Sea (SNS). It is approximately 116 km from Flamborough Head, on the UK coastline, and 72 km from the UK/Netherlands transboundary line.

The Trent installation consists of two platforms; the Trent Production Platform (TP) which is a fixed-steel structure and the Trent Compression Platform (TC) which is a Mobile Offshore Application Barge (MOAB). There were three gas production wells (P2, P3, P4Z) at Trent during its operation. In 2025, the topsides were made hydrocarbon safe (HCS) and the three wells plug and abandon (P&A). Trent is currently in Lighthouse Mode. Two production wells (P2 and P3) were P&A'ed to AB2 status and one production well (P4Z) was P&A'ed to AB3 status.

The Trent decommissioning campaign will be undertaken within the East Offshore Marine Plan Area. Throughout the Environmental Assessment process the objectives and policies in the East Offshore Marine Plan that may be relevant to the proposed activities were considered in order to allow for sustainable use of the marine environment.

An Environmental Impact Assessment (ENVID) was carried out to identify environmental and social receptors and to determine if planned activities would have a significant impact on the receiving environment. Presented below is a high level summary of the ENVID. It was determined that none of the activities would have a significant impact.

Trent is located within one Special Area of Conservations (SAC), the Southern North Sea (Summer Area) SAC, designated for the Harbour Porpoise (*Phocoena phocoena*). The Dogger Bank SAC lies 9.6 km north of Trent and is a designated area for Annex I habitats Sandbanks which are slightly covered by seawater all the time (1110).

A benthic habitat and sediment survey of Trent was carried out in 2024. The survey did not identify any *Sabellaria spinulosa* biogenic reef as present within the 500m safety zone. No other protected benthic species or habitats were encountered within the safety zone during the survey. There were also no Invasive Non-Native Species (INNS) present within the 500m safety zone.

The chemical analysis of the marine sediment within the Trent survey area indicated that generally the hydrocarbon and heavy metals concentrations are within background levels for the North Sea.

The navigation route of support vessels to and from the ports of Great Yarmouth and Lowestoft will pass through two coastal Special Protection Areas (SPA); the Greater Wash SPA and the Outer Thames Estuary SPA. Both SPAs are designated for the overwintering of Red-Throated Diver (*Gavia stellata*), and the Greater Wash SPA is also designated for the overwintering of Common Scoter (*Melanitta nigra*). It is known that passing vessels can disturb these birds in winter months. The navigation routes for the Trent decommissioning are through established shipping routes. It is considered that the impact on the birds would be minor and not a significant impact on the SPAs conservation objectives.

Ornithologists undertook seabird breeding season surveys of Trent in 2023, 2024 and 2025. No nesting birds were encountered on the installations, and it can be concluded that Trent is not a seabird nesting colony.

The most abundant species present in the vicinity of Trent are Guillemots (*Uria aalge*) during the post-breeding dispersal season, and the Northern Fulmar (*Fulmarus glacialis*) during the winter season. However, these densities are very low when compared to the precited density ranges across UK waters. In the vicinity of the Trent, the sensitivity of seabirds to oil pollution

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(SOSI index) is Extremely High in July and Very High from August to January. In May and June, the SOSI is categorised as High. The seabird sensitivities to oil are Low during Spring from February to April.

Fish and shellfish species that spawn within ICES Rectangle 37F1 (where Trent is located) are Cod (*Gadus morhua*), Lemon Sole (*Microstomus kitt*), Nephrops, Plaice (*Pleuronectes platessa*), Sandeels (*Ammodytidae* spp.), and Whiting (*Merlangius merlangus*). Fish and shellfish that have nursery grounds in this location include Anglerfish (*Lophius piscatorius*), Blue Whiting (*Micromesistius poutassou*), Cod, Hake (*Merluccius merluccius*), Herring (*Clupea harengus*), Ling (*Molva molva*), Mackerel (*Scomber scombrus*), Sandeels, Spurdog (*Squalus acanthias*), and Whiting. The decommissioning activities are not expected to impact on fish and shellfish spawning and nursery grounds.

The seas around Trent are not considered important feeding grounds for Harbour Seals (*Phoca vitulina*). Trent is located towards the outer extent of the feeding grounds for Grey Seals (*Halichoerus grypus*), which has breeding/haul out grounds at The Wash. The decommissioning activities will not impact on seals foraging in the area.

The Southern North Sea (Summer Area) SAC is a designated area for the Harbor Porpoise. The type of noise generated by the decommissioning activities, primarily generated by vessels engines and jacket/piles cutting, is not considered to have a significant auditory impact on Harbour Porpoises, and thus the planned activities are not considered an impact on the SAC's conservation objectives.

The density of traffic within in Block 43/24 is 'High'. This is due to the high density of oil and gas infrastructure in the vicinity and other shipping activity, predominantly cargo ships and offshore support vessels. There is significant surface and subsurface oil and gas infrastructure within UKCS Block 43/24, although many installations have now ceased production.

Fishing effort within ICES Rectangle 37F1 is relatively low and mostly concentrated to the summer months. The average annual fishing effort from 2020 to 2024 for 37F1 is 94 days.

Trent is located within SNS Area 1 which is a Carbon Capture Storage (CCS) license area offered for application. Within each Carbon Capture Application Area there are smaller licensed areas. Trent is located, respectively, approximately 0.7 km and 3.7 km from the CS006 and CS020 CCS licensed areas. The CCS storage site 'Net Zero North Sea Storage (NZNSS)' is located approximately 32.1 km southwest of Trent. The CCS activities in the area will not have an influence on or be influenced by the Trent decommissioning activity.

There are no marine aggregate extraction areas within 40 km of the Trent installation. Trent is not located within a windfarm site. The closest wind farm site is the R4 Project 2 (Dogger Bank Southeast) site which is currently undergoing a pre-planning application status. This site lies approximately 17.1 km northeast of Trent, at its closest point. The closest subsea telecommunications cable to Trent is the active Viking Link cable approximately 27.6 km south at its closest point.

Trent is located within the EGD323D Southern Complex airspace danger zone. In the vicinity of the Trent, there are no designated wrecks protected under The Protection of Wrecks Act 1973, the Ancient Monuments and Archaeological Areas Act 1979, or the Protection of Military Remains Act 1986. There are 13 non-protected shipwrecks located within 10 km of the Trent.

Atmospheric emissions for the decommissioning project will primarily arise through fuel combustion of the rigs, support vessels, and helicopters. It is estimated that up to 3,637 tonnes of CO₂eq will be generated which accounts for less than 0.001% of the annual UK national emissions. Atmospheric emissions generated from the project will be minimal in terms of the overall carbon footprint of the UKCS oil and gas activity and the UK national carbon budget.

The waste generated from the decommissioning project will be either treated in the UK or the Netherlands under an International Waste Shipment (IWS) consent. The assets are >95% recyclable.

There are limited sources of a hydrocarbon release, with the only potential source being from a fuel bunkering incident, which would not constitute potential for a Major Environmental Incident (MEI).

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1 Introduction

Trent is located within the Trent gas field in the United Kingdom Continental Shelf (UKCS) Block 43/24a of the Southern North Sea. The installation is approximately 116 km from the nearest UK coastline, and approximately 72 km from the UK/Netherlands median line. The Trent installation is owned by Perenco UK Limited (PUK) and consists of two adjacent platforms, the Trent Production Platform (TP) and the Trent Compression Platform (TC). For ease of writing, the Trent TP and TC installations will be collectively known as Trent for this EA report.

Gas production at Trent was suspended in 2020 due to high operational costs and a depleting gas reservoir. In 2025, the three production wells at Trent (P2, P3 and P4Z) were plug and abandoned (P&A'ed) and the installations were made hydrocarbon safe (HCS). Two production wells (P2 and P3) were P&A'ed to AB2 status and one production well (P4Z) was P&A'ed to AB3 status. The installations are currently in Lighthouse Mode. It is planned to decommission and remove the two installations, the connecting bridge, and associated risers in 2027.

This Environmental Appraisal (EA) report was produced to support the *Trent Jackets and Risers Decommissioning Programmes* (DP) (PUK, 2026), by assessing the potentially significant impacts associated with the installations decommissioning.

1.1 Scope

The scope of this EA report is the removal of Trent TP and TC jackets, risers, and subsea drilling template only.

The removal of the two Trent topsides, the connecting bridge, and the riser sections connected to the topside is covered by the *Trent 43/24a Topsides and Riser Sections Decommissioning Programmes* (PUK, 2025).

1.2 Document Structure

This EA has been prepared to align with Chapter 12 of the *Environmental Considerations of the Decommissioning of Offshore Oil and Gas Installations and Pipelines Guidance Notes* (BEIS, 2018) and has the structure and sections presented in Table 1.1.

Table 1.1. Environmental appraisal overview.

Section	Description
Non-technical summary	A high level non-technical summary of the Environmental Appraisal (EA).
1. Introduction	Introduction to the decommissioning project and a description of the EA report scope and structure. It includes the regulatory context and guidance for undertaking a decommissioning EA.
2. Stakeholder Consultation	A summary of the stakeholder engagement process and activities carried out by PUK to date.
3. Decommissioning Activities	Describes the location, assets, and planned decommissioning activities.
4. Environmental & Societal Baseline	A description of the environmental and societal sensitivities relevant to the proposed activities, utilising available information.
5. Environmental Issues Identification	Drawing on the information described in sections 3 and 4, a preliminary scoping exercise is conducted to identify potential environmental, economic, and societal issues and impacts.
6. Environmental & Societal Assessment	The impact assessment methodology is presented, followed by a review of the potential impacts from the proposed decommissioning activities and justification for scoping potential impacts in or out of assessment in this EA Report.
7. EA conclusions	A conclusion of the EA process is presented.
References	References
Appendix 1	PUK Environmental management system description.
Appendix 2	Environmental Impact Identification (ENVID) Summary
Appendix 3	Greenhouse Gas (GHG) calculations

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1.3 Policy & Regulatory Context

The decommissioning of offshore oil and gas installations and pipelines on the United Kingdom Continental Shelf (UKCS) is controlled through the Petroleum Act 1998, as amended by subsequent Energy Bills. The United Kingdom’s international obligations in relation to decommissioning are based on the 1992 Oslo Paris Convention for the protection of the Marine Environment of the Northeast Atlantic (OSPAR Convention).

The responsibility for ensuring that the requirements of the Petroleum Act 1998 and international obligations are complied with the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) which sits within the Department for Energy Security and Net Zero (DESNZ). OPRED is also the competent authority on decommissioning in the UK for OSPAR (international regulations) purposes. The main guidance for this document is the *Decommissioning of Offshore Oil and Gas Installations and Pipelines Guidance Notes* (BEIS, 2018).

1.4 Perenco UK Limited

Perenco UK Limited (PUK) is part of the Perenco Group, an independent oil and gas company with operations in 14 countries across the world, ranging from Northern Europe to Africa and from South America to Southeast Asia.

In 2024, Perenco had a gross production of 500,000 barrels of oil equivalent per day (BOEPD), of which 343,000 BOEPD is net to the company. In the Southern North Sea gas basin, PUK operates 17 offshore fields, along with associated pipelines and onshore processing facilities including the Bacton and Dimlington Terminals. PUK’s gas production in the North Sea is approximately 45,000 BOEPD.

PUK operates under a Safety and Environmental Management System (SEMS) which is certified to conform to the International Organisation for Standardisation (ISO) 14001 for Environmental Management Systems and ISO45001 for Occupational Health and Safety Management Systems. SEMS provides the framework for PUK to achieve safe and reliable operations and ensures compliance with PUK’s Health, Safety, Security and Environment (HSSE) Policy. Refer to Appendix 1.

2 Stakeholder Consultation

PUK, as part of the Decommissioning Programme (DP) consultation process, plans to include the following statutory stakeholders of the DP:

- NFFO - National Federation of Fishermen’s Organisation
- SFF - Scottish Fishermen’s Federation
- NIFPO - Northern Ireland Fish Producers Organisation
- Global Marine Systems
- NSTA – North Sea Transition Authority

Informal stakeholder consultations plan to include the following stakeholders:

- OPRED EMT (Environmental Management Team)
- HSEx – Health and Safety Executive
- Environment Agency
- Maritime and Coastguard Agency
- Marine Management Organisation
- UK Hydrographic Office
- Trinity House

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3 Decommissioning Activities

3.1 Location

Trent is located in Block 43/24a in the Southern North Sea (SNS) Special Area of Conservation (SAC), approximately 116 km from Flamborough Head on the UK coastline, and 72 km from the UK/Netherlands transboundary line. The nearest installations to Trent are Kilmar (non-operational) which is located around 21 km west of Trent, and Cavendish (non-operational) which is located around 21 km northeast. The closest active installations to Trent are Ravenspurn North (47 km southwest of Trent) and Cygnus (51 km northeast).

Prior to cessation of production, produced gas from Trent was combined with imported third-party gas from Garrow and Kilmar (TORS field); Kilmar, is located approximately 21 km west, and Garrow, approximately 43 km west of the Trent installation. The combined gas was metered at Trent and then exported via a 24" pipeline (PL253b) to the Eagles Transportation System (ETS) pipeline (PL253), via a subsea Wye manifold which is located approximately 1 km east of Trent. From the manifold, the ETS pipeline continued to the Bacton Gas Terminal.

Refer to Figures 3.1 and 3.2.

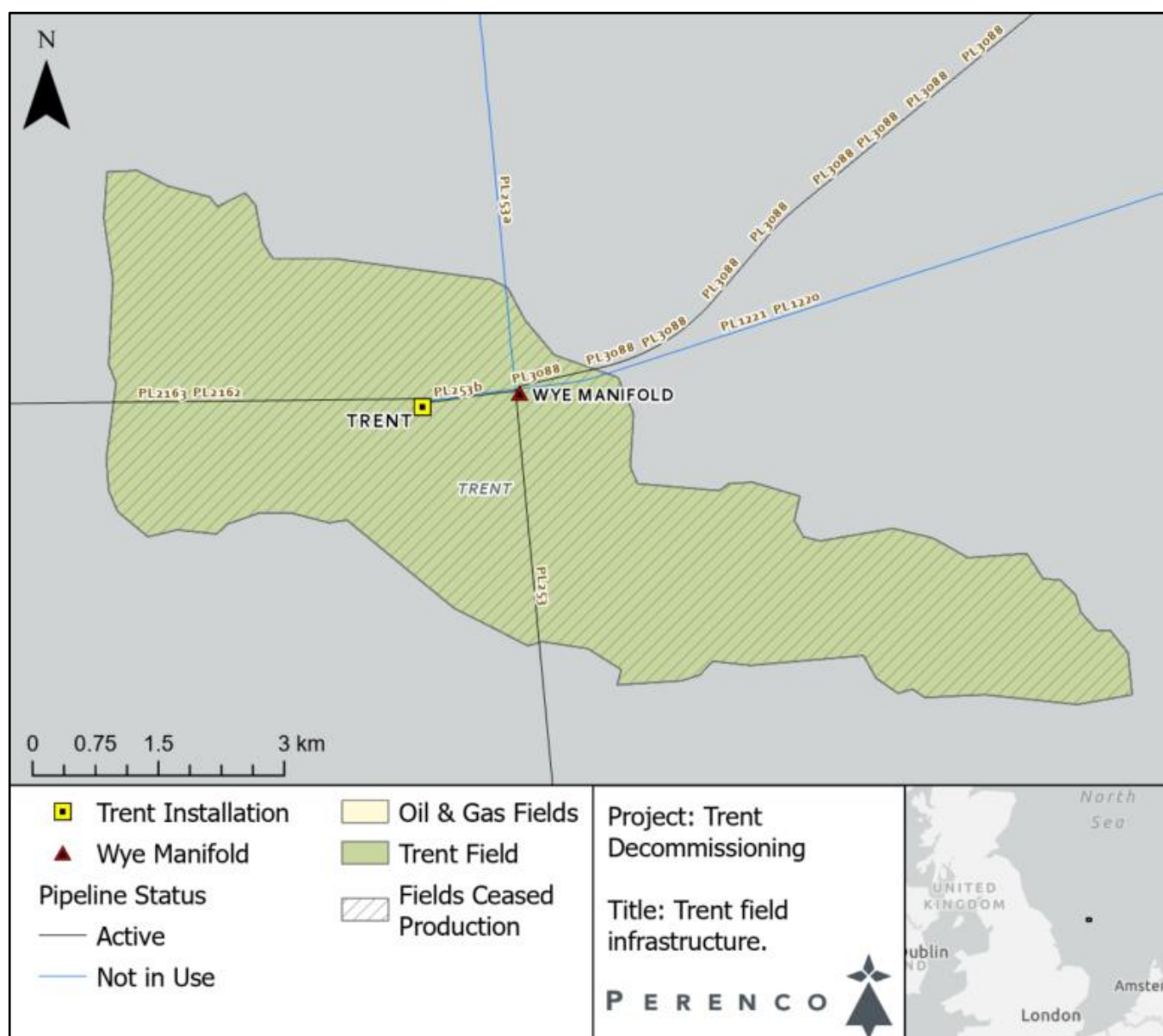


Figure 3.1. Trent field layout.

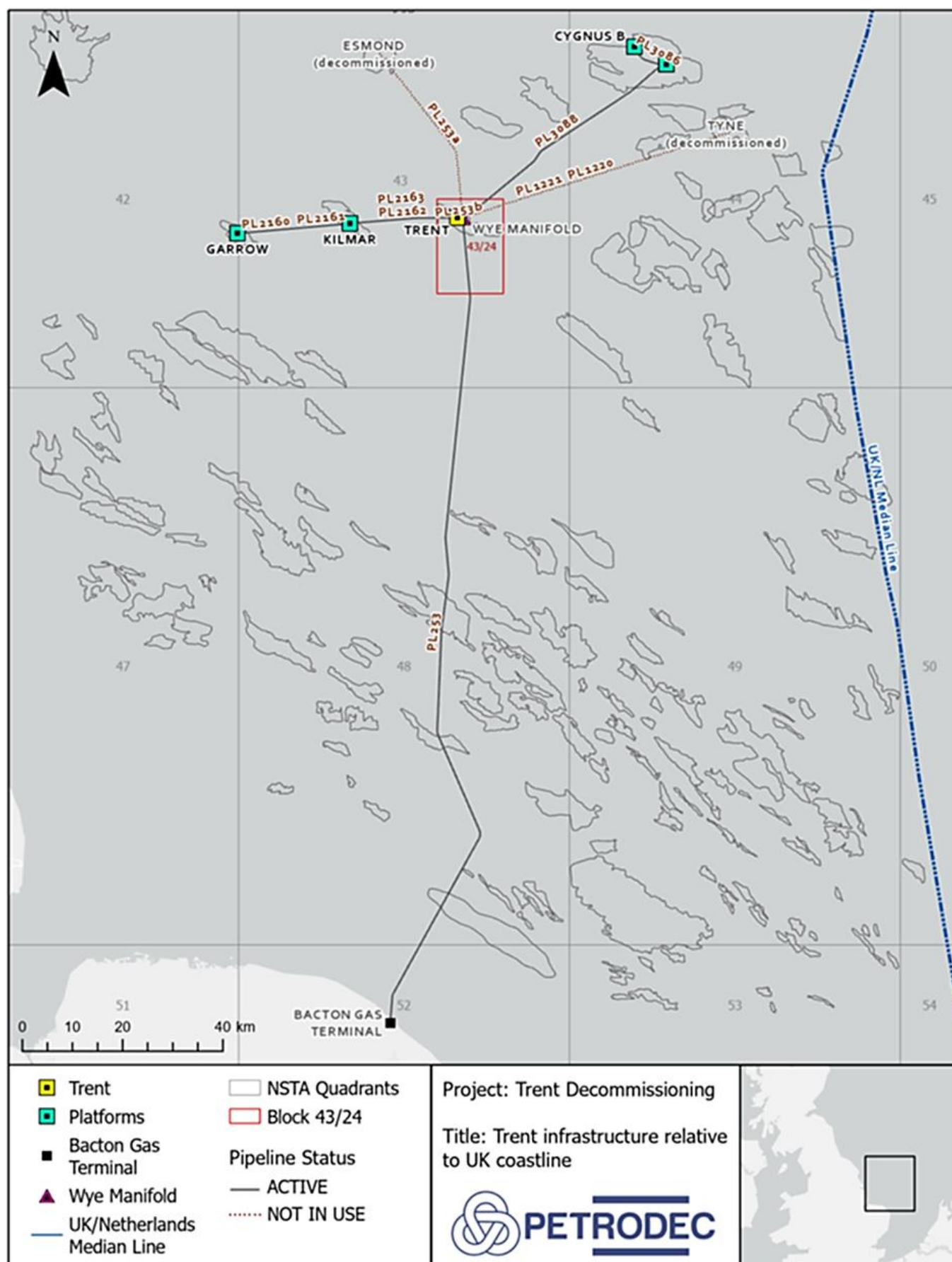


Figure 3.2. Trent field location in UKCS, relative to the UK coastline.

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3.2 Asset Description

Trent consists of two adjacent normally unattended installation (NUI) installations in 48.6 m of water; the Trent Production Platform (TP) and the Trent Compression Platform (TC). The two platforms are connected by a 30.48 m long bridge. Refer to Figure 3.3.

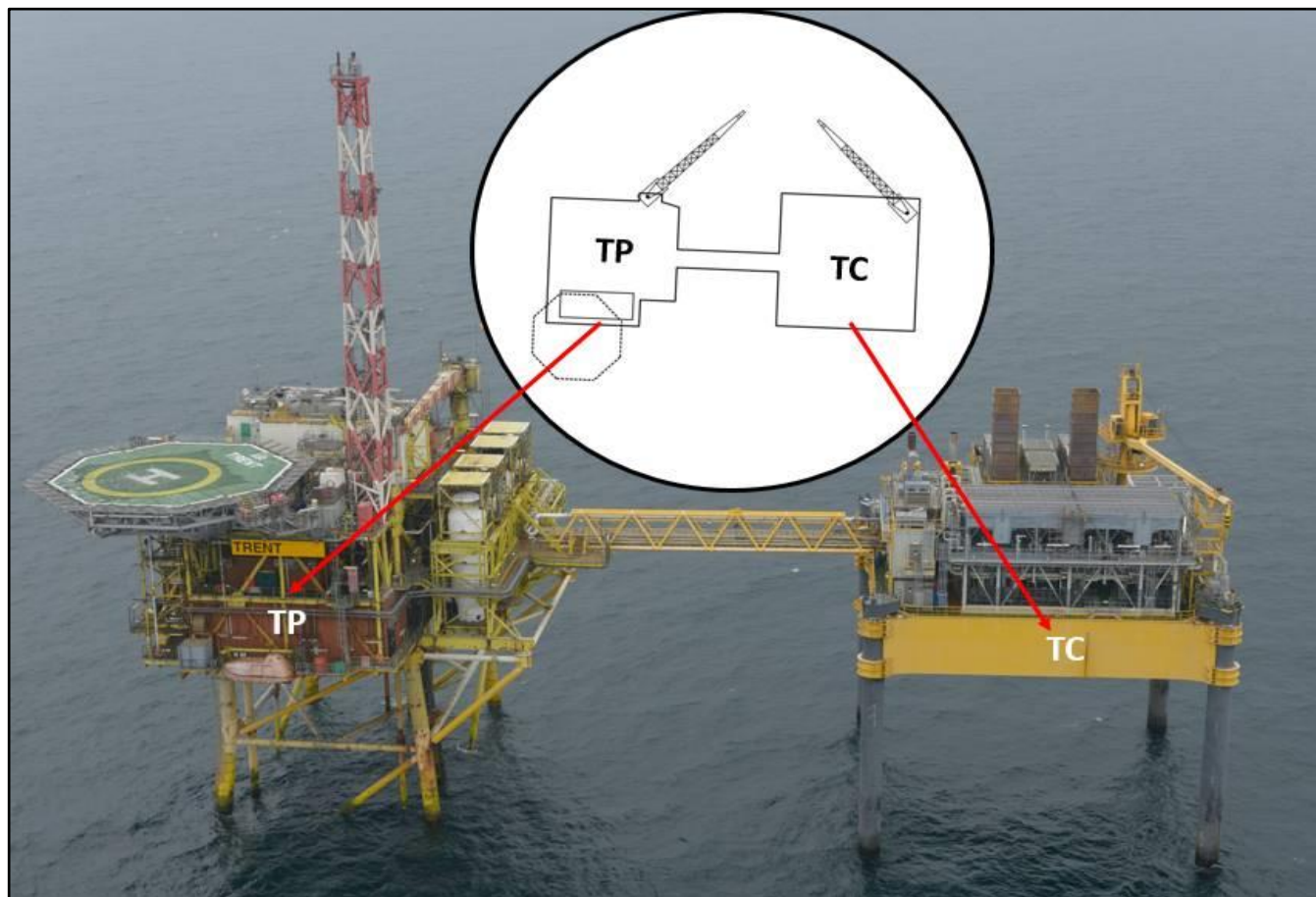


Figure 3.3. Trent TP and TC topsides.

3.2.1 Trent Production Platform (TP)

The Trent Production Platform (TP) was installed in 1996 and consists of a four-legged steel jacket. The platform has four deck levels consisting of a helideck, weather deck, mezzanine deck and cellar deck.

Trent had five wells located on TP, three production wells (P2, P3, P4Z) and two non-producing wells (P1 and P4).

Well P1 was drilled and then abandoned to AB2 in one operation in 1995. Well P4 was sidetracked and put into production as Well P4Z. Well P4 was P&A'ed to AB1 in 1996.

All three producing wells were in production until August 2023 when the platform was put into warm suspended phase. In 2025, the wells P2 and P3 were P&A'ed to AB2 status and well P4Z was P&A'ed to AB3 status, and the two topsides were made HCS.

The installations are in Lighthouse Mode.

3.2.2 Trent Compression Platform (TC)

The Trent Compression Platform (TC) is a Mobile Offshore Application Barge (MOAB) which was installed in 2005. The TC installation consists of a single 30m x 30m deck which houses the compression facilities and associated equipment.

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3.2.3 Trent TP-TC Bridge

The TP and TC platforms are connected by a 30.48 m long bridge.

3.2.4 Risers

There are five risers connected to the Trent installations. The risers for the Tyne gas pipelines (PL1220 and PL1211) and the Trent 24" Export Line (PL253b) are connected to the TP installation. The riser sections for the Kilmar pipelines (PL2162 and PL2163) are connected to the TC installation.

All risers and associated pipelines were flushed in 2025 and are certified hydrocarbon safe, with retained seawater with <30ppm oil content. The risers will be cut subsea prior to the removal of the jacket.

3.2.5 Drilling Template

There is one 7.16m x 7.16m subsea drilling template remaining on the seabed at TP. This template was placed over the production wells in 1995 to guide the drilling tools into the wells. The drilling template contained slots to drill up to nine wells. Refer to Figure 3.4.

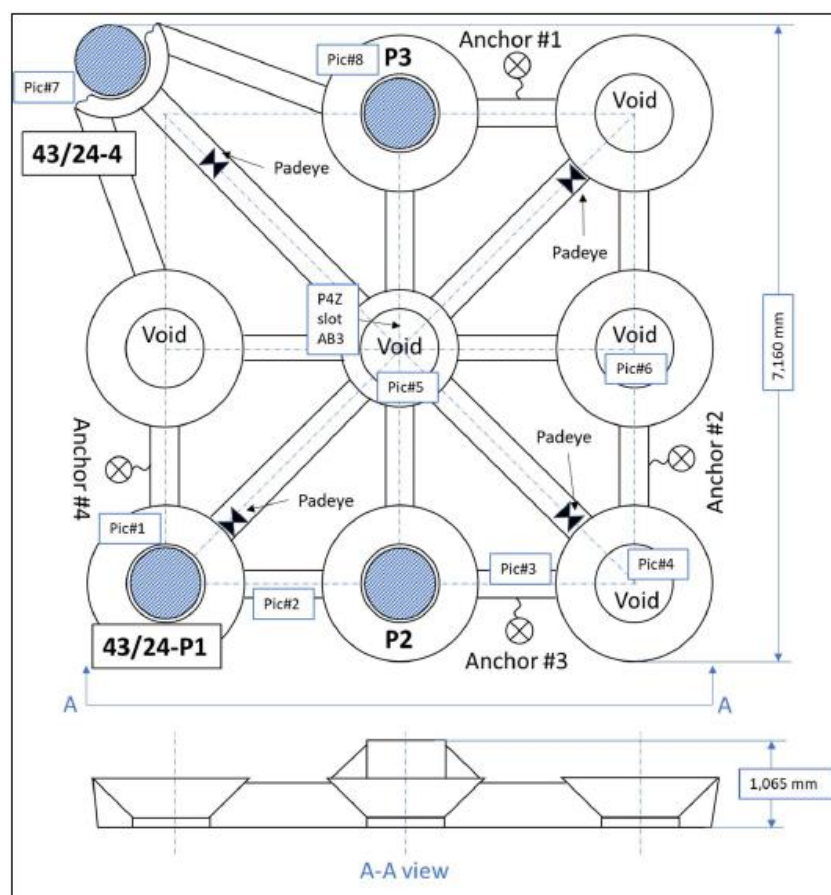


Figure 3.4. Trent Drilling Template.

3.3 Planned Decommissioning Activity

The decommissioning of Trent will consist of removal of the bridge, topsides followed by the removal of the jackets. The risers will be removed with the jackets. The order of removal is not finalised The Heavy Lift Vessel (HLV) will be utilised.

Below is a description of the typical removal approach, although it may change at the time of execution.

The removal of the two Trent topsides, the connecting bridge, and the riser sections connected to the topside is covered by the *Trent 43/24a Topsides and Riser Sections Decommissioning Programmes* (PUK, 2025). However, the activity for the removal

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of the topside and connecting bridged are discussed below for completeness. The topside riser section was removed in the 2025 HCS campaign and not addressed further in this EA.

3.3.1 Rig Move & Positioning

A high-level description of the rig move is as follows:

- Transit of HLV with tugboats to Trent.
- Arrive at 500m exclusion zone and complete pre-entry checks.
- Move into position alongside installation and lowering of spudcans to seabed.

A maximum of two rig moves and locating alongside the installations may be required.

3.3.2 Bridge Removal

The TP-TC bridge will be removed by the HLV. Once disconnected from the installation, the bridge will be lifted using the HLV's crane and placed on the rig's main deck for transport to shore.

3.3.3 Topside Removal

It is planned to remove the topsides using a "reverse installation" method, whereby the topside modules will be removed by reversing the steps used during its original installation. Each topside will be removed in a single lift utilising the HLV's crane and brought to the HLV's main deck where it is seafastened.

3.3.4 Jacket Removal

In order to remove the jackets from the seabed, the leg piles of each installation must be cut to a depth of at least 3 m below the mudline. Before the cutting can take place, each pile must first be dredged internally to remove the sediments and make space for the cutting tool. After the cutting of the jacket piles have been completed, the jacket will then be lifted by the HLV in a single lift and seafastened on the main deck.

3.3.5 Riser Removal

The risers are attached to the jackets. Prior to lifting the jackets, the attached risers will be cut subsea by the Remotely Operated Vehicle (ROV). The risers will then be removed together with the jackets. Pipeline and riser cuts will not require excavation. The pipeline ends of PL253b, PL1220 and PL1221 at TP will be cut back flush with the existing mattresses to mitigate potential snagging hazards. Riser sections PL2162 and PL2163 at TC will be cut up to the first riser elbow flanges approximately 2m above the seabed and will be removed with the TC jacket. A single mattress may remain to prevent a snagging hazard if the cut ends are exposed and not easily covered by the existing rock dump. The mattress will be moved, the pipelines cut, and then the mattress replaced over the cut end. Any remaining mat will be flush with seabed and overtrawlable.

3.3.6 Drilling Template Removal

The drilling template will be removed from the seabed in a single lift by the HLV.

3.3.7 Post-Operations Seabed Survey

Following the removal of the installations a seabed survey will take place around each platform. Any debris found will be removed by placement into a subsea basket on the seabed or by lifting with the crane in a sling to the rig's main deck. The seabed survey will be carried out using a Remotely Operated Vehicle (ROV).

3.3.8 Transportation & Waste Recovery

The removed bridge, topsides, and jackets (with attached risers) will be transported on the HLV to shore for onshore dismantlement and waste treatment. Smaller materials, such as recovered seabed debris and the drilling template, may be transported to shore on a supply vessel.

Dismantlement and disposal may take place in the UK or the Netherlands. If it goes to the Netherlands, an International Waste Shipment consent will be in place prior to shipment.

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4 Environmental & Societal Baseline

This section describes the physical, environmental, and socio-economic sensitivities of the receiving environment, which could be affected by the Trent decommissioning campaign.

Environmental information from the Offshore Energy Strategic Environmental Assessment (SEA) 4 (BEIS, 2022a) 'Regional Sea 2', in which Trent is located, is referenced within the EA. The environmental baseline draws upon a number of data sources including published papers and datasets on scientific research in the area.

Site specific benthic surveys and an ornithology survey were carried out and are referenced in the report:

- Trent Pre-Decommissioning Environmental Seabed Monitoring Survey 2024: Technical Report (OEL, 2024)
- Perenco: Ornithological Survey Reports (RSK Biocensus, 2023; Xodus, 2024 & 2025).

4.1 Environmental Baseline Survey Overview

A pre-decommissioning environmental baseline survey (OEL, 2024) was carried out by Ocean Ecology Limited (OEL) in April 2024.

The survey involved the collection of seabed imagery and sediment samples at 10 environmental sampling stations arranged in a cruciform shape centred on the Trent platform. Sample stations were positioned at 100m, 500m and 1,000m from the installation in both directions along the axis of predominant tidal current, and at 100m and 250m range in both directions in a perpendicular axis to the predominant tidal current.

Samples were also collected from one reference station (TRE11) positioned 5 km south of the platform.

Refer to Figure 4.1 for the locations of the sampling stations around the Trent installation.

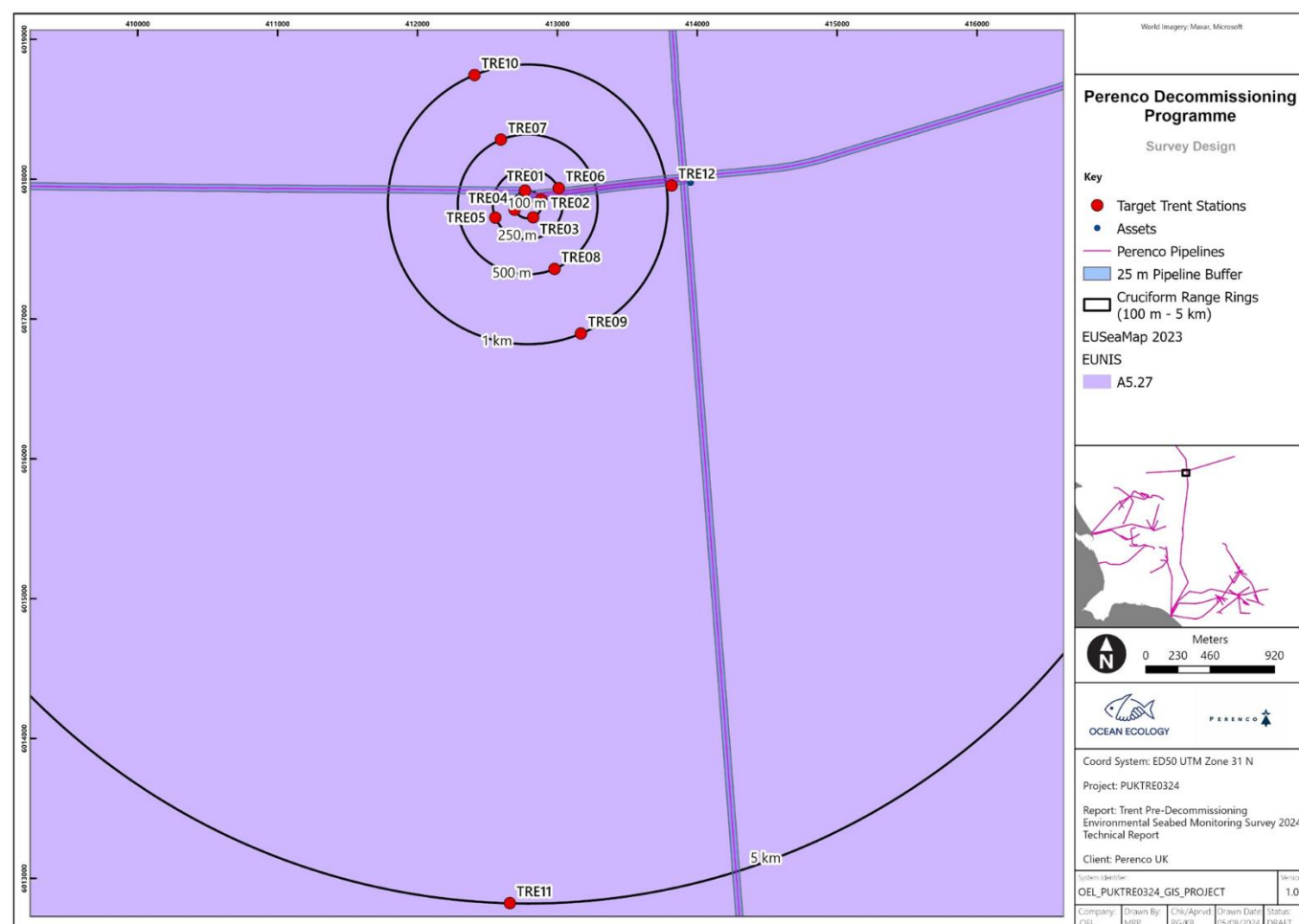


Figure 4.1. Environmental sampling stations across the Trent survey area (OEL, 2024).

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4.2 Physical Environment

4.2.1 Site Location and Nearest UK Coastline

The Trent installation is located within the UKCS Block 43/24a in the Southern North Sea, approximately 116 km from the UK coastline and 72 km from the UK/Netherlands median line.

At the north of Regional Sea 2 are the chalk cliffs of Flamborough Head which fall away to the flatter Holderness coast, characterised by generally low sand and glacial till cliffs which are being quickly eroded. The area has fragmented, remnant semi-natural carr, swamp, and moist grassland environments, and is lightly settled. Holderness terminates at the Spurn peninsula (which is also a Heritage Coast), which comprises a low sand and shingle spit, inland and south of which the Humber Estuary opens, containing internationally important mudflats, wetland, and coastal habitats, but also the industrial influences around Hull and the south bank.

The Lincolnshire coast to the south of the Humber contains vast areas of mudflats, major dune systems (such as at Gibraltar Point), but also extensive lengths of artificial sea defences, with larger settlement concentrated on the coast which includes resort towns, and holiday resorts and caravan parks. Both onshore and offshore wind farms are visible in this area of coast (BEIS, 2022a).

The area of the Fens and The Wash are low lying, the former often below sea-level, being largely reclaimed peatland drained between the 17th and 19th centuries. The Wash contains significant saltmarsh and mudflats, along with internationally important populations of seals, waders, and wildfowl. On the south side of The Wash, cliffs provide views across to Skegness in the Lincolnshire Coast and Marshes.

A distinctive scarp slope separates a low west-east trending chalk escarpment from the coast and inland the landscape is rolling and arable with remnant heath and mixed woodland. This landscape continues along the North Norfolk Coast, where low-lying intertidal sand and mudflats, sand dunes, shingle beaches, saltmarsh, reed beds, tidal creeks and harbours are backed by rural, arable land, but with a significant tourist industry (BEIS, 2022a).

Offshore, the seascapes range from open expansive areas with few surface features such as Dogger Bank, to areas which are characterised by human activities and which include gas field infrastructure and associated vessel movements, and more recently, offshore wind farms. There are strong associations with the fishing industry including around the Dogger Bank, and potting which takes place off Holderness, and almost every coast is influenced by a relatively dense concentration of shipping, which in some areas such as the Thames, is formalised into designated routes.

The area also has strong historical associations which range from the prehistoric occupation of the SNS to the more recent defence of Britain during World Wars 1 and 2, and the associated coastal defence structures and aviation and maritime losses (BEIS, 2022a).

4.2.2 Meteorology

Air temperatures offshore are generally at their lowest in January and February (mean of 4°C to 6°C) and highest in July and August (ca. 16°C). Rainfall decreases in a south-north direction (BEIS, 2022).

Winds in the Southern North Sea are generally from between south and northwest; however, in spring the frequency of those from the north and east increases (BEIS, 2022). Wind strengths are generally between Beaufort Scale 1 - 6 (1 - 11m/s) in the summer months with a greater proportion of strong to gale force winds of force 7 - 12 (14 - 32m/s) in winter. In January, 20% of winds can be expected to exceed force 7 (14m/s), reducing to 2 - 4% in July (BEIS, 2022).

Seastates (2018) indicates that the prevailing wind at Trent is south-westerly, with a mean windspeed of 8.2 m/s.

4.2.3 Oceanography

The waves in the North Sea occur as a result of long periods of swells from the Northern North Sea and North Atlantic, and also from locally generated storms. The wave cycle in the Southern North Sea is seasonal with maximum wave heights occurring during the winter (January) (BEIS, 2022). Annual mean wave height in the area around Trent is 1.6 m (Seastates, 2018).



The general circulation of near-surface water masses in the North Sea is cyclonic and mostly driven by the ingression of Atlantic surface water from the west into the Northern North Sea. As a result, residual water currents near the sea surface tend to move in a south-easterly direction along the coast towards the English Channel (NSTF, 1993; BEIS, 2022). Refer to Figure 4.2.

Sea surface temperatures in the vicinity of Trent average around 10°C, with the lowest sea surface temperatures occurring in February (approx. 6°C) and the highest occurring in August (approx. 16°C) (Berx & Hughes, 2009).

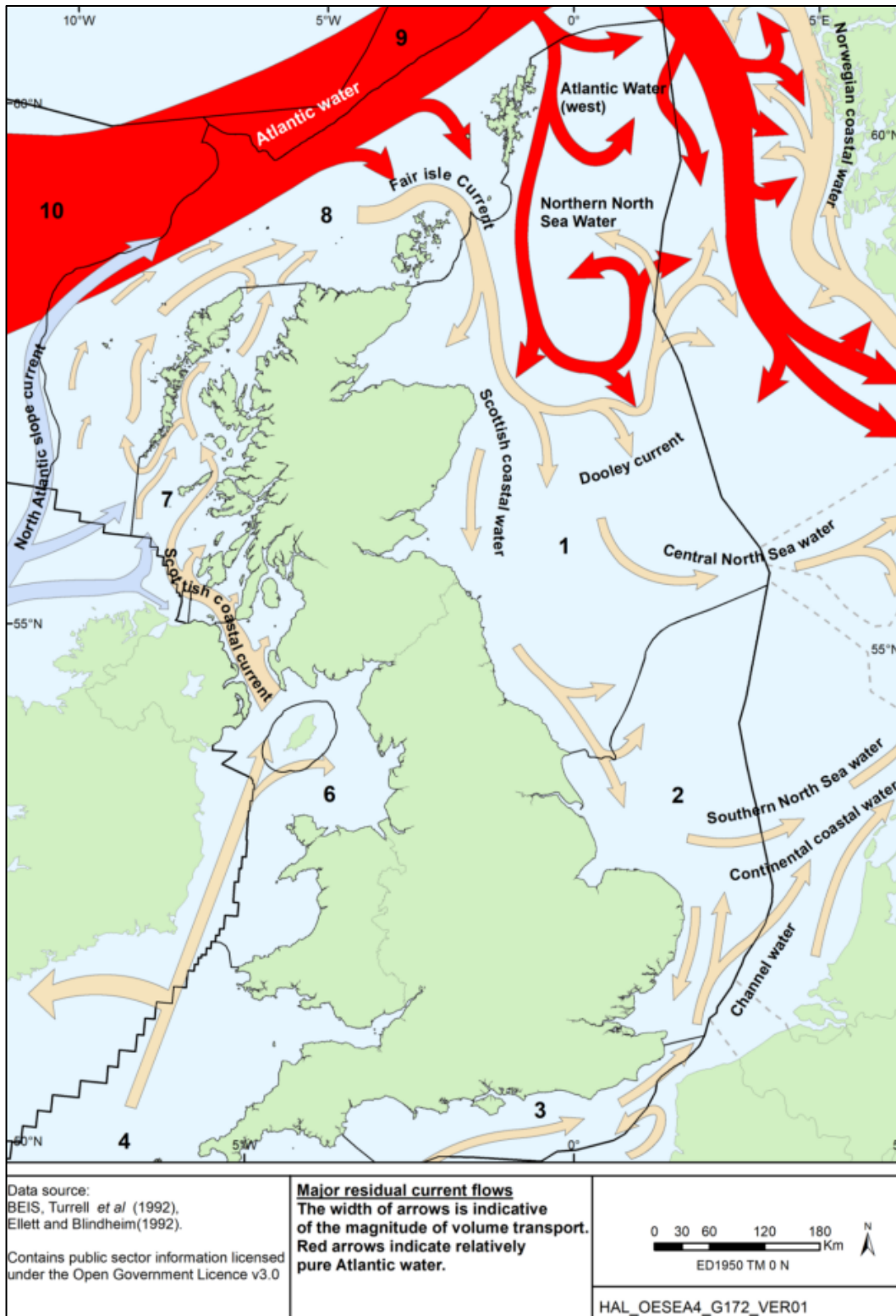


Figure 4.2. Major residual current flows in the North Sea. The width of arrows is indicative of the magnitude of volume transport (BEIS, 2022a).

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4.2.4 Bathymetry

The Trent Pre-Decommissioning Survey (OEL, 2024) indicated that the water depths at the Trent platform area range from 40m to 52m LAT. The Trent installation lies in 48.6 m water depth. An overview of the bathymetry of the survey area is presented in Figure 4.3.

Side scan sonar (SSS) imagery along with Multibeam Echosounder (MBES) were used for interpretation of seabed features and morphology. The bathymetric data in the vicinity of Trent was interpreted as relatively uniform bedform features associated with sandbanks with wave bedforms gently deepening from south to north (OEL, 2024).

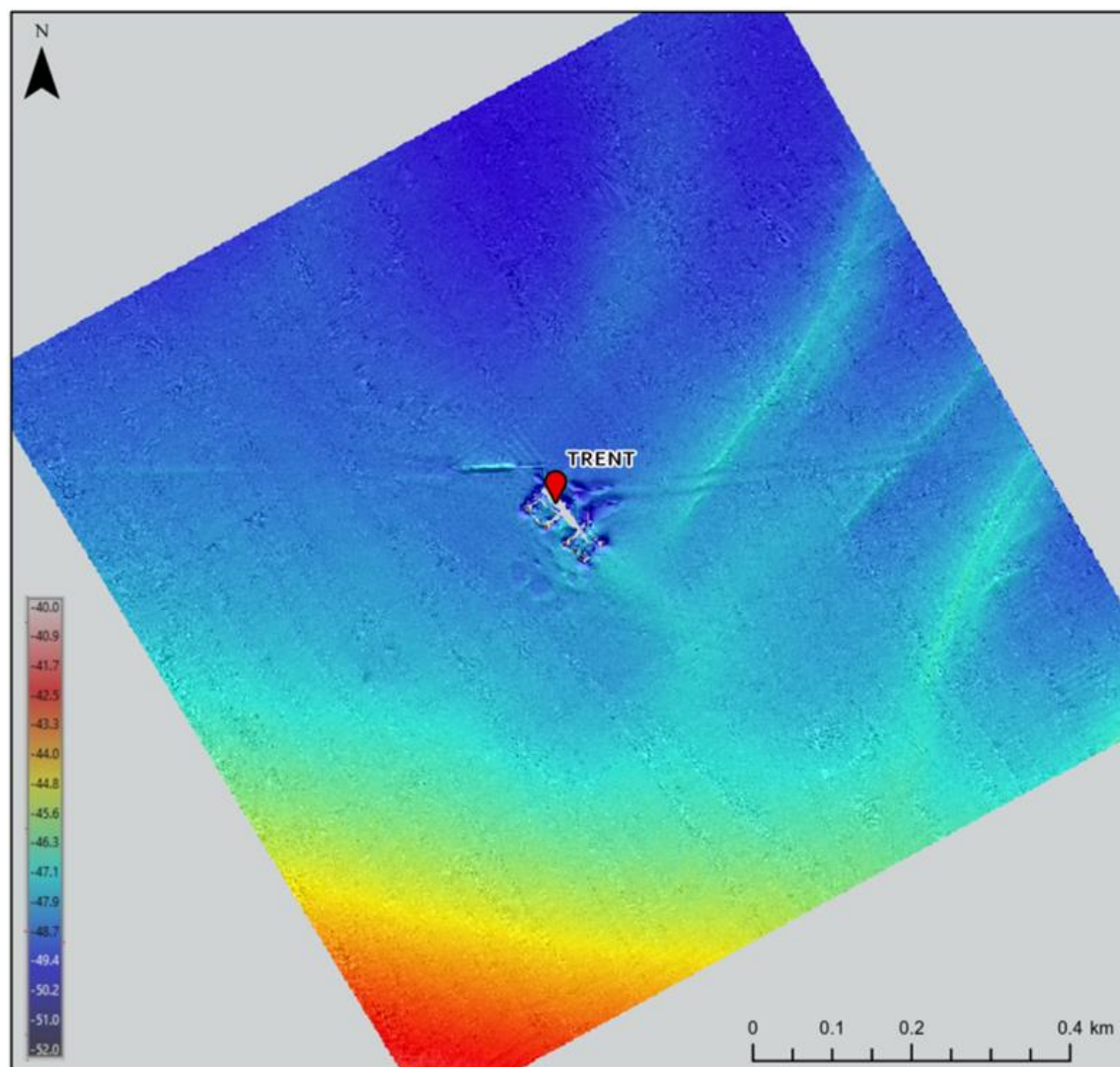


Figure 4.3. Bathymetry in the area around the Trent. GIS Shapefile from Hydroconsult (2024).

4.2.5 Seabed Sediments and Bedrock

Seabed sediments within the Southern North Sea generally comprise of coarse sands and gravels in some areas, which are highly mobile largely due to the increased near seabed currents (BEIS, 2022a).

According to the British Geological Survey (BGS) seabed maps, the seabed sediments at Trent comprise of Holocene (Undifferentiated) Sand overlying a bedrock of Mudstone, Sandstone, and Tuff (BGS, 2026).

The Folk (1954) classification system is used to classify the sediment types found at each station. The Folk classification provides a more representative description for poorly sorted sediments, encompassing a range of particle sizes as it takes into account the relative proportions of mud (<63µm), sand (63µm-2mm) and gravel (>2mm) fractions.

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4.2.5.1 Seabed Sediment Sampling and Analysis

Ocean Ecology Limited (OEL) conducted grab sampling at ten environmental sampling stations within 1 km of Trent, and one reference station located 5km south of Trent. Refer to Figure 4.4 for an overview of the sampling stations.

Sediments were relatively homogenous at all stations and characterised by contributions of sand and mud with almost no gravel present. Of the sediment collected from the grab sampling, eight stations were classified as Muddy Sand (mS), and two stations as Sand (S). The reference station (TRE11) was also classified as Sand (S) (OEL, 2024). Refer to Figure 4.4.

Sediments were dominated by sand with variable contribution of mud (8 % – 46 %) and almost no gravel content (max 0.2 %) The station with the highest level of mud was Station TRE03, with approximately 50% of the sediment sample consisting of mud (OEL, 2024). The percentage contribution of gravels (> 2 mm), sands (63 µm to 2 mm), and fines (< 63 µm) at each station is presented in Figure 4.5.

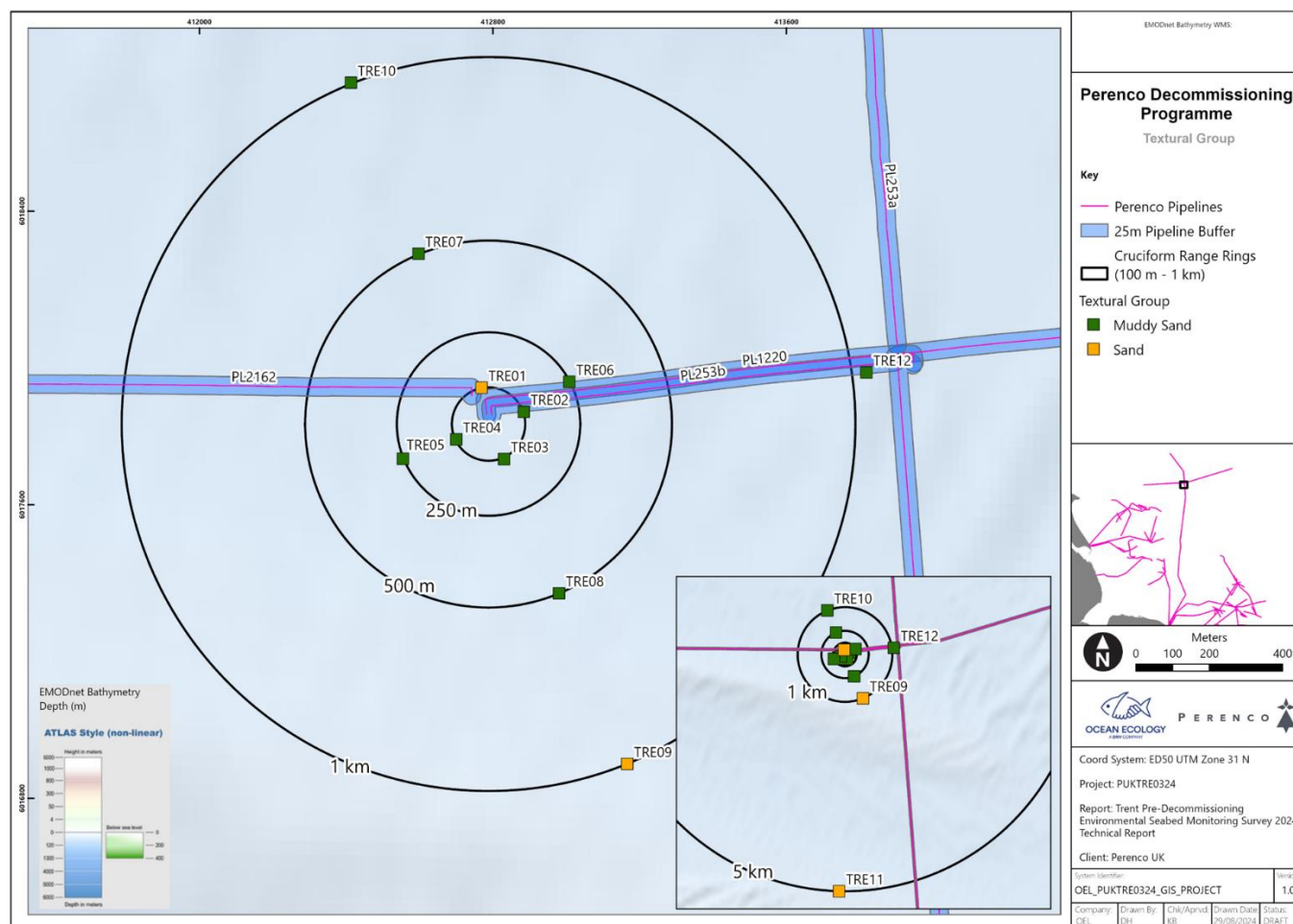


Figure 4.4. Spatial distribution of the sediment textural groups (Folk, 1954) across the survey area (OEL, 2024).

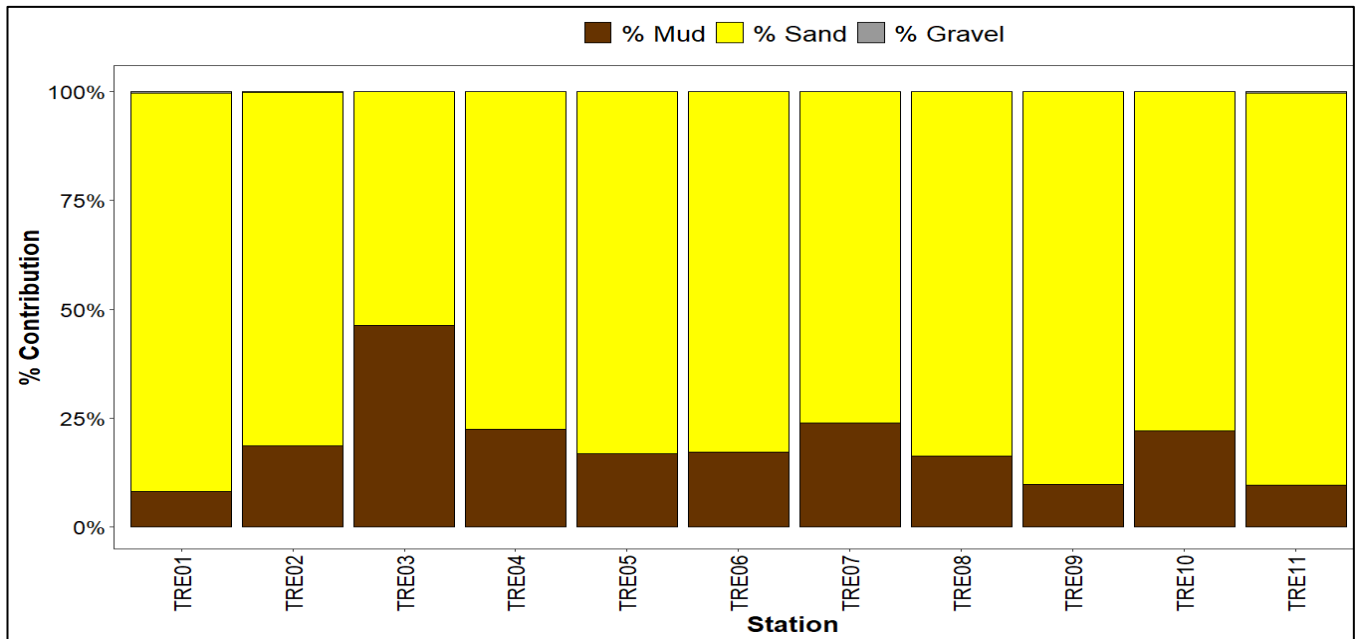


Figure 4.5. Relative contribution of major sediment fractions (Gravel, Sand, Mud) by volume at each sampling station (OEL, 2024).

4.2.5.1 Soil Stratigraphy

The soil stratigraphy at the Trent installation generally comprises 2 m of Medium Dense to Very Dense SAND overlying 8.3 m of Firm to Hard Slightly Sandy CLAY to a depth of 10.3m. This is underlain by 19.7 m of Very Dense SAND to a depth of at least 30 m below the seabed (DNV, 2025). Refer to Table 4.1.

Table 4.1. Summary of soil stratigraphy at Trent (DNV, 2025).

Depth (m)		Soil Description
From	To	
0.0	2.0	Medium Dense to Very Dense SAND
2.0	10.3	Firm to Hard Slightly Sandy CLAY
10.3	≥ 30.0	Very Dense SAND

4.3 Chemical Environment

4.3.1 Reference Levels for Seabed Chemistry

A number of reference levels are available as a means of comparing the chemical contaminants measured within the survey area to the background levels of these contaminants for the North Sea and also to the ecological threshold levels, above which may cause harmful effects to marine organisms. Refer to Table 4.1 for the reference levels used in analysing the seabed chemistry within survey zone around Trent and Section 4.1 for an overview of the environmental baseline survey sampling locations.

Table 4.2. Overview of reference levels used for analysis of the seabed chemistry results.

Acronym	Name and reference	Description
OSPAR BAC	OSPAR Background Assessment Concentrations (OSPAR, 2009)	The OSPAR BACs were developed to assess the status of contaminant concentrations in sediment within the OSPAR framework, where concentrations significantly below the BAC are considered to be near background levels for the North-East Atlantic.

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UKOOA 50th Percentile; UKOOA 95th Percentile	UKOOA 50th & 95th Percentiles for Background North Sea Sediments (UKOOA, 2001)	In 2001, the UKOOA published sediment quality guidelines for the UK North Sea. Using a database of survey data collected between 1975 to 1995, the report sets out ‘background’ levels for a variety of parameters (e.g., organic carbon, hydrocarbon, and metals content) in sediments over 5km from an existing oil and gas platform. The 50th and 95th percentile levels for uncontaminated background sediments are presented where available, using a combination of levels for the entire North Sea, specific North Sea sectors or specific sediment types, as appropriate.	
OSPAR THC Threshold	OSPAR Total Hydrocarbons Threshold (OSPAR, 2006)	Used to delineate the chemical boundaries of total hydrocarbon concentrations for drilling cuttings deposited on the seabed. Concentrations above this THC threshold may cause adverse impacts on the biota present in the area.	
OSPAR ERL; OSPAR ERM	Effect Range Low & Effect Range Medium (OSPAR, 2014)	In order to assign a level of context for toxicity, an approach by Long <i>et al.</i> , (1995) was used by OSPAR to characterise contamination in sediments. The “Effect Range Low” (ERL) values is defined as the lowest concentration of a metal that produced adverse effects in 10% of the data reviewed, whilst the “Effect Range Medium” (ERM) values designate the level at which half of the studies reported harmful effects. Consequently, metal concentrations recorded below the ERL value are not expected to elicit adverse effects, while levels above the ERM value are likely to be toxic to some marine life.	
CEFAS AL1; CEFAS AL2	CEFAS Action Level 1 & Action Level 2 (DEFRA, 2003)	Action Levels (ALs) are thresholds which are used to determine whether dredged material is suitable for disposal at sea by providing a proxy risk assessment for potential impacts to biological features such as fish and benthic organisms. Contaminant levels in dredged material which fall below AL1 are of no concern and are unlikely to influence decision-making, while contaminant levels above AL2 are generally considered unsuitable for at-sea disposal.	
CPI	Carbon Preference Index	The Carbon Preference Index (CPI) refers to the ratio between the concentration of odd-numbered and even-numbered carbon chains in n-alkanes. CPI values equal to 1 indicate hydrocarbons of petrogenic origin (originating from rocks or petroleum); CPI values less than 1 indicate pyrogenic origin (produced by fire or heat) (Fagbote, 2013), while CPI values greater than 1 indicate a biogenic origin (produced by living organisms) (Al-hejuje <i>et al.</i> , 2015).	

4.3.2 Seabed Chemistry

4.3.2.1 Total Organic Carbon (TOC)

Total Organic Carbon (TOC) represents the proportion of biological material and organic detritus within substrates, such as seabed sediments. TOC in surface sediments is an important source of food for benthic fauna, although an overabundance may lead to a reduction in the species richness and species abundance of the area due to oxygen depletion (Snelgrove & Butman, 1994). Increases in TOC may also reflect increases in both physical factors such as fine sediments or mud particles, and in common co-varying environmental factors through greater sorption on increased sediment surface areas (Thompson & Lowe, 2004).

TOC Concentrations within the survey samples ranged from 0.13% at station TRE01 to 0.37% at station TRE03, with a mean value of 0.21%. Refer to Table 4.3. TOC content was low compared to the average content of 2% for coastal seas (Seiter *et al.*, 2004). Note that there are no UKOOA (2001) BAC reference levels available for TOC.

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Table 4.3. Total Organic Carbon (TOC) (%) results from the Trent benthic survey (OEL, 2024).

Station	TOC (%)
TRE01	0.13
TRE02	0.15
TRE03	0.37
TRE04	0.19
TRE05	0.15
TRE06	0.13
TRE07	0.18
TRE08	0.28
TRE09	0.24
TRE10	0.28
Mean	0.21
Standard Deviation	0.08
TRE11 (reference station)	0.23

4.3.2.2 Sediment Hydrocarbons

The results of the sediment hydrocarbons from the survey samples are presented as follows:

Table 4.4. TPH (mg/kg) and PAH (mg/kg) concentrations from the benthic survey samples (OEL, 2024).

Station	TPH (mg/kg)	Total PAHs (mg/kg)	CPI (-)
TRE01	7.79	0.01	1.50
TRE02	5.98	0.09	2.02
TRE03	88.70	0.04	1.40
TRE04	29.90	0.16	1.98
TRE05	7.95	0.07	1.95
TRE06	4.74	0.10	1.43
TRE07	5.47	0.14	1.98
TRE08	3.71	0.05	1.90
TRE09	1.59	0.03	2.33
TRE10	3.86	0.08	2.10
Mean	15.97	0.08	1.86
Standard Deviation	25.41	0.04	0.29
TRE11 (reference station)	1.12	0.01	3.08
Reference Levels			
UKOOA 50th Percentile (UKOOA, 2001)	4.34	0.07	1.32
UKOOA 95th Percentile (UKOOA, 2001)	11.4	0.37	n/a
OSPAR THC Threshold (OSPAR, 2006)	50	n/a	n/a

Carbon Preference Index (CPI)

The Carbon Preference Index (CPI) was used to assess the hydrocarbon origin sources. All stations had a CPI index of greater than 1, indicating that sediment hydrocarbons in the samples were biogenic in origin, i.e., being produced by living organisms (OEL, 2024). Refer to Table 4.4.

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Total Petroleum Hydrocarbons (TPH)

Marine sediments contain hydrocarbons which can be derived from many sources and enter into the marine environment. Hydrocarbons can enter the marine environment through three general processes, namely biosynthesis (organisms synthesising hydrocarbons), geochemical (submarine/coastal oil seeps), and anthropogenic sources. Anthropogenic sources of hydrocarbon inputs to the marine environment include marine transportation, offshore oil production, coastal oil refineries, accidental shipping losses, and industrial and municipal waste (Myers & Gunnerson, 1976).

Total Petroleum Hydrocarbons (TPH) within the survey zone ranged from 1.59 mg/kg at station TRE09 1km southeast of Trent to 88.7 mg/kg at station TRE03 100m south of Trent. The mean TPH concentration across the survey area was 15.97 mg/kg. Refer to Table 4.4.

Two stations (TRE03 and TRE04) exceeded the UKOOA (2001) 95th percentile for TPH in sediments in the Southern North Sea. The TPH concentrations at TRE03 also exceeded the OSPAR (2006) total hydrocarbons threshold (THC). The CPI indicates that the sediment hydrocarbons at these stations were biogenic in origin (produced by biological processes).

Polycyclic Aromatic Hydrocarbons (PAH)

Polycyclic Aromatic Hydrocarbons (PAHs) have been recorded in a wide range of marine sediments (Laflamme & Hites, 1978) with the majority of compounds produced from what is thought to be pyrolytic sources. Pyrolytic sources are those which come from the combustion of organic material such as forest fires, the burning of fossil fuels and, in the case of offshore oil fields, flare stacks (Youngblood & Blumer, 1975). The resulting PAHs typically end up in the sediments from atmospheric fallout or river runoff. Another PAH source is petroleum hydrocarbon, often associated with localised drilling activities.

Total PAH concentrations measured from the survey samples were low, with a mean concentration of 0.08 mg/kg. PAH concentrations ranged from 0.01 mg/kg at TRE01 to 0.16 mg/kg at TRE04. Six stations exceeded the UKOOA (2001) 50th percentile. No stations surpassed the UKOOA (2001) 95th percentile for PAHs. Refer to Table 4.4.

4.3.2.3 Heavy Metals

Metals occur naturally in the marine environment and are widely distributed in both dissolved and sedimentary forms. Some are essential to marine life while others may be toxic to numerous organisms (Paez-Osuna & Ruiz-Fernandez, 1995). Rivers, coastal discharges, and the atmosphere are the principal modes of entry for most metals into the marine environment, with anthropogenic inputs occurring primarily as components of industrial and municipal wastes (Schaule & Patterson, 1983).

Historically, several heavy metals are found in elevated concentrations where drilling fluids or produced waters have been discharged by oil and gas installations (Neff, 2005). Eight heavy metals (Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Nickel (Ni), Mercury (Hg), Zinc (Zn)) from the sediment sampling results are described in the following subsections. These metals can provide insight into the potential impact of the oil and gas industry on the marine environment (Neff, 2005; OEL, 2024).

The following is a descriptive overview of the heavy metal concentrations in the analysed survey samples. Refer to Table 4.5 for the heavy metal analysis results, and Table 4.2 for an explanation of the reference levels used for analysis of the results.

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Table 4.5. Total heavy metal concentrations (mg/kg) across the Trent benthic survey (OEL, 2024).

Station	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	
TRE01	4.5	<0.04	6.8	2.8	5	0.04	3.3	22.2	
TRE02	4.4	<0.04	7.5	3.2	5.3	0.08	4.5	23.3	
TRE03	3.5	0.13	15.3	6.8	25	0.07	8.9	73.7	
TRE04	3.7	0.06	8.1	2.9	6.9	0.03	4.8	21.1	
TRE05	4.2	<0.04	6.8	1.3	4.3	0.1	3.9	14.4	
TRE06	5.1	<0.04	7.3	1.5	4.6	0.07	4.1	16.6	
TRE07	5.3	<0.04	9	2.3	5.4	0.04	5.4	20.3	
TRE08	4.2	<0.04	7.1	1.7	4.1	0.03	4	15.1	
TRE09	4.6	<0.04	5.4	1.2	3.9	0.02	3.4	16.3	
TRE10	5.3	0.04	9.6	2.3	5.8	0.02	5.5	20.1	
Mean	4.48	0.08	8.29	2.60	7.03	0.05	4.78	24.31	
Standard Deviation	0.56	0.03	2.47	1.48	5.77	0.03	1.47	15.94	
TRE11 (reference station)	8.4	<0.04	7.5	1.6	6.2	0.03	4.1	22	
Reference Levels									
Background Levels	UKOOA 50 th Percentile (UKOOA, 2001)	-	0.03	6.51	2.04	6	0.02	3.97	12.2
	UKOOA 95 th Percentile (UKOOA, 2001)	-	0.72	44.8	13.9	21	0.05	21.5	35.8
	OSPAR BAC (OSPAR, 2009)	25	0.31	81	27	38	0.07	36	122
Ecological thresholds	CEFAS AL1 (DEFRA, 2003)	20	0.4	40	40	50	0.3	20	130
	CEFAS AL2 (DEFRA, 2003)	100	5	400	400	500	3	200	800
	OSPAR ERL (OSPAR, 2014)	8.2	1.2	81	34	46.7	0.15	20.9	150
	OSPAR ERM (OSPAR, 2014)	70	9.6	370	270	218	0.71	51.6	410

Arsenic (As)

Arsenic concentrations ranged from 3.5 mg/kg at TRE03 to 5.3 mg/kg at TRE07 and TRE10, with a mean concentration of 4.48 mg/kg. All arsenic concentrations were below the OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL and OSPAR ERM. Note that there are no UKOOA (2001) 50th percentile and 95th percentile reference levels available for arsenic.

Cadmium (Cd)

Cadmium concentrations ranged from less than 0.04 mg/kg at seven stations to 0.13 mg/kg at TRE03, with a mean of 0.08 mg/kg. All stations marginally exceeded the UKOOA (2001) 50th percentile for cadmium. All stations remained below the UKOOA 95th percentile, OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL and OSPAR ERM.

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Chromium (Cr)

Chromium concentrations ranged from 5.4 mg/kg at TRE09 to 15.3 mg/kg at TRE03, with a mean of 8.29 mg/kg. All chromium concentrations surpassed the UKOOA (2001) 50th percentile. All concentrations remained below the UKOOA 95th percentile, OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL, and OSPAR ERM.

Copper (Cu)

Copper concentrations ranged from 1.2 mg/kg at TRE09 to 6.8 mg/kg at TRE03, with a mean of 2.6 mg/kg. Copper concentrations at six stations were above the UKOOA (2001) 50th percentile. All stations remained below the UKOOA 95th percentile, OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL, and OSPAR ERM.

Lead (Pb)

Lead concentrations ranged from 3.9 mg/kg at TRE09 to 25 mg/kg at TRE03, with a mean of 7.03 mg/kg. Concentrations at TRE03 and TRE04 exceeded the UKOOA 50th percentile reference level, with TRE03 also slightly exceeding the UKOOA 95th percentile. All other stations remained below the UKOOA 50th and 95th percentiles, the OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL, and OSPAR ERM.

Mercury (Hg)

Mercury concentrations ranged from 0.02 mg/kg at stations TRE09 and TRE10, to 0.1 mg/kg at TRE05, with a mean of 0.05 mg/kg. Mercury concentrations at each station had levels higher than the UKOOA 50th percentile. Four stations (TRE02, TRE03, TRE05, TRE06) had levels higher than the UKOOA 95th percentile, with two stations (TRE02 and TRE05) having concentrations slightly higher than the OSPAR Background Assessment Concentration (BAC). The concentrations at TRE02 and TRE05 are lower than the CEFAS AL2, OSPAR ERL and OSPAR ERM

All stations had mercury concentrations below the CEFAS AL2, OSPAR ERL, and OSPAR ERM.

Nickel (Ni)

Nickel concentrations ranged from 3.3 mg/kg at TRE01 to 8.9 mg/kg at TRE03, with a mean of 4.78 mg/kg. Seven stations had concentrations higher than the UKOOA 50th percentile. All stations remained below the UKOOA 95th percentile, the OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL, and OSPAR ERM.

Zinc (Zn)

Zinc concentrations ranged from 14.4 mg/kg at TRE05 to 73.7 mg/kg at TRE03, with a mean of 24.31 mg/kg. All stations exceeded the UKOOA 50th percentile for zinc, with one station (TRE03) also exceeding the UKOOA 95th percentile. All stations remained below the OSPAR BAC, CEFAS AL1, CEFAS AL2, OSPAR ERL, and OSPAR ERM.

4.3.2.3.1 Summary of Heavy Metal Concentrations

Overall, the heavy metal concentrations from the sediment samples are in line with the typical concentration of the sediment in the Southern North Sea, as they are generally below the UKOOA (2001) 95% percentile and OSPAR BAC reference levels (OEL, 2024). No heavy metal concentrations recorded surpassed the CEFAS AL1, CEFAS AL2, OSPAR ERL, or OSPAR ERM.

Mercury concentrations recorded at Station TRE02 and TRE05 were the only heavy metal concentrations measured which slightly surpassed the OSPAR BAC for the Southern North Sea. Despite slightly higher concentrations, the mercury levels recorded at these stations still remained well below the mean concentration of total mercury (0.36 mg/kg) known to be found within 500m of active platforms in the North Sea (UKOOA, 2001). Furthermore, no obvious macrobenthic anomalies were associated with the elevated mercury concentrations at this station (OEL, 2024).

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4.4 Biological Environment

4.4.1 Plankton

The plankton community may be broadly divided into a plant component (phytoplankton) and an animal component (zooplankton). The ecology of the plankton community is strongly influenced by environmental and, potentially, anthropogenic factors. Consequently, the plankton acts as an important link between the biological and physical components of the ecosystem. Members of the plankton are key producers and primary consumers in marine ecosystems and so population changes will have impacts on organisms at higher trophic levels, with environmental and economic consequences (BEIS, 2022a).

The Sothern North Sea is characterised by shallow, well-mixed waters, which undergo large seasonal temperature variations. The region is largely enclosed by land and, as a result, the environment here is dynamic with considerable tidal mixing and nutrient-rich run-offs from the land (eutrophication). Under these conditions, there is relatively little stratification throughout the year and constant replenishment of nutrients, so opportunistic organisms such as diatoms are particularly successful.

Diatoms comprise a greater proportion of the phytoplankton community than dinoflagellates from November to May, when mixing is at its greatest. The phytoplankton community is dominated by the dinoflagellate genus *Tripes*, along with higher numbers of the diatom, *Chaetoceros* (subgenera *Hyalochaete* and *Phaeoceros*) than are typically found in the Northern North Sea. Phytoplankton biomass is greater in the SNS than in the Northern North Sea and has been increasing since the 1988 ecological shift. Harmful Algal Blooms caused by *Noctiluca* spp. are often observed in this region as a result of the ecological shift (BEIS, 2022a).

The zooplankton community comprises of *C. helgolandicus* and *C. finmarchicus* as well as *Paracalanus* spp., *Pseudocalanus* spp., *Acartia* spp., *Temora* spp. and cladocerans such as *Evadne* spp. Commonly seen jellyfish in the region include *A. aurita* and *C. hysoscella*. There has been a marked decrease in copepod abundance in the SNS in recent years, possibly linked to the North Atlantic Oscillation index, which has a significant impact in the SNS, where the interface between the atmosphere and the sea is most pronounced (BEIS, 2022a).

The planktonic assemblage in the vicinity of the Trent is not considered unusual.

4.4.2 Benthic Habitats

4.4.2.1 Benthic Desk Study

4.4.2.1.1 Benthic Habitat Classification

A number of marine benthic habitats are predicted / encountered for the area in and around Trent. The following EUNIS habitat classifications are identified (EEA, 2019):

- A5.26: Circalittoral Muddy Sand** - Circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5 % to 20 %. This habitat is generally found in water depths of over 15-20 m and supports animal-dominated communities characterised by a wide variety of polychaetes, bivalves such as *Abra alba* and *Nucula nitidosa*, and echinoderms such as *Amphiura* spp and *Ophiura* spp., and *Astropecten irregularis*. These circalittoral habitats tend to be more stable than their infralittoral counterparts and as such support a richer infaunal community.
- A5.27: Deep Circalittoral Sand** - Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves, and echinoderms.
- A5.35: Circalittoral Sandy Mud** – Circalittoral, cohesive sandy mud, typically with over 20% silt/clay, generally in water depths of over 10 m, with weak or very weak tidal streams. This habitat is generally found in deeper areas of bays and marine inlets or offshore from less wave exposed coasts. Sea pens such as *Virgularia mirabilis* and brittlestars such as *Amphiura* spp. are particularly characteristic of this habitat whilst infaunal species include the tube building polychaetes *Lagis koreni* and *Owenia fusiformis*, and deposit feeding bivalves such as *Mysella bidentata* and *Abra* spp.

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- A5.351 - *Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud** – Cohesive sandy mud off wave exposed coasts with weak tidal streams can be characterised by super-abundant *Amphiura filiformis* with *Mysella bidentata* and *Abra nitida*. This community occurs in muddy sands in moderately deep water. This community is also characterised by the sipunculid *Thysanocardia procera* and the polychaetes *Nephtys incisa*, *Phoronis* sp. and *Pholoe* sp., with cirratulids also common in some areas. Other taxa such as *Nephtys hombergii*, *Echinocardium cordatum*, *Nucula nitidosa*, *Callianassa subterranea* and *Eudorella truncatula* may also occur in offshore examples of this biotope.

4.4.2.1.2 EMODnet Habitat Type

The European Marine Observation and Data Network (EMODnet) Seabed Habitats is a broad-scale seabed habitat map for Europe and is a predictive model that maps and classifies intertidal and subtidal habitats according to the European Nature Information Systems (EUNIS) classification criteria (EMODnet, 2023).

EMODnet published their latest seabed habitat map for Europe, the EUSeaMap, in 2023. Based on the EUSeaMap, the EUNIS seabed classification identified at Trent is **A5.27: Deep Circalittoral Sand**. Refer to Figure 4.6.

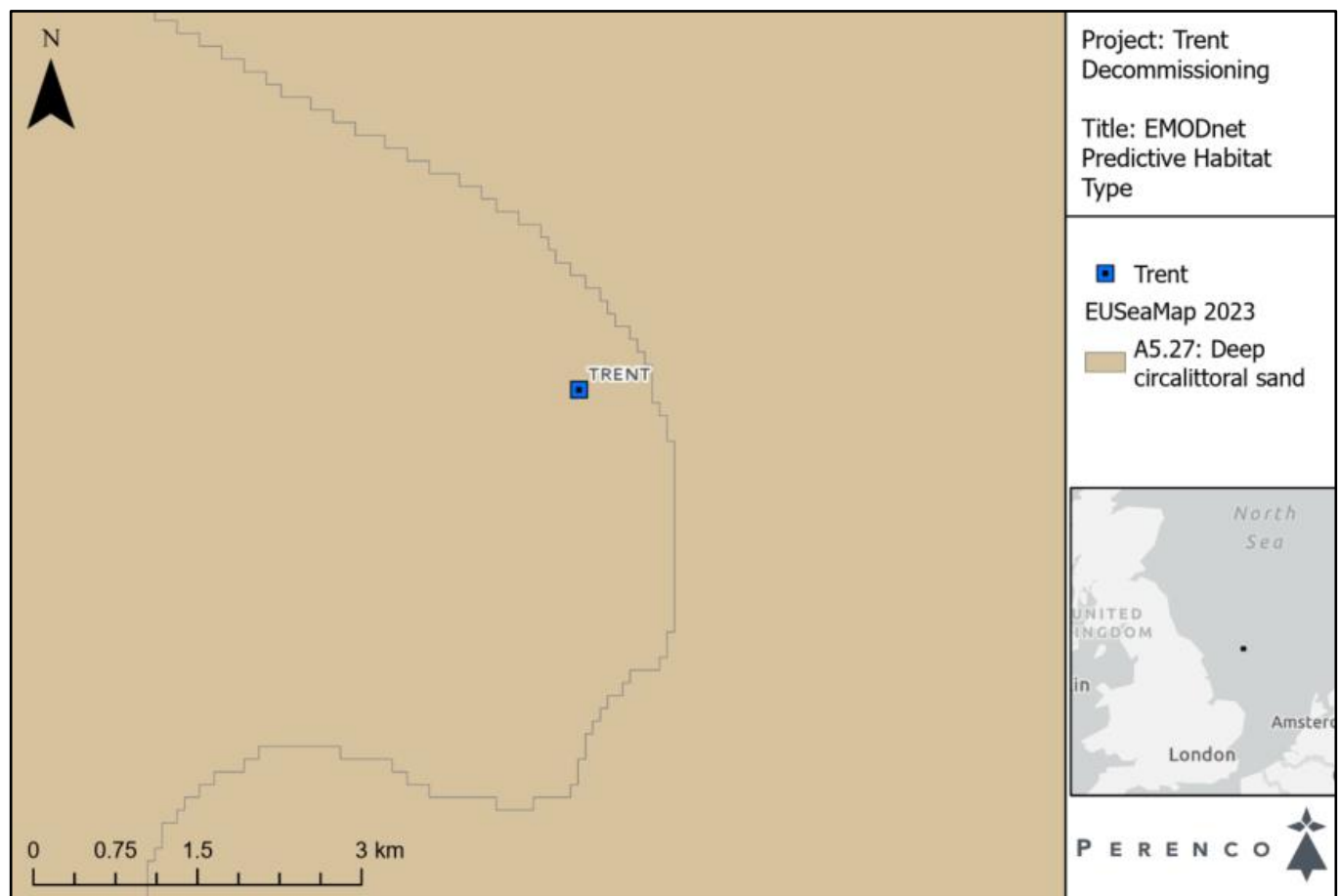


Figure 4.6. EMODnet (2023) marine habitat classification of the Trent and surrounding area.

4.4.2.1.3 Annex I Seabed Features

Annex I habitats are set by the Habitats Directive (Directive 92/43/EEC). Member States which must designate, protect, and manage core areas for habitat types listed in Annex I, as well as species listed in Annex II, of the Habitats Directive. Special Areas of Conservation (SAC) sites are selected on scientific grounds using the criteria laid down in the Directive (Annex III).

There are three Annex I marine habitats known within UK offshore waters, namely Sandbanks which are slightly covered by seawater all of the time (1110), Reefs (1170), and Submarine structures made by leaking gases (1180).

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4.4.2.1.3.1 Sandbanks which are slightly covered by seawater all of the time (1110)

Sandbanks which are slightly covered by seawater all the time (1110) are described as “*Sublittoral sandbanks, permanently submerged. Water depth is seldom more than 20 m below Chart Datum*”. Annex I Sandbanks are defined by their physiographic nature rather than by a specific biological community (JNCC, 2013).

Trent is not located within an Annex I sandbank system. Refer to Figure 4.7.

4.4.2.1.3.1 Annex I – Reefs (1170)

There are three types of Annex I reef: bedrock reef, stony reef, and biogenic reef. Bedrock and stony reefs are formed by rock, whilst biogenic reefs are formed by animals, such as *Sabellaria* worms. These worms create networks of tubes that stabilise the seafloor and create complex habitats.

All three types of reef can support a variety of life, including sponges, fish, lobsters, and crabs. These biodiversity hotspots support neighbouring commercial fisheries and provide opportunities for activities such as SCUBA diving and angling.

The desk study indicates there are no records of reefs within the 500m safety zone of Trent, as presented in Figure 4.7.

4.4.2.1.3.1 Submarine structures made by leaking gases (1180)

There are no records of Submarine structures made by leaking gases in this area of the Southern North Sea. Refer to Figure 4.7.

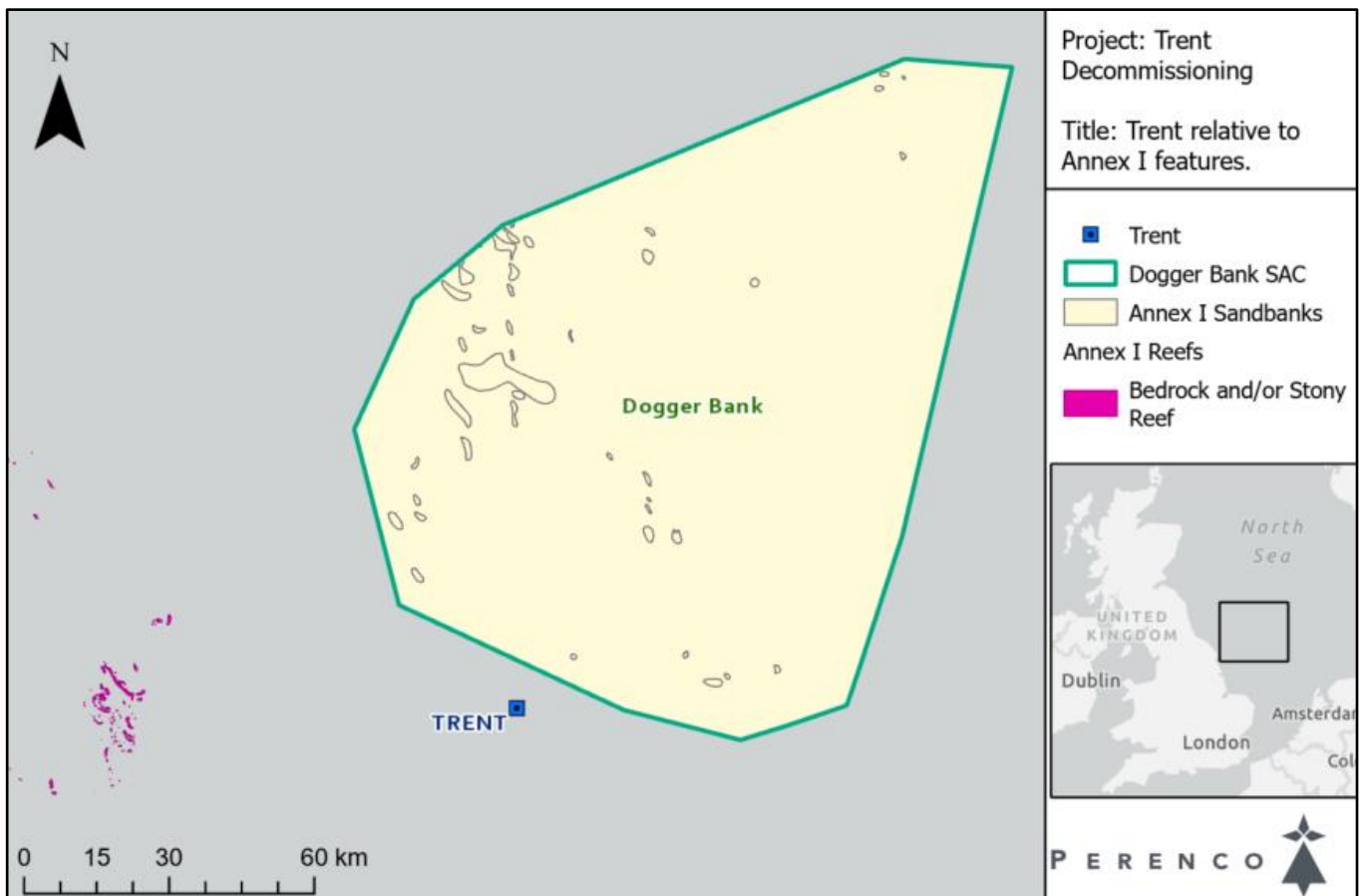


Figure 4.7. Trent in relation to Annex I sandbanks and reefs (JNCC, 2024).

4.4.2.2 Benthic Habitat Site Survey

Refer to Section 4.1 for the sampling methodology and Figure 4.1 for the location of the environmental sampling stations around the Trent.

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4.4.2.2.1 Habitat Classification

Habitat mapping across the survey area was homogeneously characterised by EUNIS **A5.35 Circalittoral Sandy Mud** with small sand ripples present. In some areas, the biotope **A5.351 *Amphiura filiformis*, *Kurtiella bidentata* and *Abra nitida* in Circalittoral Sandy Mud** was identified which was also interspersed by a number of samples representing **A5.26 Circalittoral Muddy Sand** (OEL, 2024).

The habitat type identified from the benthic survey was in contrast to the predicted EUNIS habitat in Section 4.4.2.1.2, which describes the survey area as A5.27 Deep Circalittoral Sand. This difference may be due to the predictive nature of EUSea mapping coupled with potentially limited availability of field data from this area for the EUSea habitat modelling (OEL, 2024). Refer to Figure 4.8 for example seabed imagery of A5.35 EUNIS habitat, and Figure 4.9 for the overview of the habitat results in relation to each survey station.

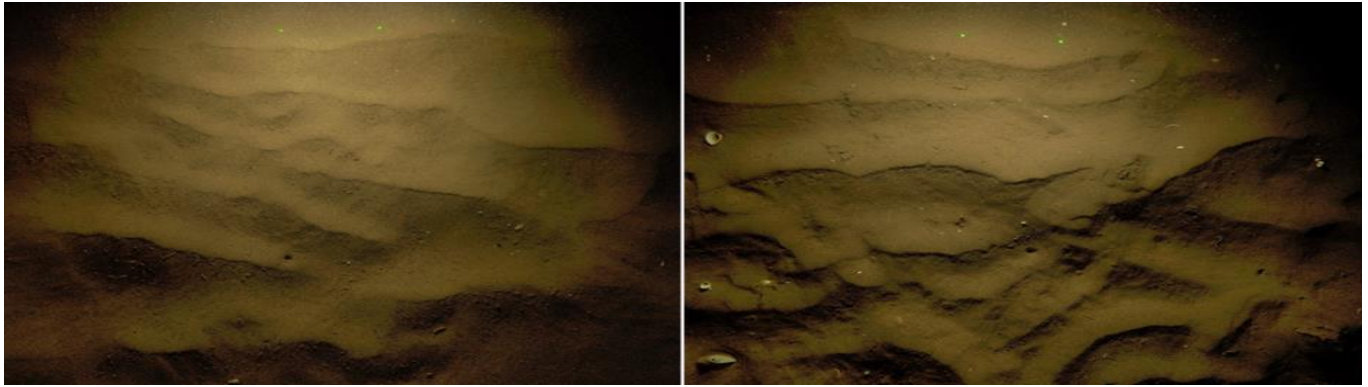


Figure 4.8. Example seabed imagery of A5.35 Circalittoral Sandy Mud across the Trent survey area (OEL, 2024).

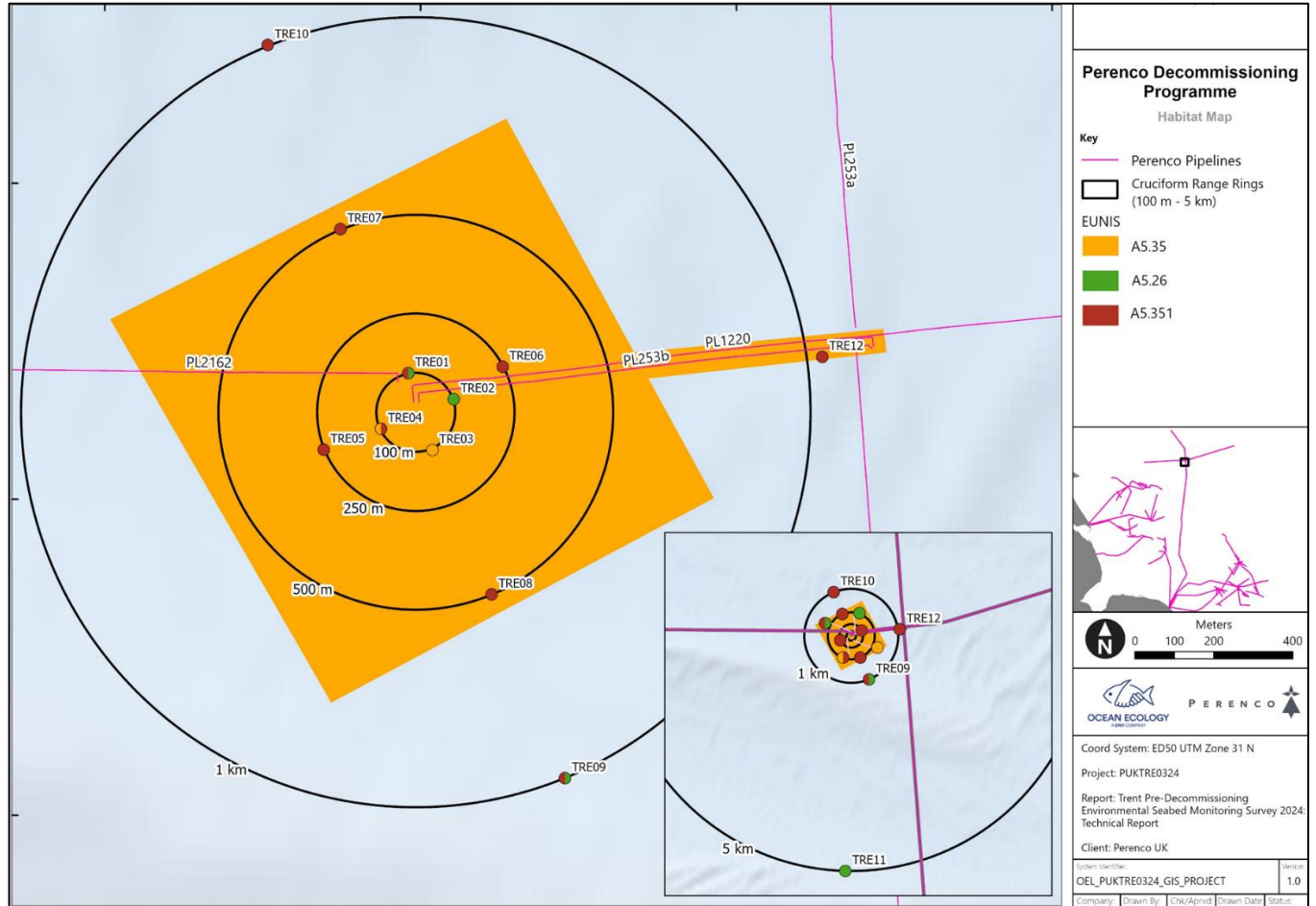


Figure 4.9. Habitat mapping results for the Trent survey area (OEL, 2024).

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4.4.2.2.2 Benthic Biodiversity

Benthic biodiversity was relatively low across the survey area. A total of 1,074 individuals and 77 taxa were recorded across the survey area. The most commonly occurring epifauna observed in the seabed imagery was the Heart Urchin of the order Spatangoida, and Faunal Turf (OEL, 2024).

As presented in Figure 4.10, the brittle star *Amphiura filiformis* was the most abundant species sampled, accounting for 30.5% of all individuals recorded. The mollusc *Cylichna cylindracea* was the most commonly occurring species appearing in 91.7% of samples, followed by *A. filiformis* which occurred in 87.5% (OEL, 2024).

Figure 4.11 presents the relative contributions to total abundance, diversity, and biomass of the major taxonomic groups found across the survey area. Echinodermata taxa contributed the most to overall abundance and biomass, accounting for approximately 46% and 84% respectively. Mollusca taxa contributed the most to overall diversity accounting for 40% (OEL, 2024).

The highest total abundance was observed at station TRE12 with a mean of 76 individuals, followed by station TRE05 with a mean of 70, as presented in Figure 4.12. The highest diversity was recorded at station TRE01 with a mean of 20 different taxa identified across both samples. Total biomass was greatest at station TRE05 with a mean total biomass of approximately 2.3 gAFDW across both replicates (OEL, 2024). Refer to Figure 4.12.

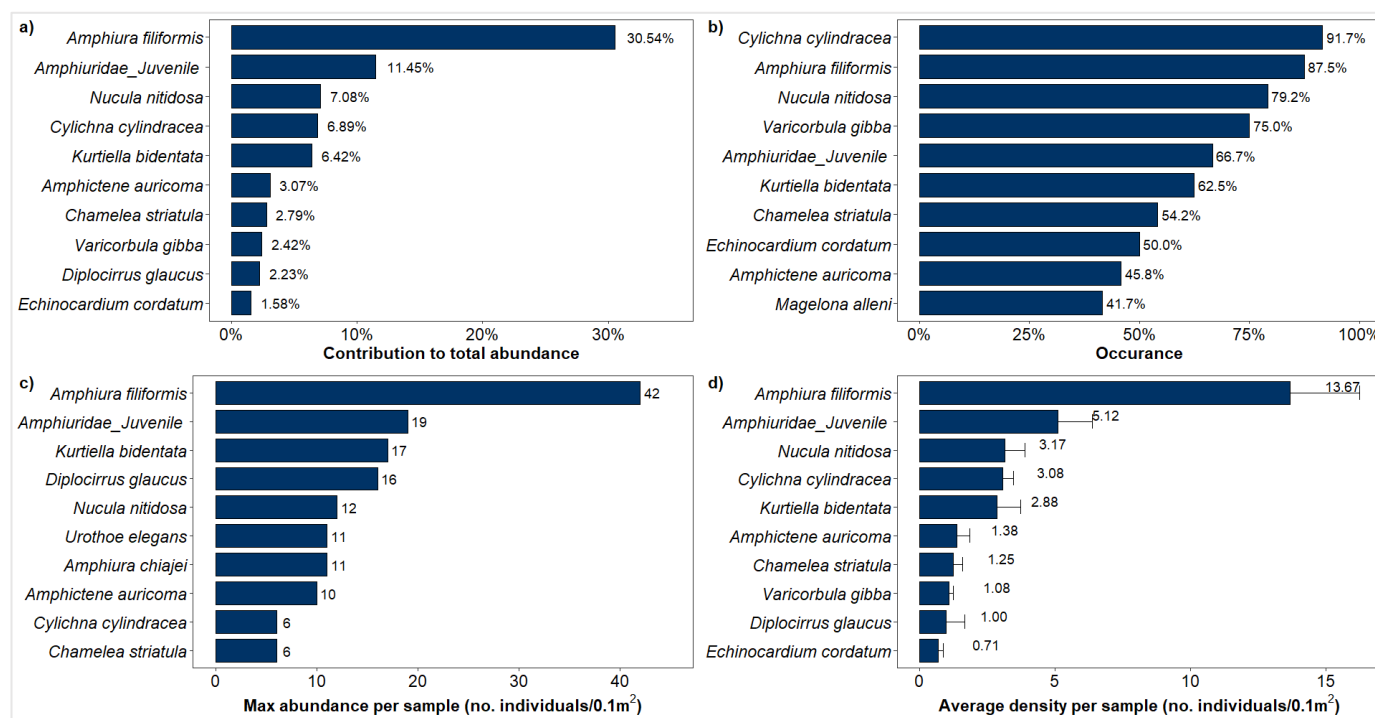


Figure 4.10. Percentage contributions of the top 10 taxa to (a) total abundance, (b) occurrence, (c) per sample, and (d) average densities of the top 10 taxa per sample (OEL, 2024).

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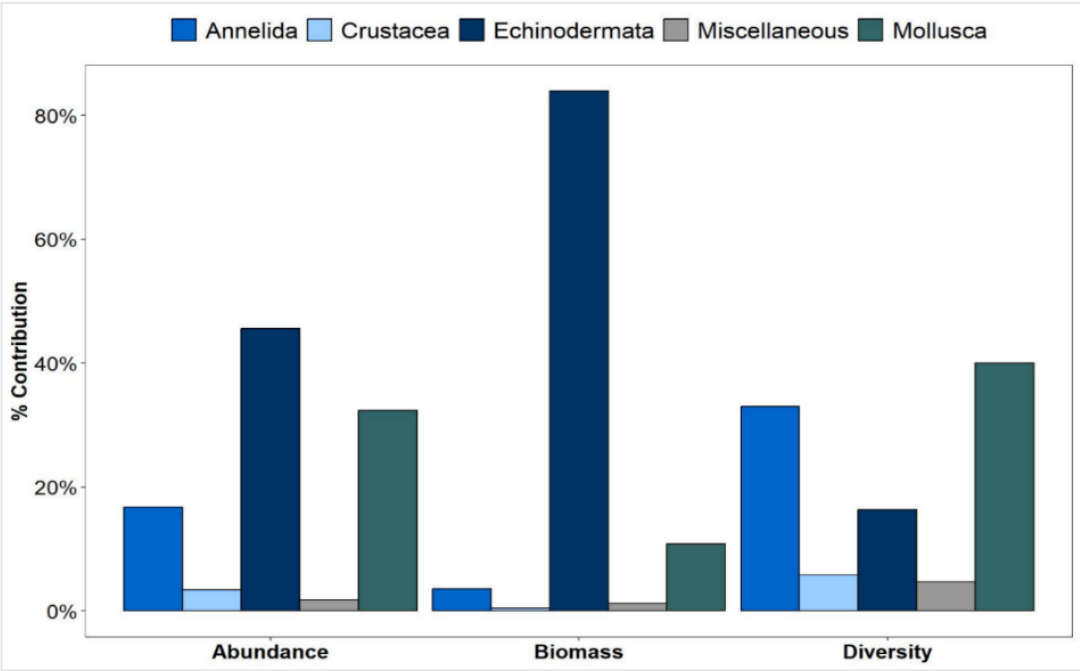


Figure 4.11. Relative contribution of the major taxonomic groups to the total abundance, diversity, and biomass of the macrobenthic community sampled across the survey area (OEL, 2024).

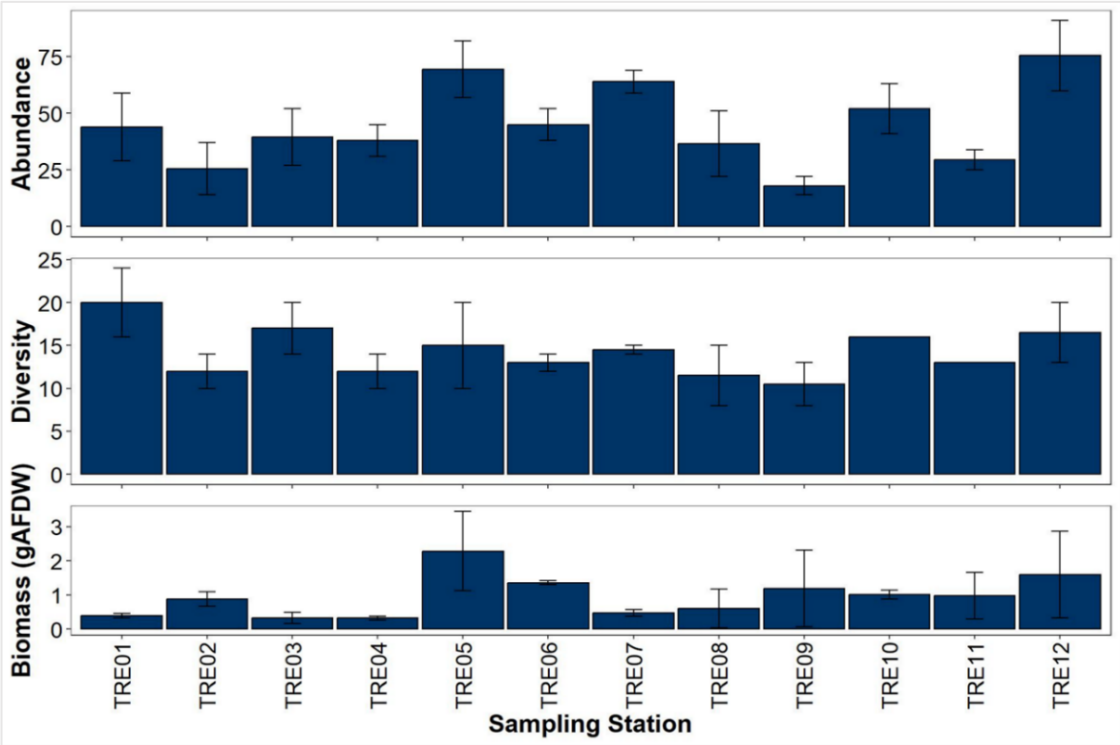


Figure 4.12. Mean abundance, mean diversity, and mean biomass per station across the survey area. Note that ‘gAFDW’ refers to ‘grams of ash-free dry weight’ (OEL, 2024).

4.4.2.3 Sabellaria Biogenic Reef - Reefiness Assessment

The Ross Worm, *Sabellaria spinulosa*, is an occasionally gregarious segmented worm that builds tubes from sand or shell fragments (Jackson & Hiscock, 2008). The species occurs widely and is found in the subtidal and lower intertidal/sublittoral fringe, especially in areas of turbid seawater with a high sediment load. *S. spinulosa* reef habitats are less frequent with relatively few examples occurring in UK waters. The reefs in the Southern North Sea are thought to be the only known location of well-developed and stable subtidal *S. spinulosa* reef in the UK.

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S. spinulosa biogenic reef are protected by a variety of European conservation legalisation and policies, most notably as Annex I features. *S. spinulosa* reef is also listed as an OSPAR threatened and declining habitat (OSPAR, 2013) and listed as a Priority Habitat under Section 41 of the Natural Environment and Rural Communities Act 2006.

There is some debate about what actually constitutes a biogenic reef rather than a colony. However, *S. spinulosa* aggregations are generally assessed against three metrics/categories: elevation, patchiness, and area. Together these categories can be used to determine whether *S. spinulosa* aggregations qualify as biogenic reef habitat under the EC Habitats Directive and provide a measure of ‘reefiness’ for monitoring and assessment purposes. These metrics are shown in Table 4.6.

Table 4.6. Characteristics of *S. spinulosa* reef.

Characteristic	‘Reefiness’			
	Not a Reef	Low	Medium	High
Elevation (cm)	< 2	2 – 5	5 – 10	> 10
Extent (m ²)	< 25	25 – 10,000	10,000 – 1,000,000	> 1,000,000
Patchiness (% Cover)	< 10	10 – 20	20 – 30	> 30

A comprehensive Annex I reef assessment was conducted on all 60 images collected across the survey area. None of the images analysed met the criteria for Annex I bedrock, stony or biogenic reef. Annex I reefs are **not present** within the Trent survey zone (OEL, 2024).

4.4.2.4 Potentially Sensitive or Protected Species & Habitats

In addition to the Annex I reef assessment the benthic survey analysis also considered the presence of sensitive and protected species and habitats. A summary of their findings is presented as follows:

- No OSPAR Priority Habitats and Species observed:
 - Horse Mussel (*Modiolus modiolus*) beds **not present**.
 - Ocean Quahog (*Arctica islandica*) **not present**.

4.4.2.5 Invasive Non-Native Species

There were **no** Invasive Non-Native Species (INNS) observed in the Trent survey area.

4.4.3 Fish and Shellfish

4.4.3.1 Spawning & Nursery Grounds

The Southern North Sea is a dynamic ecosystem characterised by a sandy, flat, shallow seabed and considerable tidal mixing, which provides ideal spawning and nursery grounds for a number of demersal and pelagic species. Species diversity within the fish community is greater in the Southern North Sea than in the Central or Northern North Sea (BEIS, 2022a).

The North-East Atlantic and North Sea is divided into statistical grids called International Council for the Exploration of the Sea (ICES) Rectangles to facilitate the mapping of fisheries information. The Trent installation is located within ICES Rectangle 37F1. Coull *et al.*, (1998) and Ellis *et al.* (2012) have produced spawning and nursery grounds maps and the information for ICES Rectangle 37F1, as presented in Table 4.7.

Species that spawn within 37F1 include Cod (*Gadus morhua*), Lemon Sole (*Microstomus kitt*), Nephrops, Plaice (*Pleuronectes platessa*), Sandeels (*Ammodytidae* spp.), and Whiting (*Merlangius merlangus*) (Coull *et al.*, 1998; Ellis *et al.*, 2012). Plaice and sandeels have high intensity spawning grounds in 37F1 (Coull *et al.*, 1998; Ellis *et al.*, 2012).

ICES Rectangle 37F1 also acts as nursery grounds for Anglerfish (*Lophius piscatorius*), Blue Whiting (*Micromesistius poutassou*), Cod, Hake (*Merluccius merluccius*), Herring (*Clupea harengus*), Ling (*Molva molva*), Mackerel (*Scomber scombrus*), Sandeels, Spurdog (*Squalus acanthias*), and Whiting. Whiting has high intensity nursery grounds in 37F1 (Ellis *et al.*, 2012).

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Of the species listed in Table 4.7, Spurdog is listed as “Endangered” on the European IUCN red list, while all other fish species are listed as “Least Concern” (IUCN, 2026).

Table 4.7. Species utilising ICES Rectangle 37F1 as spawning and nursery grounds (Ellis *et al.*, 2012¹).

Common Name ¹	Scientific Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Anglerfish	<i>Lophius piscatorius</i>	N	N	N	N	N	N	N	N	N	N	N	N
Blue Whiting	<i>Micromesistius poutassou</i>	N	N	N	N	N	N	N	N	N	N	N	N
Cod	<i>Gadus morhua</i>	S N	S N	S N	S N	N	N	N	N	N	N	N	N
Hake	<i>Merluccius merluccius</i>	N	N	N	N	N	N	N	N	N	N	N	N
Herring	<i>Clupea harengus</i>	N	N	N	N	N	N	N	N	N	N	N	N
Lemon Sole ²	<i>Microstomus kitt</i>	-	-	-	S	S	S	S	S	S	-	-	-
Ling	<i>Molva molva</i>	N	N	N	N	N	N	N	N	N	N	N	N
Mackerel ²	<i>Scomber scombrus</i>	N	N	N	N	N	N	N	N	N	N	N	N
Nephrops ²	<i>Nephrops</i>	S	S	S	S	S	S	S	S	S	S	S	S
Plaice **	<i>Pleuronectes platessa</i>	S	S	S	-	-	-	-	-	-	-	-	S
Sandeels **	<i>Ammodytidae</i> spp.	S N	S N	N	N	N	N	N	N	N	N	S N	S N
Spurdog ³	<i>Squalus acanthias</i>	N	N	N	N	N	N	N	N	N	N	N	N
Whiting *	<i>Merlangius merlangus</i>	N	S N	S N	S N	S N	S N	N	N	N	N	N	N

Key

S	Peak Spawning	S	Spawning	N	Nursery	-	No Activity Recorded
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1. All data based on Ellis *et al.* (2012) unless otherwise stated (as indicated by note 2).
 2. Lemon Sole, Mackerel, and Nephrops spawning, and nursery grounds based on Coull *et al.* (1998).
 3. Viviparous species (give birth to live young) (Ellis *et al.*, 2012).
- * High intensity nursery grounds (Ellis *et al.*, 2012).
** High intensity spawning grounds (Ellis *et al.*, 2012).

4.4.3.2 Fish Sensitivities

Aires *et al.* (2014) provides fisheries distribution maps for British waters, which present a similar distribution pattern as Ellis *et al.* (2012). These fish sensitivity maps were generated to provide a spatial and temporal description of where physical damage could potentially occur to fish species at sensitive stages of their life cycle.

These maps can be used to ascertain the requirement for mitigation against these potential damages during industrial activities offshore. However, it is important to note that the specific locations of these sites of fish sensitivity are not static and may shrink, expand, or move from one site to another over time (Aires *et al.*, 2014).

Fish with the highest sensitivities in the vicinity of Trent are Herring, Horse Mackerel, Sprat, and Whiting. Refer to Figure 4.13.

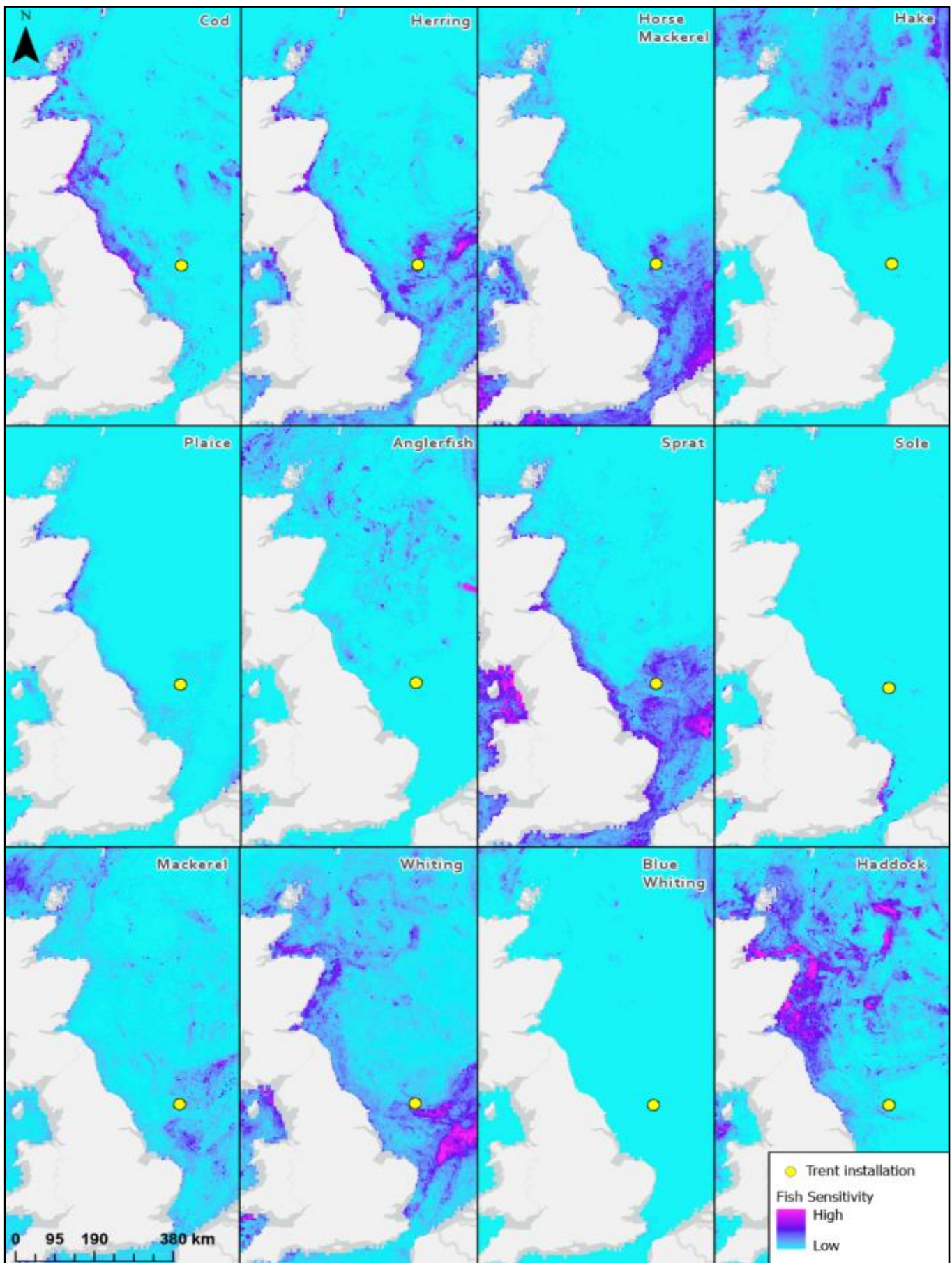


Figure 4.13. Fish sensitivities in the vicinity of Trent (Aires *et al.*, 2014).

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4.4.3.3 Elasmobranch Species

Elasmobranch species (sharks, skates, and rays) are an important component of the North Sea ecosystem. Elasmobranchs have a low fecundity and slow growth rate, leaving them vulnerable to overfishing pressures and pollution events, and subsequent recovery of populations in response to disturbance events is low. While species are typically not the subject of targeted fisheries, they are still under threat from commercial pelagic and demersal fishery by-catch.

Ellis *et al.* (2004) recorded 26 elasmobranch species throughout the North Sea and surrounding waters. Species which have been recorded in the Southern North Sea at various times throughout the year and may therefore be present in the vicinity of the survey area, are listed in Table 4.8.

The species of most concern on the IUCN European Red List are the Thornback Skate (*Raja clavata*) and Tope Shark (*Galeorhinus galeus*). All other species in the table below were of Least Concern on the IUCN Red List (IUCN, 2026).

Table 4.8. Elasmobranch species found in the vicinity of Trent (Ellis *et al.*, 2004; IUCN, 2026).

Common Name	Scientific Name	Depth Range (m)	European IUCN Status
Smallspotted Catshark	<i>Scyliorhinus canicula</i>	0 - 800	Least Concern
Spotted Skate	<i>Raja montagui</i>	8 - 283	Least Concern
Thornback Skate	<i>Raja clavata</i>	10 - 300	Near Threatened
Thorny Skate	<i>Amblyraja radiata</i>	0 - 1400	Least Concern
Tope Shark	<i>Galeorhinus galeus</i>	0 - 2000	Vulnerable

4.4.4 Marine Mammals

4.4.4.1 Cetaceans

Compared to the Central and Northern North Sea, the Southern North Sea generally has a relatively lower density of marine mammals, with the exception of the Harbour Porpoise (*Phocoena phocoena*). According to BEIS (2022a), while over ten species of cetaceans have been recorded in the Southern North Sea, only the Harbour Porpoise and White-Beaked Dolphin (*Lagenorhynchus albirostris*) can be considered as regularly occurring throughout most of the year. However, although the White-Beaked Dolphin is a regular visitor, its abundance is low, as indicated in the SCANS-IV survey, as presented in Section 4.4.4.1.1 below. The Minke Whale (*Balaenoptera acutorostrata*) as a frequent seasonal visitor. Bottlenose Dolphin (*Tursiops truncatus*) and the Atlantic White-Sided Dolphin (*Lagenorhynchus acutus*) can be considered uncommon visitors (BEIS, 2022a).

All cetacean species are European Protected Species (EPS) (listed in Annex IV of the EC Habitats Directive) and are afforded protection under Conservation of Offshore Marine Habitats and Species Regulations 2017.

4.4.4.1.1 SCANS Surveys

The Small Cetacean Abundance of the North Sea (SCANS) aerial and ship-based surveys identified the abundance and density of cetacean species within predefined sectors. The survey has been conducted at intervals of eight to eleven years since 1994. The years in which the SCANS surveys were conducted were 1994 (SCANS), 2005 (SCANS-II), 2016 (SCANS-III) and most recently 2022 (SCANS-IV). The surveys covered the North Sea, Celtic Sea, and continental European Atlantic waters (Gilles *et al.*, 2023). The SCANS-IV survey area consists of 1,467,358 km² and is divided into sectors.

Trent is located within the SCANS-IV block NS-C. In the previous SCANS, the same area was classified as 'O' North Sea (Hammond *et al.*, 2021). Block NS-C is 60,203 km², which is approximately 4.1% of the overall survey area. In SCANS-IV, the estimates of abundance and density of a total of eleven species or groups were established. Of these, five species were recorded in the NS-C survey area, namely Harbour Porpoise (*P. phocoena*), White-Beaked Dolphin (*L. albirostris*), Bottlenose Dolphin (*T. truncatus*), Minke Whale (*B. acutorostrata*) and Common Dolphin (*D. delphis*).

Table 4.9 presents a summary of abundance and density of these five species for the Block NS-C survey area, the whole of the North Sea survey area and the total survey area. The species with the highest abundance and density in Block NS-C is the Harbour Porpoise, with density of 0.6027 individuals/km², is higher than for the North Sea (0.55 individuals/km²) and the total

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surveyed area (0.2789 individuals/km²), suggesting that Block NS-C is important for this species. This correlates with the designation of a portion of this area as the SNS SAC for Harbour Porpoises. The Harbour Porpoise abundance in the North Sea has remained steady in the past thirty years (Gilles *et al.*, 2023).

The White-Beaked Dolphin has a relatively low abundance (894 individual out of 67,138) in Block NS-C but a relatively high density (0.333 individuals/km²). Bottlenose Dolphin, Minke Whale, and Common Dolphin (*Delphinus delphis*) were recorded at very low densities (0.0419, 0.0068 and 0.0032 individuals/km² respectively). Refer to Table 4.9.

Figure 4.14 presents the density and abundance of cetaceans from the SCANS-IV survey.

Table 4.9. SCANS-IV cetacean abundance and density for Block NS-C and total survey area (Gilles *et al.*, 2023).

Species*	SCANS-IV Block NS-C		North Sea Only		Total Survey Area	
	Abundance	Average Density ¹	Abundance	Average Density ¹	Abundance	Average Density ¹
Bottlenose Dolphin	2,520	0.0419	2,730	0.02	80,809	0.0551
Common Dolphin	192	0.0032	1,814	0.01	317,527	0.2164
Harbour Porpoise	36,286	0.6027	338,918	0.55	409,244	0.2789
Minke Whale	412	0.0068	7,853	0.02	12,417	0.0085
White-Beaked Dolphin	894	0.333	46,300	0.09	67,138	0.091

¹ Density is the number of animals per km².

* All listed cetacean species are on the UK Priority Marine Species.

4.4.4.1.1 Marine Mammal Management Units

The Inter-Agency Marine Mammal Working Group (IAMMWG) has identified Marine Mammal Management Units (MU) to collate data on the geographical range and abundance of marine mammals, and therefore to help understand the potential effects of anthropogenic activities on populations (IAMMWG, 2023). The North Sea MU includes the entire Greater North Sea, including the UK, Dutch and Norwegian waters.

The abundance of cetacean species within their respective MU is presented in Table 4.10 and indicates that Harbour Porpoises are the most abundant species in the North Sea compared to the other cetacean species found there. The Common Dolphin is the next most abundant within the UK sector of its MU, however the species was not recorded in significant numbers in SCANS-IV Block NS-C, suggesting they are more prevalent in other part of the North Sea.

Table 4.10. Estimates of cetacean abundance in the relevant marine mammal MUs (IAMMWG, 2023).

Species	Management Unit	Abundance in MU	95% Confidence Interval for MU	Abundance in UK portion of MU	95% Confidence Interval for UK portion
Bottlenose Dolphin	Greater North Sea	2,022	548 - 7,453	1,885	476 - 7,461
Harbour Porpoise	North Sea	346,601	289,498 - 419,967	159,632	127,442 - 199,954
Common Dolphin	Celtic and Greater North Seas	102,656	58,932 - 178,822	57,417	30,850 - 106,863
Minke Whale		20,118	14,061 - 28,786	10,288	6,210 - 17,042
White-Beaked Dolphin		43,951	28,439 - 67,924	34,025	20,026 - 57,807

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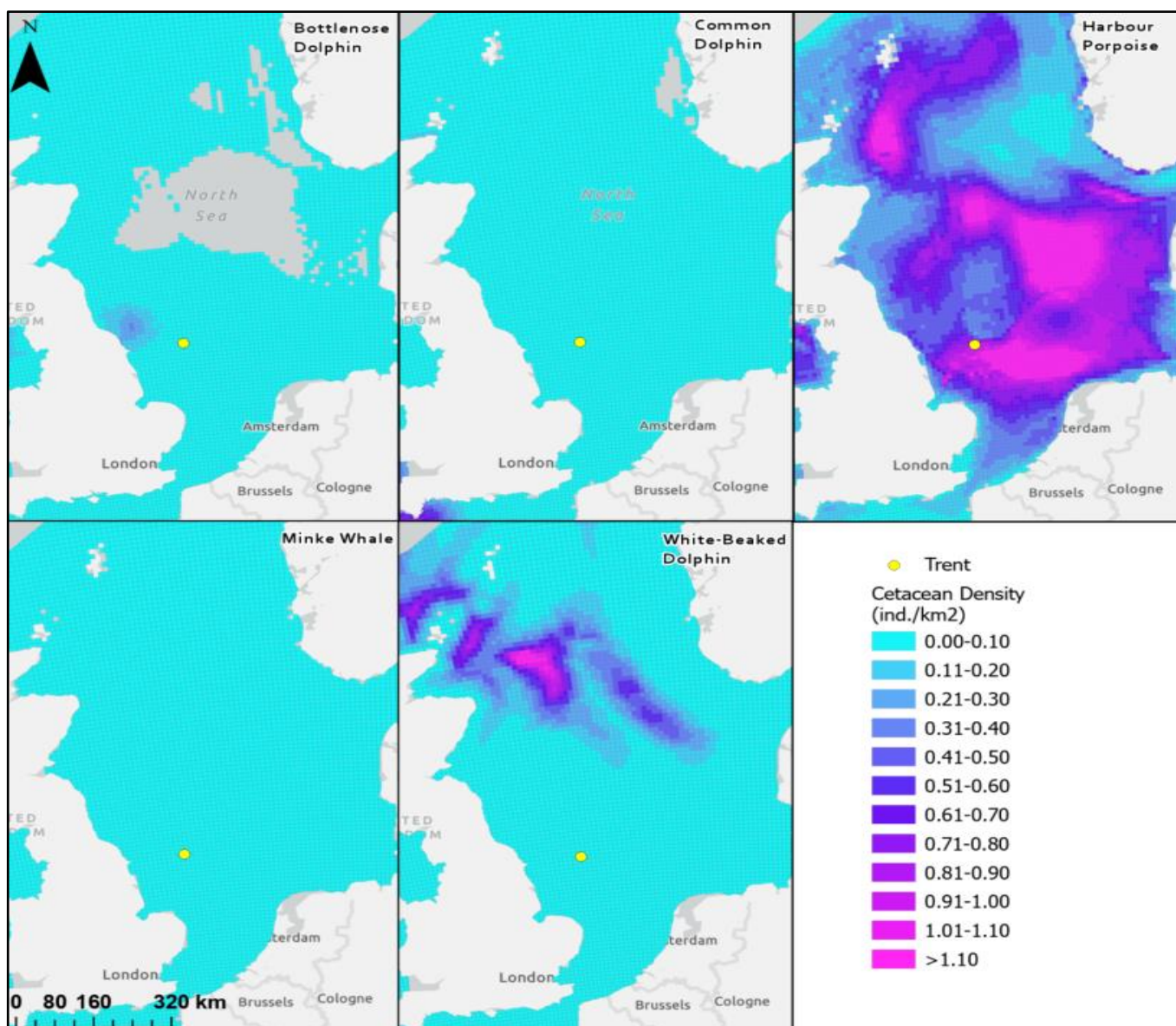


Figure 4.14. Density maps of cetaceans found in Block NS-C of the SCANS IV Survey (Stiftung Tierärztliche Hochschule Hannover, 2026).

4.4.4.1.2 Atlas of Cetacean Distribution in North-West European Water

The Atlas of Cetacean Distribution in North-West European Water (Reid *et al.*, 2003) provides a comprehensive review of cetacean sightings in northwest European waters for each ICES Rectangle. Although the data is over twenty years old and may be dated, it is useful to consider in comparison to the more recent data presented above.

The seasonal sightings data for ICES Rectangle 37F1 is summarised in Table 4.11. The species with the most frequent sightings in 37F1 is the Harbour Porpoise. The species with the least number of sightings are Bottlenose Dolphins and Pilot Whales (Reid *et al.*, 2003).

It is important to note that the lack of recorded sightings does not necessarily preclude the presence of a species at a certain time of year. In addition, the highly mobile nature of cetaceans means that species that are found within the area in general, such as the Harbour Porpoise, White-Beaked Dolphin and White-Sided Dolphin may be present at other times of the year.

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Table 4.11. Cetacean sightings within ICES Rectangle 37F1 (Reid *et al.*, 2003).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Harbour porpoise				3	3		3	3	3	3	3	
Bottlenose Dolphin											3	
Minke whale							3	3				
Pilot whale								3				
White-beaked dolphin			3		3		3			3		

Key

1	High density (>100)	2	Moderate density (10-100)	3	Low density (0.01-10)		No Sightings
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4.4.4.1.3 Harbour Porpoise and the Southern North Sea SAC

The Harbour Porpoise (*Phocoena phocoena*) is listed under Annex II of the EC Habitats Directive, a status that obliges member states to afford protection to species and habitats through the designation of SAC. The Southern North Sea SAC has been identified as an area of importance for the Harbour Porpoise. This site includes key Winter (October to March) and Summer (April to September) habitat areas for this species and covers an area of 36,951 km², supporting an estimated 17.5 % of the UK North Sea Management Unit population. Trent is located within the summer area of the Southern North Sea SAC.

The conservation objectives of the Southern North Sea SAC are to ensure that the integrity of the site is maintained and that it makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters (JNCC, 2019a) by ensuring:

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

Conservation Objective 2 of the Southern North Sea is: *There is no significant disturbance of the species*. Disturbance is considered significant if it leads to the exclusion of harbour porpoise from a significant portion of the site. Noise disturbance within an SAC from a plan/project individually or in combination is significant if it excludes harbour porpoises from more than:

- 1) 20% of the relevant area of the site in any given day, and
- 2) An average of 10% of the relevant area of the site over a season (JNCC, 2019a).

4.4.4.2 Pinnipeds

Two species of pinnipeds (seals), the Grey Seal (*Halichoerus grypus*) and the Harbour (or Common) Seal (*Phoca vitulina*), are found in the North Sea around the east English coast. Both species are listed under Annex II of the EC Habitats Directive and are also protected under the Conservation of Seals Act 1970 (from 0 to 12 nautical miles from the coast).

Along the east coast of England there are established colonies of seals present at recognised locations from Donna Nook to the North, at the mouth of the Humber, and south to Scroby Sands near Great Yarmouth. Further south there are additional colonies along the coasts of Essex and Kent. The seal populations are monitored annually by the Natural Environment Research Council Special Committee on Seals (SCOS). Populations along Southeast England in 2023 are presented in Table 4.12.

Table 4.12. Estimated populations of seals in Southeast England 2023 (Sea Mammal Research Unit, 2025; SCOS, 2024; OSPAR, 2023).

Seal Species	Donna Nook	The Wash	Titchwell	Blakeney Point	Horsey	Scroby Sands	Yarmouth	Total UK Waters
Grey Seal	6,020	1,092	0	504	219	1,971	2	168,400
Harbour Seal	97	2,500	23	153	17	32	40	40,525

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Data gathered by Carter *et al.* (2020) on Grey and Harbour Seals shows the predicted distribution maps for providing estimates per species of relative at-sea density for seals hauling-out in the British Isles. The relative at-sea density refers to the density per species on a 5 km x 5 km grid relative to the total population size in the British Isles and where cells in each species' predicted mean density surface sum to 100% (Carter *et al.*, 2020).

Note that previous seal distribution maps for the British Isles, such as that by Russell *et al.* (2017), have presented the absolute density (number of seals) rather than the relative density (% at-sea population) as used by Carter *et al.* (2020). Relative density for seal distribution estimates is more advantageous as they are independent of scaling factors, while still being readily convertible to absolute density estimates, as more accurate scaling factors become available (Carter *et al.*, 2020).

Grey Seals

The UK Grey Seal population increased at a rate of approximately 1.5% between 2022 and 2023, with pup production in all east coast SMU's (including SE England) continuing to increase (SCOS, 2024). Overall, the UK Grey Seal population has increased since the late 2000s and is now close to the late 1990s level prior to the 2002 Phocine Distemper Virus epizootic. However, there are significant differences in the population dynamics between the regions. Like all seals, Grey Seals (*H. grypus*) spend a significant proportion of their time hauled out on land during the breeding, moulting and pupping seasons and between tides and foraging trips. Grey Seals in the UK spend longer hauled out during their annual moult (between December and April) and during their breeding season (between August and December).

Grey Seals forage down to depths of 100 m and at distances of up to 100 km from their haul-out sites. Models of marine usage by grey seals show that there are high levels of foraging activity along the east coast of England. The areas of high Grey Seal density (0.06 to 0.1 individuals per 5km x 5km) concentrated towards the coastline and up to 50 m offshore, as presented in Figure 4.15. The mean predicted relative density for Grey Seals around Trent is low and ranges from 0.002 to 0.005 individuals per 5km x 5km (Carter *et al.*, 2020).

Harbour Seals

Harbour seals (*P. vitulina*) are the smaller of the two species and tend to be found closer to the UK coast. As with grey seals, the UK harbour seal population is predominantly found around the Scottish coast with smaller colonies around The Wash and along the east coast of England. Based on the 2023 count survey (SCOS, 2024), the total UK harbour seal population is estimated to be 40,525, with 3,361 along the southeast English coastline. This represents a decrease nationally of approximately 6.5% compared to previous counts from 2011 to 2019 (SCOS, 2024).

Harbour seals are restricted to their haul-out sites and the surrounding waters during pupping (June and July) and during their annual moult (August) (SCOS, 2024). This species can be found offshore from late August through to the following June and tends to forage within 40 – 50 km of its haul-out sites. In comparison to Grey Seals, important areas for Harbour Seals are concentrated around the coastline at The Wash. The mean predicted relative density at-sea for Harbour Seals at Trent is very low (< 0.002 individuals per 5km x 5km), as presented in Figure 4.15.

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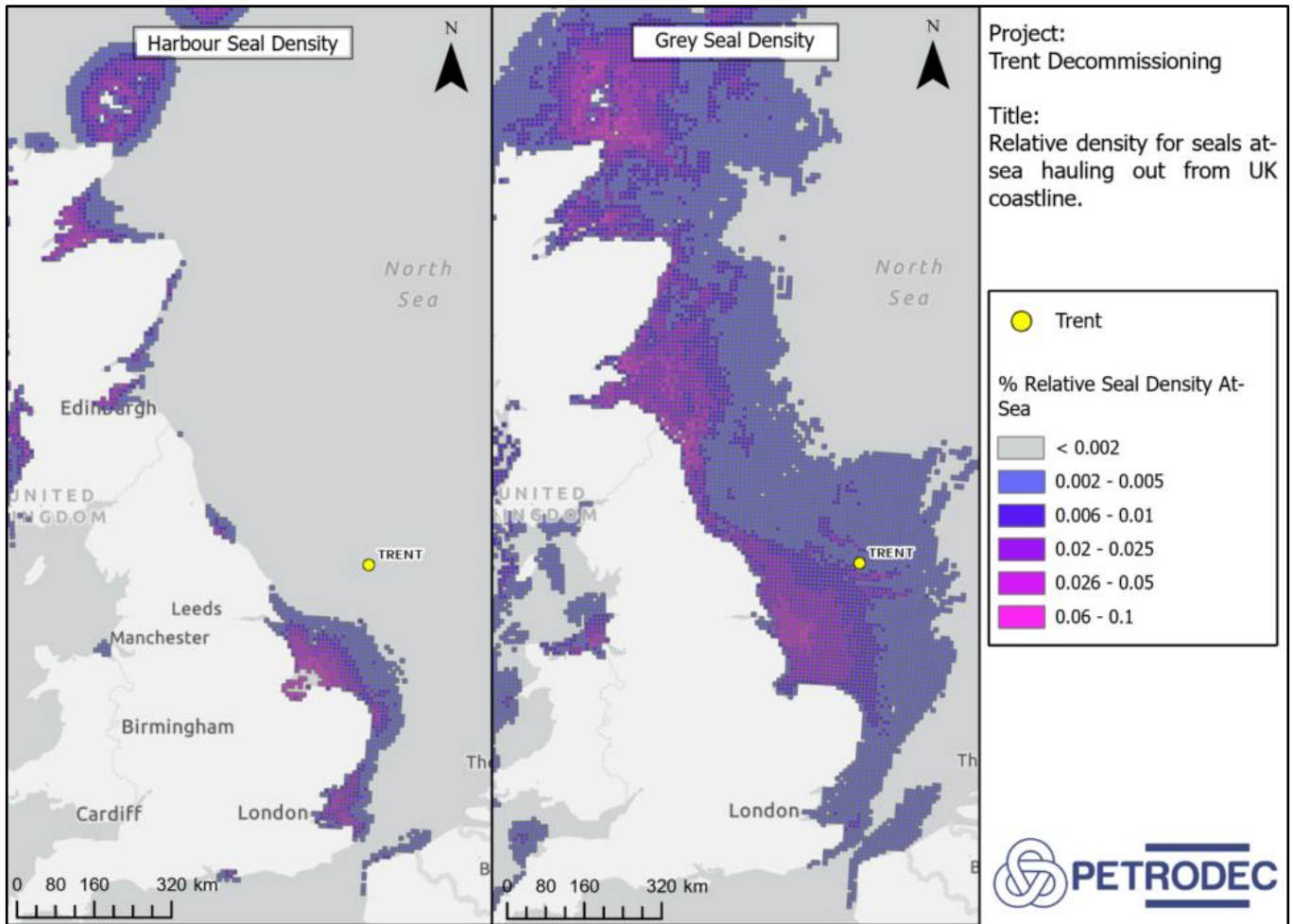


Figure 4.15. At-sea distribution of Harbour Seals and Grey Seals in relation to Trent.

4.4.5 Seabirds

Seabird distribution and abundance in the Southern North Sea varies throughout the year, with offshore areas in general containing peak numbers of birds following the breeding season and through winter. Zones where water masses meet, hydrographic fronts can have enhanced primary productivity and aggregations of other marine organisms, including birds. A year-round frontal system off the coast of Flamborough Head – the Flamborough Front – is an important hydrographic feature close to the boundary between Regional Seas 1 and 2.

The numbers of seabirds at sea are generally lower in Regional Sea 2 compared with waters further north. In October, there is a southward shift of common guillemot and razorbill populations with high concentrations of auks offshore, particularly in the area of southern gas fields off Norfolk and Lincolnshire (BEIS, 2022a). The counties along the east and south-east of England support an array of breeding seabirds, some of importance in a national and international context.

The most important seabird breeding colonies in Regional Sea 2 (listed in geographical order, from north to south) are Flamborough and Filey Coast for Black-legged kittiwake, common guillemot, razorbill, northern gannet; Humber Estuary and Gibraltar Point for little terns, and The Wash for common tern and little tern (BEIS, 2022a).

4.4.5.1 Coastal Birds

The extensive network of cliffs, sheltered bays, coastal wetlands, and estuarine areas along the east coast of England provide breeding and wintering grounds for nationally and internationally important numbers of individual bird species and assemblages. This area includes a number of areas suitable for cliff nesting seabirds and some of the most important sites for wintering and passage waterbirds, including the Wash and Thames Estuary (BEIS, 2022a).

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Flamborough and Filey Coast are important for breeding seabirds such as Black-Legged Kittiwakes, Common Guillemots, Razorbills, and Northern Gannets. The Humber Estuary and the Wash are recognised coastal bird sites and are important for supporting wintering birds. Humber Estuary and the Wash are designated SPAs. They also provide suitable breeding grounds for tern species (Common Tern (*Sterna hirundo*), Little Tern (*Sternula albifrons*), and Sandwich Tern (*Thalasseus sandvicensis*)).

4.4.5.1.1 Overwintering Coastal Birds in SPAs

The Greater Wash SPA and Outer Thames Estuary SPA are important areas in Britain for wintering waterbirds, moulting waders (early autumn), breeding waders, terns, and other seabirds (BEIS, 2022a). Refer to Figure 4.16 for the location of Trent and the supply vessel ports in relation to these SPAs.

The Greater Wash SPA covers an area of 3,536 km² and lies along the east coast of England in the mid Southern North Sea and extends between the counties of Yorkshire (to the north) and Suffolk (to the south). The Greater Wash SPA is classified for the protection of the non-breeding seabirds Red-Throated Diver (*Gavia stellata*), Common Scoter (*Melanitta nigra*), and Little Gull (*Hydrocoloeus minutus*).

The Outer Thames Estuary SPA covers an area of approximately 3,924 km² and is classified for the protection of wintering Red-Throated Diver. This area supports the largest aggregations of wintering Red-Throated Diver in the UK, which accounts for 38% of the total Red-Throated Diver population in Great Britain.

The conservation objectives apply to both the Greater Wash and Outer Thames Estuary SPAs. The objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and to ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

1. The extent and distribution of the habitats of the qualifying features;
2. The structure and function of the habitats of the qualifying features;
3. The supporting processes on which the habitats of the qualifying features rely;
4. The population of each of the qualifying features; and
5. The distribution of the qualifying features within the site.

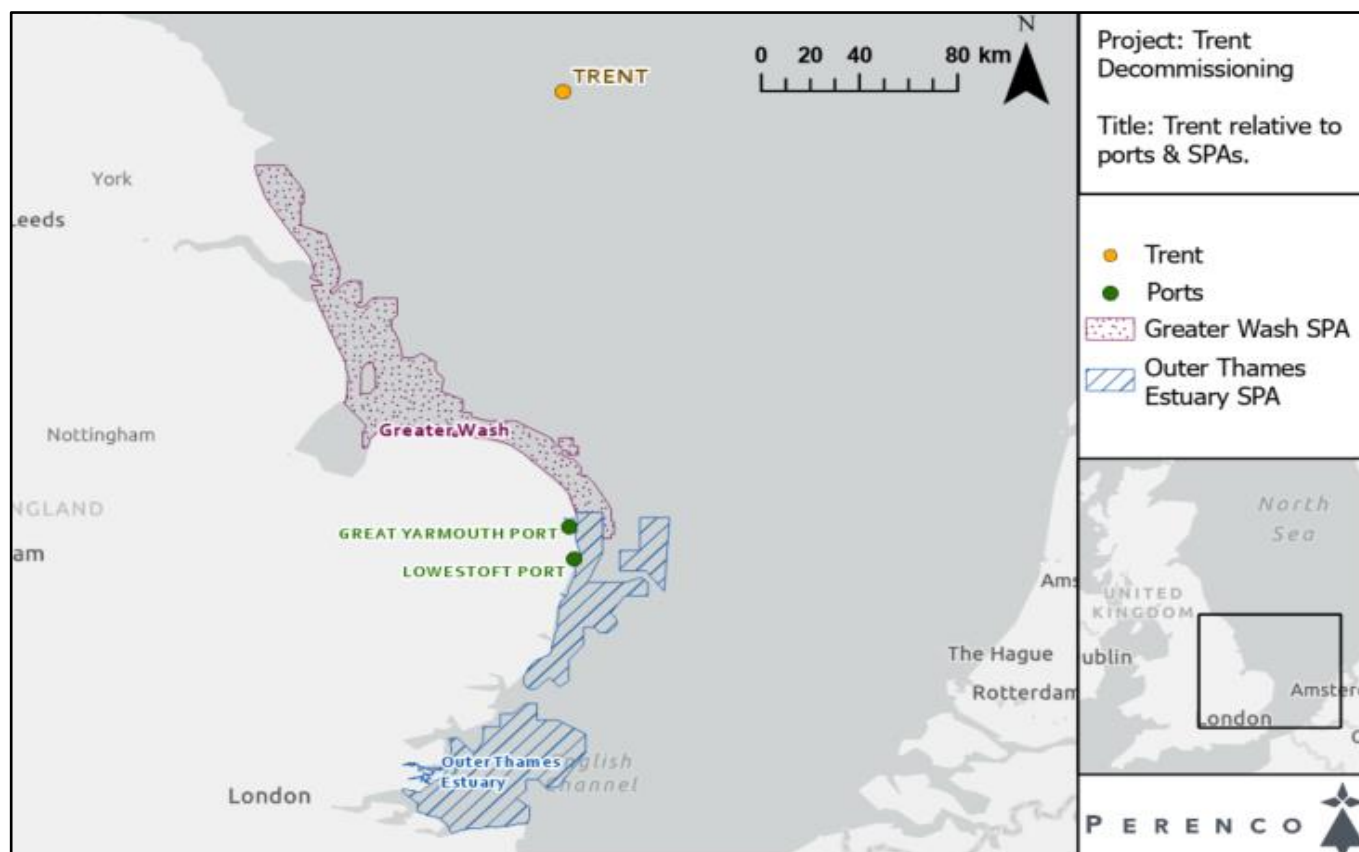


Figure 4.16. Trent relative to the Greater Wash and Outer Thames Estuary SPAs and supply vessel ports.

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4.4.5.2 At-Sea Distribution of Seabirds

The European Seabirds at Sea (ESAS) database has been recording and monitoring the distribution of seabirds at sea, compiling a range of boat and transect data, since 1979 (ESAS, 2026). The Kober *et al.* (2010) data is used to predict at-sea seabird density in the vicinity of the Trent. The report indicates that the Trent does not lie within a hotspot area, which is defined as an important area of high seabird density at sea (Kober *et al.*, 2010).

Kober *et al.* (2010) predicts a density of 23 seabirds per km² during the breeding season (typically March to September) and in winter (November to March), and migration or additional seasons, such as time of post-breeding moult, were also described for a few relevant species. The most abundant species present in the vicinity of Trent are Guillemots (*Uria aalge*) during the post-breeding dispersal season and Northern Fulmar (*Fulmarus glacialis*) during the winter season. However, these densities are very low when compared to the predicted density ranges across UK waters. Refer to Table 4.13.

4.4.5.3 Seabird Vulnerability to Oil Pollution

Seabird populations are particularly vulnerable to surface pollution. The vulnerability of bird species to oil pollution varies considerably throughout the year and is dependent on a variety of factors, including time spent on the water, total biogeographical population, reliance on the marine environment and potential rate of population recovery. Species considered most vulnerable to sea surface pollution are those which spend a great deal of time on the sea surface, for example, puffins, guillemots, and razorbills. Species considered to be at lower risk due to spending less time on the sea surface include gannets, cormorants, and kittiwakes.

The Seabird Oil Sensitivity Index (SOSI) has been developed to identify areas where seabirds are likely to be most sensitive to oil pollution (Webb *et al.*, 2016). The SOSI combines seabird data collected between 1995 and 2015 and individual seabird species sensitivity index values to create a single measure of seabird sensitivity to oil pollution. The SOSI score for each UKCS Block can be ranked into sensitivity categories, from 5 (low sensitivity) to 1 (extremely high sensitivity).

Regional Sea 2, with a couple of notable exceptions, has few large seabird breeding colonies, resulting in a predominately low to medium sensitivity during the breeding season; the exception being waters around the Flamborough Head/Filey/Bempton colonies (BEIS, 2022a).

Table 4.14 shows the SOSI scores for Block 43/24 and surrounding blocks. In the vicinity of Trent, seabird oil sensitivities are Extremely High in July and Very High from August to January. In May and June, the SOSI is categorised as High. The seabird sensitivities to oil are Low during Spring from February to April (Webb *et al.*, 2016).

Table 4.14. Assessment of Seabird Oil Sensitivity Index (SOSI) scores for UKCS Block 43/24 and surrounding blocks (Webb *et al.*, 2016).

UKCS Block	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
43/18	1	5	5	5	2	2	2	2	3	3	1	1
43/19	2	5	5	5	3	3	1	2	3	3	2	2
43/20	2	5	5	5	4	4	1	3	4	4	2	2
43/23	1	5	5	5	2	2	2	3	2	2	1	1
43/24	2	5	5	5	3	3	1	2	2	2	2	2
43/25	2	5	5	5	4	4	1	2	3	3	2	2
43/28	1	5	5	5	3	3	1	4	1	1	1	1
43/29	2	5	5	5	3	3	1	4	2	2	2	2
43/30	2	5	5	5	2	2	1	4	3	3	2	2

Key: 1= Extremely High; 2 = Very High; 3 = High; 4 = Medium; 5 = Low; 'N'= No Data.

SOSI sensitivity category in **green** indicates the block in which the Trent is located.

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Table 4.13. Predicted at-sea seabird density within a 5 km radius of Trent (individuals per km²) (JNCC, 2019b; Kober *et al.*, 2010).

Species		Season	Predicted Density (individuals per km ²)												Predicted density across UK Waters
Common Name	Scientific name		J	F	M	A	M	J	J	A	S	O	N	D	
Arctic Skua	<i>Stercorarius parasiticus</i>	Breeding						0							0 – 2.4
		Other										0			0 – 1.1
Arctic Tern	<i>Sterna paradisaea</i>	Breeding						0							0 – 31.2
Black-Headed Gull	<i>Larus marinus</i>	Breeding						0							0 – 12.0
		Winter		0								0			0 – 28.5
Common Gull	<i>Larus canus</i>	Breeding						< 0.1							0 – 2.6
		Winter		0								0			0 – 39.9
Common Tern	<i>Sterna hirundo</i>	Breeding						0							0 – 6.5
Fulmar, Northern	<i>Fulmarus glacialis</i>	Breeding					1.7								0 – 583
		Winter	4.9								4.9				0 – 239.2
Gannet	<i>Morus bassanus</i>	Breeding						< 0.1							0 – 110.5
		Winter		2.0								2.0			0 – 24.9
Glaucous Gull	<i>Larus hyperboreus</i>	Winter		0								0			0 – 0.81
Great Black-Backed Gull	<i>Larus marinus</i>	Breeding						< 0.1							0 – 4.8
		Winter		1.0								1.0			0 – 19.5
Great Skua	<i>Stercorarius skua</i>	Breeding						< 0.1							0 – 1.6
		Winter		< 0.1								< 0.1			0 – 4.3
Guillemot	<i>Uria aalge</i>	Breeding					3.2								0 – 713
		Winter		2.9								2.9			0 – 62.7
		Dispersal								10.1					0 – 254.8
Herring Gull	<i>Larus argentatus</i>	Breeding						0							0 – 44.8
		Winter		0.2								0.2			0 – 101.9
Kittiwake	<i>Rissa tridactyla</i>	Breeding						1.6							0 – 185.0
		Winter		2.2								2.2			0 – 306.8
Leach's Storm Petrel	<i>Hydrobates leucorhous</i>	Breeding						0							0 – 28.0
Lesser Black-Backed Gull	<i>Larus fuscus</i>	Breeding						< 0.1							0 – 351.7
		Winter		< 0.1								< 0.1			0 – 368.8
Little Auk	<i>Alle alle</i>	Winter		< 0.1									< 0.1		0 – 13.4
Little Gull	<i>Larus minutus</i>	Breeding						0							0 – 3.7
		Autumn									< 0.1				0 – 5.2
Manx Shearwater	<i>Puffinus puffinus</i>	Breeding						0							0 – 190.2
Pomarine Skua	<i>Stercorarius pomarinus</i>	Spring					0								0 – 2.2
		Autumn									0				0 – 2.2
Puffin	<i>Fratercula arctica</i>	Breeding						0.6							0 – 162.4
		Winter		0.5								0.5			0 – 0.14
Razorbill	<i>Alca torda</i>	Breeding					< 0.1								0 – 22.0
		Winter		< 0.1								< 0.1			0 – 15.8
Sandwich Tern	<i>Thalasseus sandvicensis</i>	Breeding						0							0 – 1.1
Sooty Shearwater	<i>Ardenna grisea</i>	Winter									< 0.1				0 – 16.3

Key:

> 10.0	4.0 – 10.0	1.0 - < 4.0	< 1.0	0	No Occurrence
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4.4.5.4 Kittiwakes Nesting on Offshore Installations

Evidence suggests that Black-Legged Kittiwakes are the predominant bird species exploiting nesting opportunities on offshore installations in the Southern North Sea. Although most kittiwake colonies are located on sheer cliffs, the species is known to nest on man-made structures such as offshore oil and gas installations (JNCC, 2025a).

There are estimated to be 241,321 breeding pairs of Kittiwakes within the UK, comprising 6% of the world's breeding population of kittiwakes (Burnell *et al.*, 2024). Colony size can vary from less than ten pairs to tens of thousands, with individuals returning to the same colony over multiple years. The nearest major colony to the Trent is the Flamborough and Filey Coast Special Protection Areas (SPA), which supported 45,504 Apparently Occupied Nests (AONs) in 2017 (Aitken *et al.* 2017).

Kittiwakes are one of the most abundant species of seabird, but UK populations are declining, and the Kittiwake is on the OSPAR List of Threatened and/or Declining Species and Habitats and Red listed in Birds of Conservation Concern (BTO, 2024). From 2000 to 2023, the UK population of kittiwake has declined by 32% (BTO, 2024). Reasons which could attribute to this decline in population include changes in food availability due to overfishing and rising sea temperatures caused by climate change. Further pressures include climate change impacting the breeding success (e.g., increased frequency of extreme weather events washing away nests), potential foraging displacement, and collisions with the development of offshore windfarms (BTO, 2024).

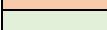
The phenology of nesting kittiwakes is summarised in Table 4.15, although timings can vary from year to year due to factors such as lack of food. Once the chicks start hatching in June, they are particularly vulnerable to human disturbance. The level of human disturbance experienced by seabirds in a particular region is generally related to the degree of human development in that region (Chardine & Mendenhall, 1998). This un-natural environment (offshore platform rather than cliff side) and the existing levels of disturbance (varying human contact via helicopter, vessel interactions or manned installation contact), all enhance the unpredictability of quantifying the true impact of humans on large offshore colonies.

The Conservation of Offshore Marine Habitats and Species Regulations 2017, Part 3, section 40 (as amended), gives protection to wild birds, their eggs, and nests in UK offshore waters. The presence of wild birds on an installation may therefore affect the timing of the proposed decommissioning activities (JNCC, 2025a).

Table 4.15. Kittiwake nesting status (adapted form Table 1 of JNCC (2025a)).

Month	Breeding/ Nesting?	Nesting Status
January	No	Existing nests washed away.
February		Birds start to return to establish territories.
March		Birds will not remain overnight at the colony.
April (early)		Birds return to colony during day.
April (late)	Yes	Pairs re-establish and begin nest building.
May	Yes	Nest building continue, eggs laid. Birds remain at colony overnight.
June to July	Yes	Chicks hatch. Parents look after chicks in turns.
July to August	Yes	Chicks begin to fly and depart the colony for up to 24-hours but will return to the nest to roost.
September	No	Final chick fledges. Adults depart colony.
Oct to Dec	No	No birds present.

Legend

	Typical Kittiwake nesting/breeding timeframe.
	Period of year when no nesting/breeding occurs.

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4.4.5.4.1 Seabird Surveys of Trent

Perenco UK commissioned ornithologists to carry out seabird nesting surveys of their offshore assets in 2023, 2024 and 2025, including Trent. No nesting seabirds were present on the Trent installations either year. It is unlikely that there will be any successful nesting activity initiated during upcoming breeding seasons (RSK Biocensus 2023; Xodus, 2024; Xodus, 2025).

4.5 Offshore Conservation Management & Marine Planning

4.5.1 Conservation Areas

The UK is party to a number of international agreements to establish an ecological network of Marine Protected Areas (MPAs) in UK waters. The UK implemented Directives relevant to MPAs include the EC Birds and EC Habitats Directives and under the requirements of the European Marine Strategy Framework Directive and Convention on Biological Diversity.

As a signatory to the OSPAR Convention Recommendation 2003/3, the UK has established an ecologically coherent and well-managed network of MPAs across the North-east Atlantic. These commitments are transposed through national legislation and regulations.

The main types of Marine Protected Areas (MPAs) in UK waters are:

- **Special Areas of Conservation (SACs)** (also known as European Sites of Community Importance; SCIs) which are designated for habitats and species listed under the EU Habitats Directive. These qualifying features include three marine habitat types (sandbanks which are slightly covered by seawater all the time, reefs, and submarine structures made by leaking gases) and four marine species (Grey Seal, Harbour Seal, Bottlenose Dolphin, and Harbour Porpoise). There are 116 SACs with marine components within the UK (JNCC, 2023).
- **Special Protection Areas (SPAs)** which are designated to protect birds under the EU Wild Birds Directive. The Directive requires conservation efforts to be made across the sea and land area. In the UK, 123 SPAs with marine components have been designated, including four wholly marine SPAs (JNCC, 2023).
- **Marine Conservation Zones (MCZs)** which are designated under the Marine and Coastal Access Act (2009) to protect nationally important marine wildlife, habitats, geology, and geomorphology and can be designated anywhere in UK territorial or UK offshore waters. To date, there are 91 designated MCZs in UK waters (JNCC, 2023).

The OSPAR MPAs encompass existing MPAs designated under existing legislation and Conventions including SACs, SPAs and MCZs (JNCC, 2023). Other international designations such as Ramsar Wetlands of International Importance (hereafter referred to as Ramsar sites), and national designations such as Sites of Special Scientific Interest (SSSIs) also form part of the UK MPA network through their protection of marine, coastal terrestrial and geological features. Ramsar Wetlands are afforded the same protection as MPAs.

The Treaties within the Southern North Sea SAC (summer area). Table 4.16 presents the qualifying features and a description for MPAs located within 40km of the Trent. Figure 4.17 shows the MPAs in the vicinity of the Trent installation, including those outside of the 40 km buffer zone.

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Table 4.16. Marine protected areas within 40 km of the Trent.

Site Name	Distance & Direction	Qualifying Features and Site Description
Southern North Sea SAC (Summer Area)	0 km (within)	Features: Annex II species; Harbour porpoise (<i>Phocoena phocoena</i>) (1351). Description: The site has been identified as an area of importance for harbour porpoise and supports 17.5% of the UK North Sea MU population. This site covers an area of 36,951km². The majority of this site lies offshore, though it does extend into coastal areas of Norfolk and Suffolk. The northern two thirds of the site are recognised as important for porpoises during the summer season (April – September), whilst the southern part (plus a small section in the northwest), supports persistently higher densities during the winter (October – March).
Dogger Bank SAC	9.6 km north	Features: Annex I habitats: Sandbanks which are slightly covered by seawater all the time (1110). Description: The Dogger Bank is the largest single continuous expanse of shallow sandbank in UK waters, the southern area of the bank is covered by water seldom deeper than 20 m and extends within the SAC in UK waters down to 35–40 m deep. The site covers an area of 12,331 km². The site is an important location for the North Sea Harbour Porpoise population and as such, they are included as a non-qualifying feature. Grey and Common Seals are known to visit the bank and are also included as non-qualifying features at the site. Sediments range from fine sands containing many shell fragments on top of the bank to muddy sands at greater depths supporting invertebrate communities, characterised by Polychaete Worms, Amphipods and small clams within the sediment, and Hermit Crabs, Flatfish, Starfish and Brittlestars on the seabed. Sandeels are an important prey source at the bank, supporting fish, seabirds, and cetaceans.

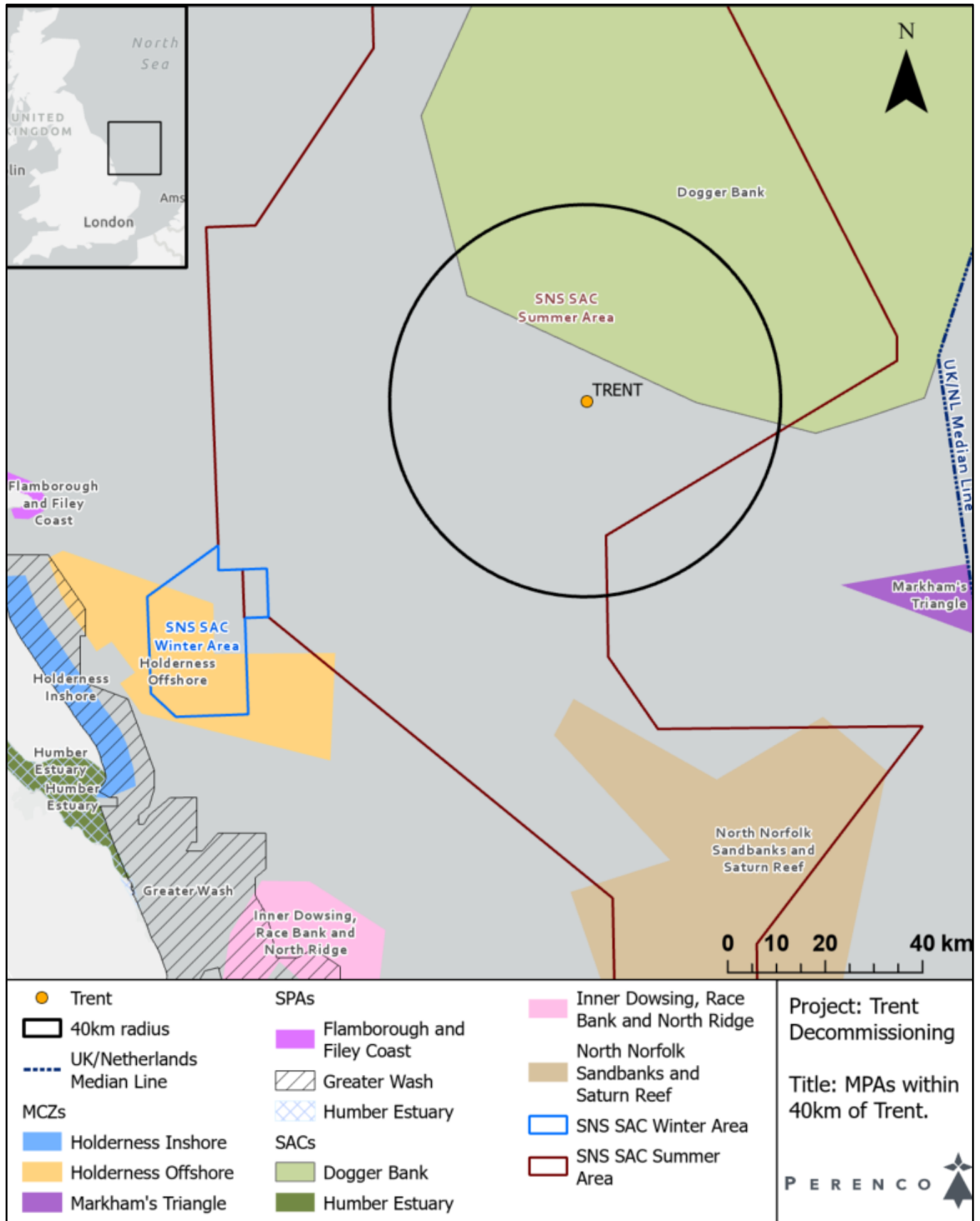


Figure 4.17. Marine Protected Areas within a 40 km radius of the Trent.

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4.5.2 Marine Planning

Through the Marine and Coastal Access Act 2009, the UK Government introduced several measures to deliver its vision of ‘clean, healthy, safe, productive, and biologically diverse oceans and seas’. This included the introduction of a new marine planning system with the Marine Management Organisation (MMO) being delegated several marine planning functions. Note that OPRED manage several licencing functions pertaining to offshore energy activities rather than the MMO. Marine plans, together with the overarching Marine Policy Statement underpin the new planning system for inshore and offshore activities.

The Trent decommissioning campaign will be undertaken within the East Offshore marine plan area. The East Offshore Marine Plan Area encompasses an area of approximately 49,000 km². The area is predominantly open, expansive, shallow water supporting oil and gas platforms and commercial activities such as shipping, aggregate extraction, and fishing. Designated shipping routes, cables infrastructure and oil and gas pipelines cross the offshore area linking the United Kingdom mainland with Europe. The area also contains a wealth of archaeological sites and heritage assets (DEFRA, 2014).

The marine plans associated with these areas aim to provide a clear spatial approach to the East Offshore areas, their resources, and the activities and interactions that take place within them. It is intended that these marine plans will help ensure the sustainable development of the marine area (DEFRA, 2014).

PUK have considered throughout the Environmental Appraisal process the objectives and policies in the East Offshore Marine Plan that may be relevant to the proposed activities in order to allow for sustainable use of the marine environment. Table 4.17 outlines the objectives and associated policies to which the proposed activities at Trent have been assessed against.

Table 4.17. Marine planning objectives and policies relevant to the Trent decommissioning campaign.

Relevant Objectives	Associated Policies	Addressed by Project
Economic Productivity - To promote the sustainable development of economically productive activities, taking account of spatial requirements of other activities of importance to the East marine plan areas.	EC1 - Proposals that provide economic productivity benefits which are additional to Gross Value Added currently generated by existing activities should be supported.	Support of the safe and cost effective decommissioning of oil & gas infrastructure in the Southern North Sea.
Employment and Skill Levels - To support activities that create employment at all skill levels, taking account of the spatial and other requirements of activities in the East marine plan areas.	EC2 - Proposals that provide additional employment benefits should be supported, particularly where these benefits have the potential to meet employment needs in localities close to the marine plan areas.	Any support will utilise local contractors, when available, and a support base close to the proposed operations.
Heritage Assets - To conserve heritage assets, nationally protected landscapes and ensure that decisions consider the seascape of the local area.	SOC2 - Proposals that may affect heritage assets should demonstrate, in order of preference: a) that they will not compromise or harm elements which contribute to the significance of the heritage asset. b) how, if there is compromise or harm to a heritage asset, this will be minimised. c) how, where compromise or harm to a heritage asset cannot be minimised, it will be mitigated against, or; d) the public benefits for proceeding with the proposal if it is not possible to minimise or mitigate compromise or harm to the heritage asset.	The Trent decommissioning campaign is not anticipated to have an impact on any heritage assets or the character of the marine area due to the limited scale and duration.



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Relevant Objectives	Associated Policies	Addressed by Project
	SOC3 - Proposals that may affect the terrestrial and marine character of an area should demonstrate, in order of preference: a) that they will not adversely impact the terrestrial and marine character of an area. b) how, if there are adverse impacts on the terrestrial and marine character of an area, they will minimise them. c) how, where these adverse impacts on the terrestrial and marine character of an area cannot be minimised, they will be mitigated against. d) the case for proceeding with the proposal if it is not possible to minimise or mitigate the adverse impacts.	
Healthy Ecosystem - To have a healthy, resilient, and adaptable marine ecosystem in the East marine plan areas.	ECO1 - Cumulative impacts affecting the ecosystem of the East marine plans and adjacent areas (marine, terrestrial) should be addressed in decision-making and plan implementation.	No significant cumulative impacts are expected to occur. Refer to Section 5 and 6.
	ECO2 - The risk of release of hazardous substances as a secondary effect due to any increased collision risk should be taken account of in proposals that require an authorisation.	The risk of an accidental release of hazardous substances, such as a diesel spill, during the project is low. Refer to Section 5 and 6.
Biodiversity - To protect, conserve and, where appropriate, recover biodiversity that is in or dependent upon the East marine plan areas.	BIO1 - Appropriate weight should be attached to biodiversity, reflecting the need to protect biodiversity as a whole, taking account of the best available evidence including on habitats and species that are protected or of conservation concern in the East marine plans and adjacent areas (marine, terrestrial).	The Trent decommissioning campaign will not significantly impact (either directly or indirectly) biodiversity as a whole. The decommissioning activity will not have a significant impact on protected habitats or species. Refer to Section 5 and 6.
Marine Protected Areas (MPAs) - To support the objectives of MPAs (and other designated sites around the coast that overlap, or are adjacent to the East marine plan areas), individually and as part of an ecologically coherent network	MPA1 - Any impacts on the overall MPA network will be taken account of in strategic level measures and assessments, with due regard given to any current agreed advice on an ecologically coherent network	The Trent decommissioning campaign will not significantly impact (either directly or indirectly) the overall MPA network. Refer to Section 5 and 6.
Governance - To ensure integration with other plans, and in the regulation and management of key activities and issues, in the East marine plans, and adjacent areas.	GOV2 - Opportunities for co-existence should be maximised wherever possible.	Residual effects from other sea users in the area are predicted to be negligible and not significant. The infrastructure removal may have positive effects, as the 500m safety zone will be removed.
	GOV3 - Proposals should demonstrate in order of preference:	Refer to Section 5 and 6.



Relevant Objectives	Associated Policies	Addressed by Project
	a) that they will avoid displacement of other existing or authorised (but yet to be implemented) activities. b) how, if there are adverse impacts resulting in displacement by the proposal, they will minimise them. c) how, if the adverse impacts resulting in displacement by the proposal, cannot be minimised, they will be mitigated against or, d) the case for proceeding with the proposal if it is not possible to minimise or mitigate the adverse impacts of displacement.	
Oil and Gas - to maximise the recovery (and transmission) of oil and gas sustainably, where it is economic to do so, is a priority for energy supply and security in the East marine plans, and adjacent areas.	OG1 - Proposals within areas with existing oil and gas production should not be authorised except where compatibility with oil and gas production and infrastructure can be satisfactorily demonstrated.	The gas field has been developed to its full potential. Refer to Section 3.
	OG2 - Proposals for new oil and gas activity should be supported over proposals for other development.	
Aggregates - to maximise the benefit of marine aggregates, where it is economic to do so, is a priority for energy supply and security in the East marine plans, and adjacent areas.	AGG1 - Proposals in areas where a licence for extraction of aggregates has been granted or formally applied for should not be authorised unless there are exceptional circumstances.	The Trent is not located close to a marine aggregate extraction area, and therefore the proposed decommissioning campaign will not impact on the extraction of aggregates in the East Offshore marine plan area. Refer to Section 5 and 6.
	AGG2 - Proposals within an area subject to an Exploration and Option Agreement with The Crown Estate should not be supported unless it is demonstrated that the other development or activity is compatible with aggregate extraction or there are exceptional circumstances.	
	AGG3 - Within defined areas of high potential aggregate resource, proposals should demonstrate in order of preference: a) that they will not, prevent aggregate extraction. b) how, if there are adverse impacts on aggregate extraction, they will minimise these. c) how, if the adverse impacts cannot be minimised, they will be mitigated. d) the case for proceeding with the application if it is not possible to minimise or mitigate the adverse impacts.	

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4.6 Socio - Economic Environment

4.6.1 Shipping and Ports

The North Sea contains some of the world's busiest shipping routes, with significant traffic generated by vessels trading between ports at either side of the North Sea and the Baltic. North Sea oil and gas fields generate moderate vessel traffic in the form of support vessels (BEIS, 2022a).

Grimsby & Immingham is the UK's busiest port, handling 11.4% of the UK's traffic (equal to 54.1Mt) in 2019. Other major ports in the area are Felixstowe and Great Yarmouth (BEIS, 2022a). Great Yarmouth is an important port along the Norfolk Coast which services the offshore sector. The density of traffic within in Block 43/24 is 'High' (NSTA, 2026a).

Figure 4.18 presents the shipping route densities from 2023 (EMODnet, 2026) in the area around Trent and the Southern North Sea. This indicates that Trent is outside of the very high density shipping routes. The vessel activity in and around the installations is likely to be offshore service vessels.

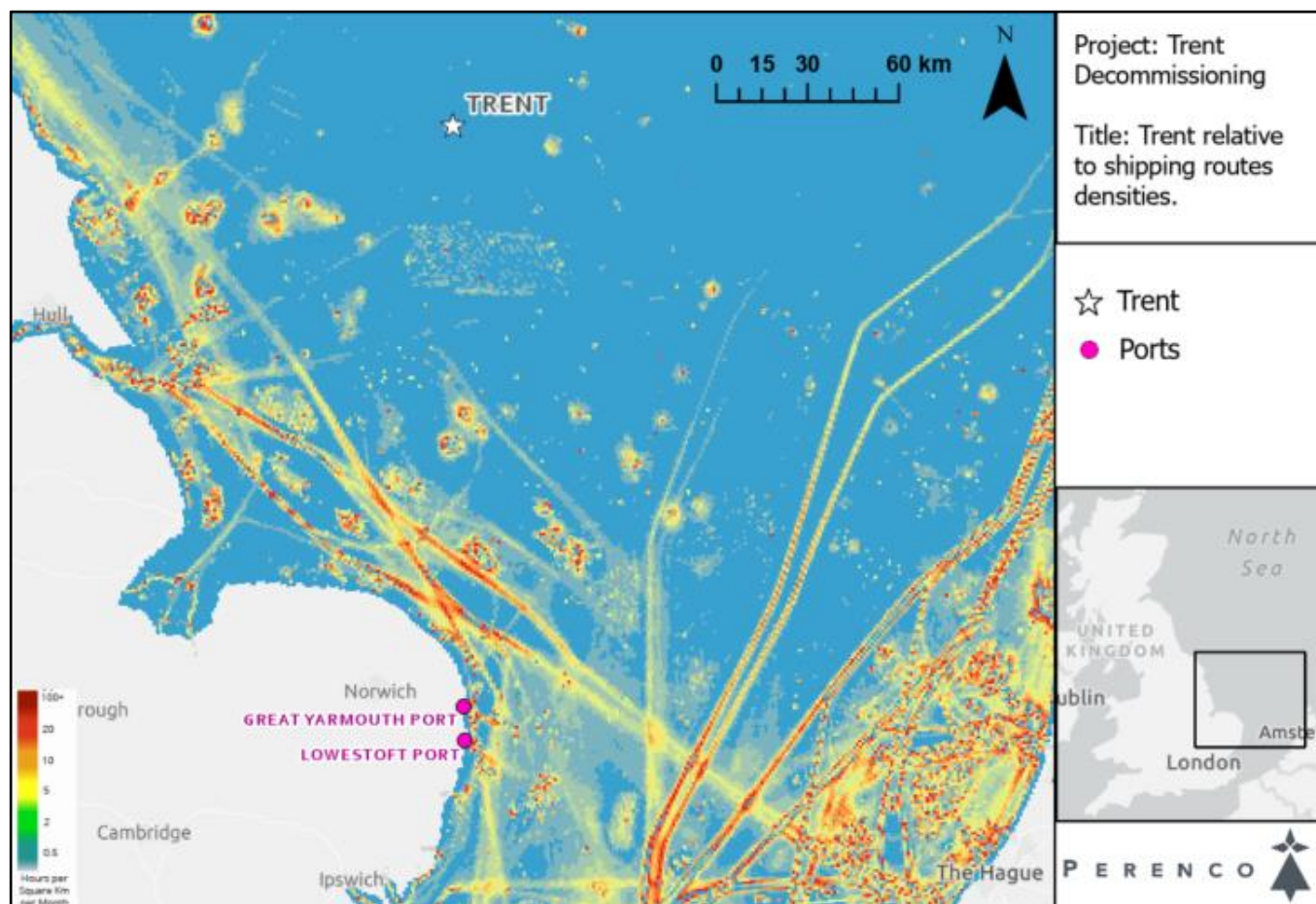


Figure 4.18. Shipping route densities within the Southern North Sea relative to Trent (EMODnet, 2026).

4.6.2 Oil & Gas Activity

Oil and gas activity within the Southern North Sea is generally high and targets a number of existing gas fields. There is significant surface and subsurface infrastructure in the vicinity of Trent, although many have now ceased production.

The nearest installation to Trent is the Kilmar gas field (non-operational) located approximately 21km west. The nearest producing field is the Cygnus field. Refer to Figure 4.19.

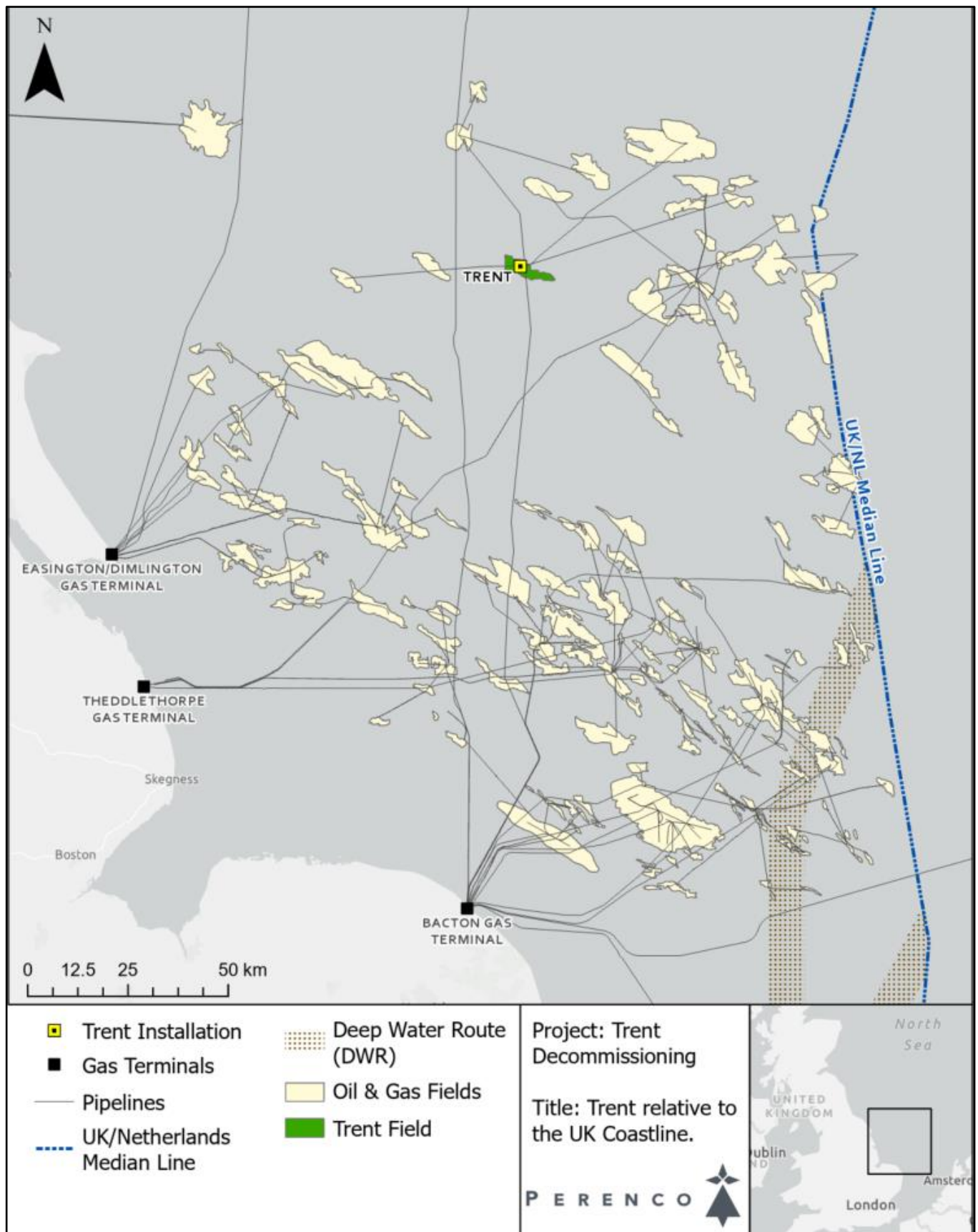


Figure 4.19. Trent relative to surrounding oil and gas infrastructure and the UK coastline.

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4.6.3 Carbon Capture Storage

Carbon Capture Storage (CCS) refers to a variety of processes which capture and store carbon dioxide emissions, generally from industrial processes. The carbon dioxide can then be transported, including via repurposed gas pipelines, and stored, for example within rock formations in the UKCS, including depleted oil and gas reservoirs (NSTA, 2026b).

The UK territory of North Sea has 13 Carbon Capture Application Areas, which are correlated to Oil and Gas fields with suitable geology to store carbon. Trent is in the Bunter Sandstone formation.

Trent is located within SNS Area 1 which is a CCS license area offered for application (NSTA, 2026c). The CCS SNS Area 1 will not be influenced or have an influence on the Trent decommissioning activity. The injected CO₂ will be retained within the structural closures of BC39 and BC40, which are located more than 4km from the Trent installation.

Within each Carbon Capture Application Area there are smaller licensed areas. Trent is located, respectively, approximately 0.7 km and 3.7 km from the CS006 and CS020 CCS licensed areas (NSTA, 2026c).

The CCS storage site 'Net Zero North Sea Storage (NZNSS) is located approximately 32.1 km southwest of Trent. This site is part of the Northern Endurance Partnership (NEP) (NSTA, 2026c).

Refer to Figure 4.21 for an overview of the CCS licensed areas in the vicinity of Trent.

4.6.4 Commercial Fisheries

Fish communities within the Southern North Sea (SNS) are dominated by small benthic groups such as flatfish. Comparisons of catch rates have shown that in general the catchability of these smaller demersal species is greater using beam trawls than otter trawls. Consequently, beam trawling effort is greatest in the SNS, while otter trawling is less frequent in the region. Beam trawl activity is concentrated in the Southern Bight and the fleet mainly targets plaice and sole. Cod catches are typically highest in the SNS in the 1st and 2nd quarters of the year. Haddock is only rarely caught in the SNS during years of very strong recruitment (BEIS, 2022a).

There are also significant seine and gillnet fisheries for plaice towards the north of the region. Industrial fisheries target the sandeel populations of the southern and central North Sea. The fishery is focused on the Dogger Bank and takes place mainly during the summer months (BEIS, 2022a). Pelagic fisheries in the SNS mainly target herring, sprat, and horse mackerel. Purse seiners and pelagic trawls are usually used in the herring fishery, with the greatest landings in the 3rd quarter. Targeted mackerel fishing is prohibited in the SNS throughout the year (BEIS, 2022a).

Shellfish fisheries are important in the region, particularly in inshore waters where a number of species are harvested from estuaries and bays. In addition to these fisheries, Nephrops may be landed from the Dogger Bank, particularly during autumn and winter. Edible crabs and lobsters are also valuable species, typically caught with static gear such as pots or creels, while fisheries for pink and brown shrimps are also prosecuted. The Humber Estuary is an important site for shrimp trawling and crab and lobster potting, while the Wash is a prime habitat for mussels, cockles, and brown shrimp. Fishing effort in these areas is moderate overall, with vessels generally avoiding the shallowest of sandbank areas (BEIS, 2022a).

Statistical information relating to commercial fisheries landings and effort are split into sectors known as ICES Rectangles. Trent is located within ICES Rectangle 37F1. Fishing effort within 37F1 is relatively low and mostly concentrated within the summer months (Marine Directorate, 2025).

The average annual fishing effort for 37F1 is 94 days fished from 2020 to 2024. The year with the highest number of fishing effort days was 2021 with an annual fishing effort of 124 days (Marine Directorate, 2025). Refer to Figure 4.20.

The average annual fish landings for 37F1 between 2020 and 2024 was 202 tonnes with an estimated value of £417,922 (Marine Directorate, 2025).

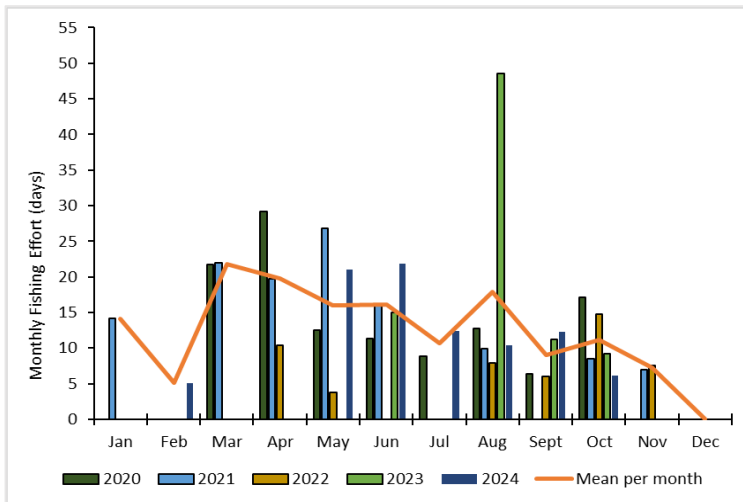


Figure 4.20a. Fishing effort (days) by month for ICES rectangle 37F1 (Marine Directorate, 2025).

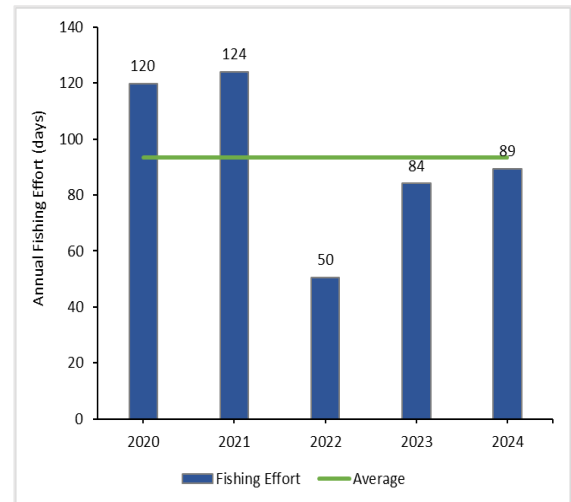


Figure 4.20b. Average annual fishing effort (days) for 37F1 (Marine Directorate, 2025).

4.6.5 Marine Aggregates

There are no marine aggregate extraction areas within 40 km of the Trent installation (The Crown Estate, 2026a). Refer to Figure 4.21.

4.6.6 Offshore Wind Farms

Trent is not located within a windfarm site.

The closest wind farm site is the R4 Project 2 (Dogger Bank Southeast) site which is currently undergoing a pre-planning application status. This site lies approximately 17.1 km northeast of Trent, at its closest point. The closest active windfarm to Trent is the Hornsea Project 2 – Phase 2 (Soundmark) approximately 32.8 km south (The Crown Estate, 2026b & 2026c).

Refer to Figure 4.21 and Table 4.18 for an overview of the windfarm infrastructure in the vicinity of Trent.

Table 4.18. Overview of the windfarm infrastructure in the vicinity of Trent (The Crown Estate, 2026b & 2026c).

Infrastructure Type	Name	Location Relative to Installation	Current Status
Windfarm Site	R4 Project 2 (Dogger Bank Southeast)	17.1 km northeast	Pre-planning Application
	R4 Project 1 (Dogger Bank Southwest)	24.7 km north	Pre-planning Application
	Hornsea Project Four (HOW04)	28.9 km southwest	Consented
	Hornsea Project 2 - Phase 2 (Soundmark)	32.8 km south	Active/In Operation
	Hornsea Project 2 - Phase 1 (Breesea)	33.2 km south	Active/In Operation
Windfarm Cable	Hornsea Project 4 (HOW04) OFTO	26.8 km southwest	In Planning

4.6.7 Subsea Telecommunication Cables

The closest subsea telecommunications cable to Trent is the active Viking Link cable approximately 27.6 km south at its closest point (KIS-ORCA, 2026). Table 4.19 provides an overview of the subsea cables within 40 km of Trent.

Table 4.19. Overview of subsea telecommunications cables within the vicinity of Trent (KIS-ORCA, 2026).

Name	Location Relative to Trent	Current Status
VIKING LINK	27.6 km south	Active

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4.6.8 Military Activity

Trent is located within the EGD323D Southern Complex airspace danger zone (NATS, 2026).

4.6.9 Archaeology

In the vicinity of the Trent, there are no designated wrecks protected under The Protection of Wrecks Act 1973, the Ancient Monuments and Archaeological Areas Act 1979, or the Protection of Military Remains Act 1986 (Historic England, 2026).

There are 13 non-protected shipwrecks located within 10 km of the Trent. The closest shipwreck is located 1.7 km northeast of the installation (UKHO, 2026).

4.6.10 Tourism and Leisure

The tourism industry is socially and economically important to the UK, with the coast in particular being a popular destination for British holidaymakers of all age groups. From large traditional seaside resorts to small-scale coastal attractions, this sector makes an important contribution to the local, regional, and national character of the coast. Leisure based and tourist activities are widespread along the east coast of England and tend to be highest during the summer months (BEIS, 2022a).

Beaches along the Yorkshire coastline (nearest coastline to Trent) which have been awarded Blue Flag status in 2025 are Whitby, Hornsea, and Withernsea (Keep Britain Tidy, 2025).

Mablethorpe and Skegness are important coastal towns in Lincolnshire. The coastline is well served by footpaths and heritage trails which attracts numerous walkers, especially during the spring and summer months. The region's rich wildlife attracts recreational anglers, birdwatchers, and wildfowlers to the coastal waters particularly around Bridlington and the Humber estuary. The North Norfolk coast is also a popular location for dinghy sailing and windsurfing (BEIS, 2022a).

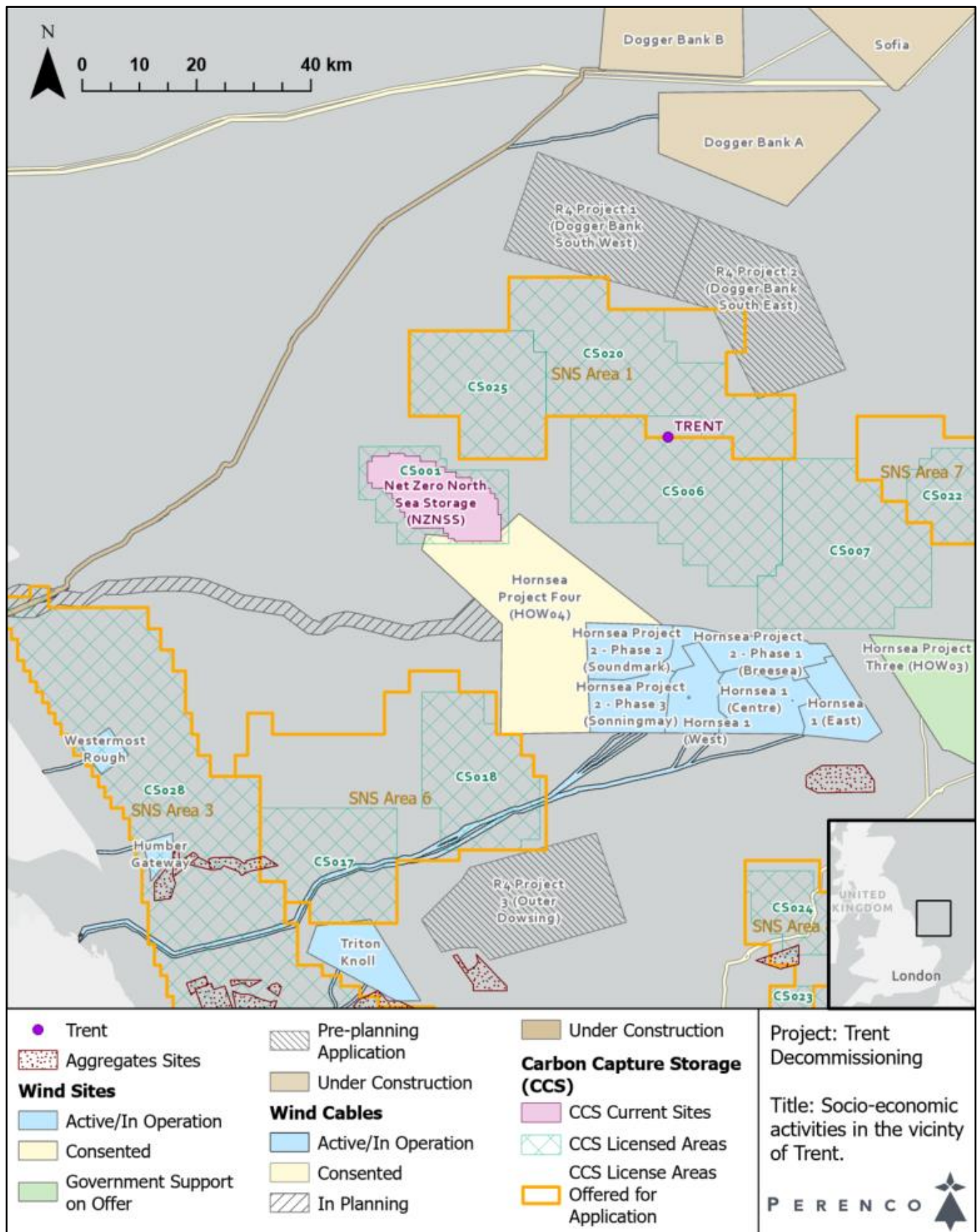


Figure 4.21. Socio-economic activities in the vicinity of the Trent.

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5 Environmental Issues Identification

An Environmental Risk Assessment (ENVID) was carried out by the Petrodec Environmental Team with support from the Petrodec Decommissioning Projects Team and PUK Decommissioning Department. The objective of the ENVID was to identify all activities of the proposed decommissioning works, analyses potential impacts on the receiving environment and ensure the operations will have minimal harm on the environment.

5.1 ENVID Methodology

The ENVID worked through a risk matrix as follows:

- Identify the activities which have the potential to impact environmental or social receptors.
- Catalogue which receptors could be affected.
- Provide a description of the potential impact.
- Summarise the built in mitigation measures to reduce the impact.
- Conduct a Risk Assessment – based on the criteria outlined in section 6.
 - Planned and Unplanned activities are address using different approaches.
- Identify if the activity will have a significant or insignificant impact (taking the mitigation measures into account).
- Present potential additional mitigation (particularly important for significant impacts).

5.2 Identified Environmental Issues

The activities that may have an effect on the environment are presented in Table 5.1. These are assessed in Section 6 to determine if they will have a significant or insignificant environmental impact.

Table 5.1. Identified environmental issues.

Assessment Aspect	Project Activity / Event
Physical Presence	Physical presence of the installation & HLV, ERRV, and supply vessels
	Potential seabird nesting habitat
	Vessels transiting through the Greater Wash SPA & Outer Thames Estuary SPA
	Presence of potential snagging hazards
Seabed Disturbance	Rig move and positioning of rig (spud cans)/ use of anchors on seabed sediment and habitats
	Installation removal activities (internal pile dredging, placement of ROV, tools, subsea basket on seabed, removal of jacket, piles, drilling template, and debris)
Marine Discharges	Discharge of deck drainage oily water and operational chemicals from rig
Noise Emissions	Underwater cutting and internal pile dredging
Solid Waste Generation	Disposal of removed infrastructure
Atmospheric Emissions	Operational activities of rig, ERRV, and support vessels
Accidental Events	Loss of containment (diesel) during bunkering

5.3 ENVID Risk Matrix

The results of the ENVID are presented in the ENVID Risk Matrix in Appendix 2. Impacts identified through the ENVID process have been assessed in section 6.

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6 Environmental & Societal Assessment

6.1 Assessment Methodology

The method used to determine if the Trent decommissioning activities are likely to have significant effects on the environment is described in this section and follows Environmental Impact Assessment (EIA) best practice guidance (e.g., EC, 2017; CIEEM, 2018; SNH & HES, 2018; IEMA, 2016). It builds on the methodology for identifying the aspects and the receptors was described in Section 5.

6.2 Evaluation of Impact Significance

A distinction is made between planned activities and unplanned activities. Planned activities are those activities that are within the project scope, e.g., removal of the jacket. Unplanned activities are those that could occur but are not part of the normal/planned work scope. E.g., diesel spill during bunkering. There are different approaches to assessing the significance of these two types of activities, which are presented below.

6.2.1 Planned Activities

For planned activities, the significance of effects has been evaluated by considering the **sensitivity** of the receptor affected in combination with the **magnitude** of impact that is likely to arise, having regard to the criteria detailed in Annex III of the EIA Directive (EC, 2011), including:

- The spatial extent and magnitude of the impact (geographical area and size of the population likely to be affected).
- The nature of the impact.
- The transboundary nature of the impact.
- The intensity and complexity of the impact.
- The probability of the impact.
- The expected onset, duration, frequency, and reversibility of the impact.
- The accumulation of the impact with the impact of other existing and/or approved projects and/or projects not yet approved, but that PUK is aware of.
- The possibility of effectively reducing the impact.

6.2.1.1 Sensitivity of Receptor Criteria

Sensitivity is a function of the **value** of the receptor (a measure of its importance, rarity and worth), its capacity to accommodate change when a pressure is applied (**resistance** or tolerance), and its subsequent recoverability (**resilience**).

The criteria presented in Table 6.1 has been used as a guide in this assessment to determine the sensitivity of receptors.

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Table 6.1. Determining sensitivity matrix.

		Resistance and Resilience			
		Very High	High	Medium	Low
Value	Low	Low	Low	Medium	Medium
	Medium	Low	Medium	Medium	High
	High	Low	Medium	High	Very High
	Very High	Medium	High	Very High	Very High
Definitions					
Resistance and Resilience					
Very High:		Highly adaptive and resilient to pressure. High recoverability in the short-term.			
High:		Some tolerance / capacity to accommodate pressure. High recoverability in the medium-term.			
Medium:		Limited tolerance / capacity to accommodate pressure. Recoverability is slow and/or costly.			
Low:		Very limited or no tolerance / capacity to accommodate pressure. Recovery is unlikely or not possible.			
Very High:		Very high value and/or of international importance.			
High:		High value and/or of national importance.			
Medium:		Moderate value and/or of regional importance.			
Low:		Low value and/or of local importance.			

6.2.1.2 Magnitude of Impact Criteria

The magnitude of impact considers the characteristics of the change that is likely to arise (e.g., a function of the spatial extent, duration, reversibility, and likelihood of occurrence of the impact) and can be adverse or beneficial. Where it is not possible to quantify impacts, a qualitative assessment has been carried out, based on best available scientific evidence and professional judgement. The criteria presented in Table 6.2 is used as a guide in this assessment to define the magnitude of impact.

Table 6.2. Determining magnitude of impact.

Magnitude	Definition
Substantial	Permanent or long-term (> 5 years) change in baseline environmental conditions, which is certain to occur. Impact may be one-off, intermittent, or continuous and/or experienced over a very wide area (i.e., transboundary in scale). Impact is likely to result in environmental quality standards or threshold criteria being routinely exceeded.
Major	Medium to long-term (1 – 5 years), reversible change in baseline environmental conditions, which is likely to occur. Impact may be one-off, intermittent, or continuous and/or experienced over a wide area (i.e., national in scale). Impact could result in one-off exceedance of environmental quality standards or threshold criteria.
Moderate	Short to medium-term (< 1 year), temporary change in baseline environmental conditions, which is likely to occur. Impact may be one-off, intermittent, or continuous and/or regional in scale (i.e., beyond the area surrounding the Project site to the wider region). Impact is unlikely to result in exceedance of environmental quality standards or threshold criteria.
Minor	Short-term (a few days to weeks), temporary change in baseline environmental conditions, which could possibly occur. Impact may be one-off, intermittent and/or localised in scale, limited to the area surrounding the proposed Project site. Impact would not result in exceedance of environmental quality standards or threshold criteria.
Negligible	Immeasurable or undetectable changes (i.e., within the range of normal natural variation).

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6.2.1.3 Significance of Effect

For planned activities, the overall significance of an effect is determined by cross referencing the sensitivity of the receptor with the magnitude of impact, using the matrix shown in Table 6.3.

The effects classified as **Major** or **Moderate** are considered to be “significant” in EIA terms and therefore mitigation measures are required to prevent, reduce or offset adverse significant effects or enhance beneficial effects.

Effects classed as **Minor** are considered to be insignificant and are usually controlled through good industry practice.

Effects classed as **Negligible** are also considered to be insignificant.

Table 6.3. Significance evaluation matrix for planned activities

Significance Evaluation Matrix		Magnitude of Impact				
		Negligible	Minor	Moderate	Major	Substantial
Receptor Sensitivity	Low	Negligible	Minor	Minor	Minor	Minor / Moderate
	Medium	Negligible	Minor	Minor	Moderate	Moderate / Major
	High	Negligible	Minor	Moderate	Major	Major
	Very High	Negligible	Minor / Moderate ¹	Moderate / Major	Major	Major

6.2.2 Unplanned Events

For unplanned events, such as accidental hydrocarbon releases or a ship collision, the significance is determined using a risk assessment approach, where the likelihood (probability) of the unplanned event occurring is considered against the severity (significance of effect) if the event was to occur.

The likelihood of an unplanned event occurring, and the effect is determined using the criteria presented in Table 6.4.

A risk category (low, medium, or high) has then been assigned to the unplanned event using the matrix shown in Table 6.4.

In the context of this assessment:

- **High** risk events are considered to be “significant” in EIA terms and are unacceptable.
- **Medium** risk events are also considered to be “significant” in EIA terms, unless it can be demonstrated that the risk has been reduced to as low as reasonably practicable (ALARP) through mitigation, control measures and good industry practice.
- **Low** risk events are considered to be “insignificant” in EIA terms but should still be controlled through good industry practice.

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Table 6.4. Unplanned Events - Risk assessment matrix.

1-6		MINOR RISK				Likelihood					
8-12		ACCEPTABLE IF ALARP									
15-30		UNACCEPTABLE RISK				1	2	3	4	5	
Risk = Likelihood x Severity						Never heard of in industry	Heard of industry	Has happened in our organisation or more than once per year in the industry	Has happened at the location or more than once per year in the organisation	Has happened more than once per year at the location	
Severity			Persons	Environment	Damage	Effect	Very unlikely	Unlikely	Possible	Likely	Very likely
	1	No harm or no First Aid required	No effect	Negligible Damage, Damage < €1,000	Insignificant	1	2	3	4	5	
	2	One or more First Aid Cases	Minor effect, contained within the location	Minor Damage to equipment/ assets/ tools, €1,000 ≤ Damage < €50,000	Minor	2	4	6	8	10	
	3	One or more Medical Treatment Cases	Minor Damage to or disturbance of flora/ fauna, no lasting effects	Significant Damage to equipment/ assets/ tools, €50,000 ≤ Damage < €100,000	Significant	3	6	9	12	15	
	4	One or more Lost Workday Cases	Single loss of, or local Damage to, flora/ fauna with persisting effect that requires clean-up outside the premises	Loss of, or serious Damage to, equipment/ assets/ tools, €100,000 ≤ Damage < €700,000	Serious	4	8	12	16	20	
	5	One Fatality or one or more Permanent Total Disabilities	Severe environmental Damage requiring extensive measures to restore the environment	Total loss of asset, €700,000 ≤ Damage < €7,000,000	Major	5	10	15	20	25	
	6	Multiple Fatalities	Persistent severe environmental Damage leading to loss of commercial use or loss of natural resources over a wide area	Massive Damage, Damage ≥ €7,000,000	Catastrophic	6	12	18	24	30	

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6.3 Insignificant Impacts

Each activity that is considered insignificant in the Environmental Impact Identification (ENVID) (refer to Section 5) are presented in this section.

6.3.1 Physical Presence

6.3.1.1 *Presence of infrastructure*

The infrastructure considered are:

- Trent Installation,
- HLV
- Support vessels – Rig move tugboats, ERRV and Supply Vessels

The physical presence of the Trent installation may result in interference to commercial shipping vessels and/or fishing vessels either through presenting a collision risk or by removing area available to these sea-users that may be used as shipping routes or fishing grounds.

For the decommissioning, there may be up to two rig moves at Trent. The HLV will be supported by other vessels such as tugboats (for the rig move), supply vessels and an Emergency Response and Rescue Vessel (ERRV).

The physical presence of the installation has resulted in the exclusion of other vessels from a 500 m radius around the installation. Following the rig move (s), the HLV will remain in position adjacent to the Trent platform, and therefore within the 500 m safety zone for the duration of the project. An ERRV typically is assigned to the installation for the duration of the project and remains in a holding position around the safety zone. Typically, there are supply vessels every couple of days, and it remains alongside the HLV during cargo handling activities.

The surrounding area is considered to have a high level of shipping activity. The receptors that could be affected would be other sea users such as fishing vessels, cargo vessels and ferries.

Impact Significance Assessment

Sensitivity: Low

Magnitude: Minor

Significance: Minor – Not significant

The 500m safety zone is well established and is marked on the navigation charts so that other sea users know to avoid the area. A Consent to Locate (CTL) is in place for the Trent and a variation will be obtained prior to the deployment of the HLV. Aids to navigation will be active on the HLV, and the ERRV monitors vessel movements. As a result, no further assessment is required.

6.3.1.2 *Potential Seabird Nesting Habitat Removed*

All birds are protected under the EU Birds Directive (Directive 2009/147/EC) as a naturally occurring wild bird species. The EU Birds Directive is transposed for the UK offshore area by The Conservation of Offshore Marine Habitats and Species Regulations 2017. Under regulation Part 3 (40) of The Conservation of Offshore Marine Habitats and Species Regulations 2017 it is an offence to deliberately capture, injure, or kill any wild bird; take, damage, or destroy the nest of any wild bird while that nest is in use or being built; or take or destroy an egg of any wild bird.

The physical presence of the installation may provide a potential nesting habitat for seabirds which forage in the Southern North Sea.

Seabird nesting surveys of Trent were undertaken in 2023, 2024 and 2025 and found that there were no nesting seabirds present (Biocensus 2023, Xodus, 2024, and Xodus, 2025).

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Impact Significance Assessment

Sensitivity: Medium

Magnitude: Negligible

Significance: Negligible – Not significant

As there is no history of seabirds nesting on Trent, the impacts to nesting seabirds from the decommissioning activities is considered to be negligible and not significant.

6.3.1.3 Vessels transiting through Greater Wash & Outer Thames Estuary SPA

The Greater Wash SPA and Outer Thames Estuary SPA are located along the Norfolk and Suffolk coastline. Support vessels for the Trent decommissioning project will pass through the SPAs enroute to port.

The Greater Wash SPA for seabirds covers an area of 3,536 km² and lies along the east coast of England in the mid Southern North Sea and extends between the counties of Yorkshire (to the north) and Suffolk (to the south). The site is classified for the protection of overwintering seabirds; Red-Throated Diver (*Gavia stellata*), Common Scoter (*Melanitta nigra*) and Little Gull (*Hydrocoloeus minutus*). The Outer Thames Estuary SPA covers an area of 3,924 km² and is classified for the protection of the overwintering red-throated diver. This area supports the largest aggregations of wintering red-throated diver in the UK, 38% of the UK's population. Breeding birds will not be impacted by vessel movements through the area as they breed onshore and vessels will not come in close proximity to them.

The ERRV and supply vessels generally operate out of Lowestoft and Great Yarmouth. The distance of the typical navigation routes from Trent to Great Yarmouth is approximately 191 km and Lowestoft is 203 km and are presented in Figures 6.1 and 6.2. The route passes through approximately 37 km of the Greater Wash SPA when approaching the Great Yarmouth and Lowestoft ports. In relation to the Outer Thames Estuary SPA, the route passes through approximately 11 km of the SPA when transiting from Great Yarmouth and approximately 20 km from Lowestoft. Refer to Figure 6.1.

Typically, there are four supply vessel visits to the HLV each week and the ERRV crew changes every three weeks. The European Marine Observation and Data Network (EMODnet) provides ship density routes for the North Sea. The planned supply vessel route to Trent from Great Yarmouth and Lowestoft were overlayed on the EMODnet data ship densities route for 2023 (the most recent data available) (EMODnet, 2026), as presented in Figure 6.2. It is evident that the planned Trent to Great Yarmouth/Lowestoft route follows a standard shipping route.

The Red-Throated Diver and Common Scoter form large aggregations during the winter period from November to March. Vessels passing through the SPAs during this period may disturb the overwintering seabirds. The Common Scoter and Red-Throated Diver are vulnerable to disturbance by shipping traffic (Schwemmer *et al.*, 2011).

It is assumed that all Red-Throated Divers within 2 km of a vessel (Burt *et al.*, 2017; Burger *et al.*, 2019) and all Common Scoter within 2.5 km of a vessel could be displaced (Fliessbach *et al.*, 2019). It is estimated that up to 3.6% and 2.1% of the Red-Throated Diver population in the Greater Wash SPA and the Outer Thames Estuary SPA, respectively, could be disturbed at any one point by vessels transiting to and from Trent. The Common Scoter is less effected by transiting vessels, with up to 0.4% of the Greater Wash SPA population being disturbed at any one point. Refer to Table 6.1.

The following best practice will be applied to ensure minimal disturbance.

- Follow established shipping routes through the SPAs.
- Maintaining direct transit routes.
- Avoiding over-revving of engines.
- Briefing vessel crew on the purpose and implications of vessel management practices within the Greater Wash SPA.

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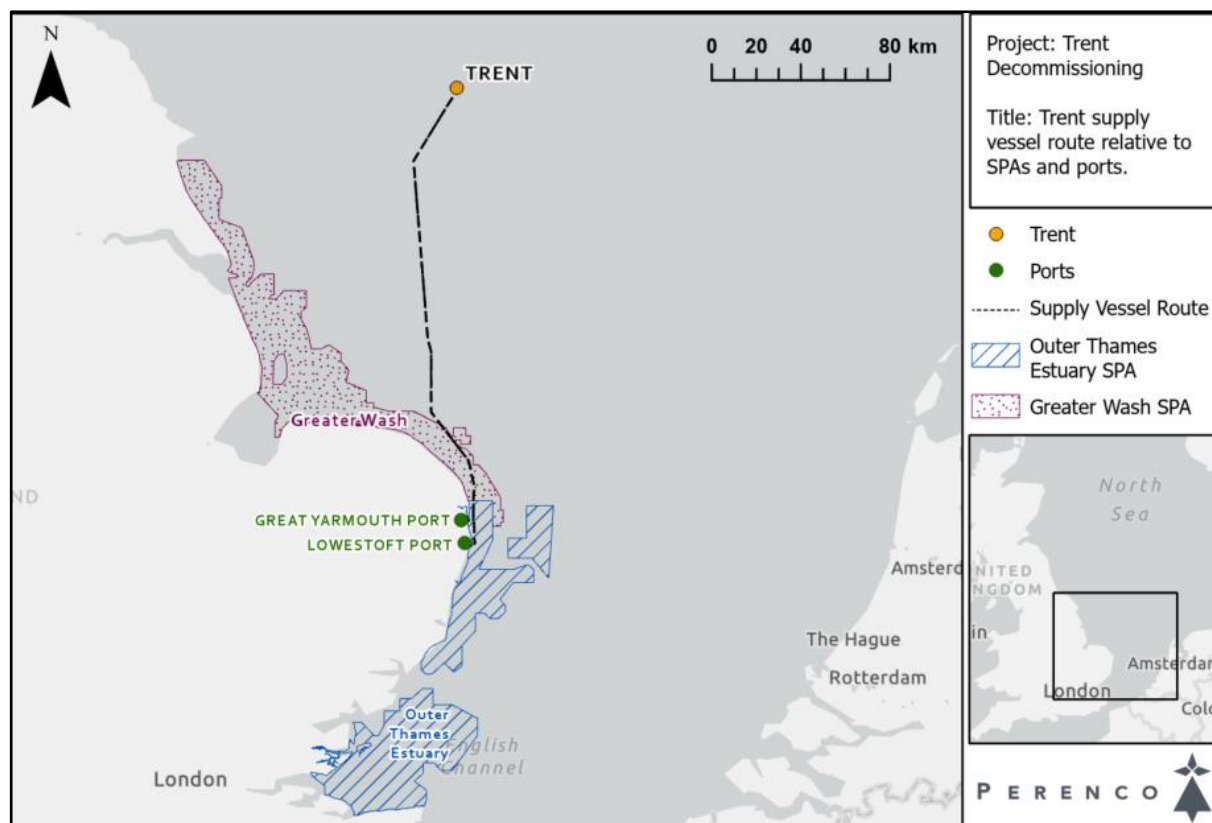


Figure 6.1. Supply vessel density routes from Great Yarmouth and Lowestoft ports to the Trent installation relative to the Greater Wash and Outer Thames Estuary SPAs.

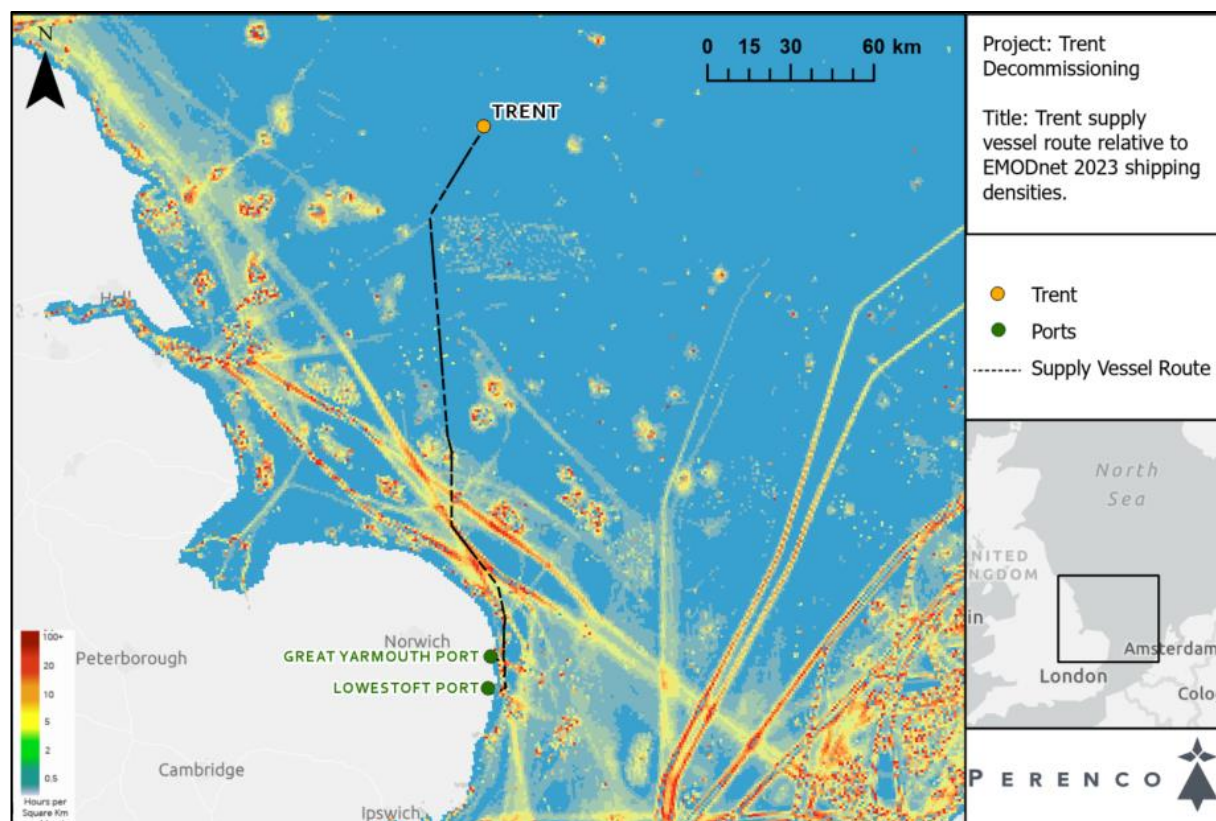


Figure 6.2. Supply vessels route to Trent overlaid on shipping route densities. Red and yellow indicate high density route pathways.

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Table 6.1. Estimated numbers of Red-Throated Diver and Common Scoter potentially disturbed during the overwintering period from vessel activity within the Greater Wash SPA and Outer Thames Estuary SPA.

SPA	Species	Displacement Area at any One Point ¹	Density of Birds within SPA ²	Number of Birds Disturbed at any One Point	% Population of SPA disturbed at any One Point ³
Greater Wash SPA	Red-Throated Diver	13 km ²	1.35 – 3.88 per km ²	18 - 50	1.3 – 3.6
		13 km ²	1.35 – 3.88 per km ²	18 – 50	1.3 – 3.6
	Common Scoter	20 km ²	0 – 0.7 per km ²	0 - 14	0 – 0.4
		20 km ²	0 – 0.7 per km ²	0 - 14	0 – 0.4
Outer Thames Estuary SPA	Red-Throated Diver	13 km ²	4 per km ²	52	2.1
		13 km ²	4 per km ²	52	2.1

Note 1: Based on displacement distance of 2km radius for red-throated diver (Burt *et al.*, 2017; Burger *et al.*, 2019) and 2.5km radius for common scoter (Fliessbach *et al.*, 2019).

Note 2: Based on maximum predicted density of red-throated diver within the SPA (Lawson *et al.*, 2016; Dierschke *et al.*, 2017).

Note 3: Based on the following count data: 1,407 red-throated diver and 3,449 common scoter in Greater Wash SPA (Lawson *et al.*, 2016). 2,458 red-throated divers in Outer Thames Estuary (Dierschke *et al.*, 2017).

Impact Significance Assessment

Sensitivity: Medium

Magnitude: Minor

Significance: Minor – Not significant

Based on the short route through the SPAs following the established navigation routes, and the implementation of best practices, it is considered that the impacts to overwintering seabirds from vessels transiting through the Greater Wash SPA and Outer Thames Estuary SPA to and from Trent are minor and Not Significant.

6.3.1.4 Presence of Potential Snagging Hazards

When the Trent installations have been removed, there may be material remaining on the seabed which may pose as a snagging hazard to passing vessels, particularly to commercial fishing vessels. Any material which may pose as a snagging hazard will be removed/mitigated during a remediation campaign post installation removal. Cut pipeline ends of PL253b, PL1220 and PL1221 at TP will be cut back flush with existing mattresses so that no exposed pipework will be visible above the seabed. At TC, it is intended that 13 exposed or partially exposed mattresses will be recovered to shore. Those covered with rock dump are to be left in situ. It is also intended to remove the pipelines underneath each recovered mattress. A single mattress may remain to prevent a snagging hazard if the cut ends of PL2162 and PL2163 are exposed and not easily covered by the existing rock dump in the 500m safety zone. The mattress will be moved, the pipelines cut, and then the mattress replaced over the cut end. Any remaining mat will be flush with seabed and overtrawlable. If the mattress is not used it will be recovered to shore. In the event of practical difficulties during the removal execution, OPRED will be consulted, and an alternative method of decommissioning will be examined. The 500m safety zones at the Trent installations will be removed once the jackets are removed.

Impact Significance Assessment

Sensitivity: Low

Magnitude: Minor

Significance: Minor - Not significant

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6.3.2 Seabed Disturbance

6.3.2.1 Rig Move & Positioning

The HLV will be moved from its previous location by means of towing. The HLV will be towed into the 500m zone and initially be placed at a stand-off position, with the legs temporarily placed on the seabed. The HLV is then moved to the final position and again the jacks down and will remain at this position until the end of the project.

There may be up to two rig moves, meaning that the HLV spud cans will be placed on the seabed up to four times (one for the standoff position, and once at the final position).

This activity will result in the resuspension of sediment and abrasion of the seabed.

6.3.2.1.1 Impact on seabed sediment

The seabed will be disturbed from the HLV's spudcans, anchors, and anchor chains being placed on the seabed during the rig move and rig positioning on each occasion. The seabed disturbance will result in the suspension of sediment in the water column. The resettling of suspended sediment can result in smothering of species and habitats. Furthermore, the disturbance of sediment can result in the spreading of contaminants from within the sediment.

The Obana jack-up barge is initially placed at a stand-off position, located approximately 100 m from the final position and the legs are temporarily placed on the seabed. The Obana is then moved to the final position and again the rig jacks down and will remain at this position until the end of the planned activity. The anchors are not repositioned between the standoff and final positioning.

The Obana will be 'jacked-up' onto the seabed. Each of the Obana's six legs terminate in a spudcan that rest on the seabed, which will occur twice during the rig positioning operation; once for the standoff position, and secondly for the final position. The spudcans each have a footprint area of approximately 260 m². In total, the 6 spud cans will disturb an area of 1,560 m². Prior to the legs of the Obana being installed on the seabed, anchors will be used to assist in the final positioning of the Obana. Each of the 6 anchors has an estimated disturbance area of 15 m² and the anchor chains / mooring lines have a length of up to 645 m, of which 250 m of chain will be laid on the seabed with a lateral movement of 30 m, which equates to approximately 3,750 m² area of disturbance.

The Obana will be placed at two separate locations for the Trent removal campaign. The total area of seabed disturbance for each rig move is 25,710 m², and for the two rig positionings it is a total seabed impact of 51,420 m² (refer to Table 6.2).

Table 6.2. Seabed impact from Obana positioning.

Disturbance Source	Number per location (6 legs)	Seabed Footprint area per source type (m ²)	Total seabed impact for each source (m ²)	Total seabed impact for 2x rig moves (m ²)
Spun can – Standoff location	6	260	1,560	3,120
Spud can – Final location	6	260	1,560	3,120
Anchors	6	15	90	180
Anchor Chain Laydown *	6	3,750	22,500	45,000
Total area of seabed impact			25,710	51,420

* Estimated based on typical rig positioning. Assumed 250 m of anchor wire on the seabed, with lateral movement of 30 m from the standoff position to the final position in all lines. Area is a 'triangle'; the anchor position stays stationary and only anchor lines move.

There were no significantly high concentrations of heavy metals in the sediment. The majority of the hydrocarbon samples were below the UKOOA 95th Percentile. Two locations had concentrations slightly above the OSPAR THC Threshold. However, in the contents of the volume of sediment and water in this section of the southern North Sea, any contaminants in the sediment re-suspended would be quickly diluted and reduce the concentration to below the OSPAR THC Threshold. There are also no protected species or benthic habitats within the area.

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Impact Significance Assessment

Sensitivity: Low

Magnitude: Minor

Significance: Minor - Not significant

6.3.2.2 Installation Removal Activities

The activities to remove the installation, activities which may cause seabed disturbance are listed as follows:

- Internal dredging of sediments in piles
- Placement of ROV, tools and subsea basket on seabed
- Removal of jackets and piles.
- Removal of subsea drilling template.
- Removal of debris from seabed.

These activities will cause the resuspension of sediment.

There were no significantly high concentrations of heavy metals within the 500m zone. Overall the hydrocarbons concentrations were below the threshold, with the exception of TRE 03, which was slightly elevated.

The volume of sediment disturbed from the decommissioning campaign at Trent is typically minimal and the activities are temporary in nature. The strong currents and weather conditions of the North Sea agitate the seabed, which results in a high sediment background levels already in the water column. The vast volume of water in the North Sea will also significantly dilute any hydrocarbons that may be resuspended with the sediments. Overall, any disturbed sediment and potential containments from the decommissioning campaign is very unlikely to have an impact on the surrounding biota. The disturbed sediments are therefore predicted to be Negligible and Not Significant, and no further assessment is required.

Impact Significance Assessment

Sensitivity: Medium

Magnitude: Negligible

Significance: Negligible - Not significant

6.3.3 Marine Discharges

During the decommissioning campaign, discharges to the sea from the HLV and support vessels will occur. These include deck drainage waters from the HLV, which may contain rig wash and oily waters, as well as the use of jacking grease on the spudcans.

Following the seabed riser cut, the content of the riser will discharge to sea. The pipeline was flushed to <30ppm oil content in the 2025 pipeline flushing campaign and will contain only residual hydrocarbons. Overtime, the fluid in the pipeline will slowly disperse into the surrounding water column. As the oil content is <30ppm, it is considered that there will be negligible impact on the surrounding environment upon the slow discharge.

Impact Significance Assessment

Sensitivity: Medium

Magnitude: Minor

Significance: Minor – Not significant

Discharges during the operations will be minimal in nature and controlled under either MARPOL or OPRED permits. Oily deck water discharged will have an Oil Discharge Permit. Bilge oily water and sewage discharges are controlled under MARPOL rules. Discharges containing the rig chemicals will have a Chemical Permit in place.

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6.3.4 Noise Emissions

The Harbour Porpoise is the main cetacean that is frequently present in the Southern North Sea (refer to Section 4.4.4). Trent is located in the Southern North Sea SAC, which is designated for the Harbour Porpoise.

The impacts of underwater sound on marine species, including Harbour Porpoises, can be broadly summarised as physical traumatic injury and fatality, auditory injury (either permanent or temporary) and behavioural responses. The following noise generating activities will be carried out underwater during the decommissioning project:

- Dredging and subsea cuts
- Service vessel motors

The guidance document *“Updated Effective Deterrent Ranges (EDRs) for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise Special Areas of Conservation (England, Wales & Northern Ireland)”* (JNCC, 2025b) presents a list of noisy activities that impact on the Harbour Porpoise. Dredging, subsea cuts and vessel activity are not included in this list. Therefore, it is deemed these activities do not have an auditory impact on the Harbour Porpoise or other marine species.

Other noisy activities such as rig activities, cutting topside and bridges and helicopter flights occur outside of the water column and are also considered not to have an auditory impact on the Harbour Porpoise.

Impact Significance Assessment

Sensitivity: High

Magnitude: Negligible

Significance: Negligible- Not significant

The noise impact from these sources is considered to be Negligible and Not Significant.

6.3.5 Solid Waste Generation

Typically, approximately 95% of the total installation is recycled. The topside is between 70% and 80% steel, which is fully recyclable. The remaining materials, such as electrical systems and the accommodation, are also recyclable. Overall, over 95% of the topside is recyclable. The jacket, excluding the marine growth, is almost 100% recyclable.

Marine growth on the jacket is currently sent to landfill as the waste to energy processing plants are unable to facilitate the incineration of the low calorific marine growth. Marine growth can make up 10% of the jacket weight.

All waste generated during decommissioning activities will be handled and recovered or disposed of, following the principles of the waste hierarchy and in line with existing waste management legislation. Only licensed contractors will be used for waste handling and treatment/disposal.

An International Waste Shipment (IWS) consent will be in place prior to shipment to the Netherlands.

The rig and support vessels will have an approved MARPOL Garbage Management Plan.

Impact Significance Assessment

Sensitivity: Medium

Magnitude: Minor

Significance: Minor

As there is strict alignment with waste management legislation and the very high waste recovery target, no further assessment is required.

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6.3.6 Atmospheric Emissions

The offshore decommissioning activities will produce atmospheric emissions, primarily through fuel combustion on the HLV, support vessels and helicopters. These Greenhouse Gas (GHG) emitting activities are required to meet decommissioning obligations for the infrastructure.

It is estimated that up to 3,637 tonnes of CO_{2eq} may be emitted during the Trent decommissioning campaign. This represents approximately < 0.04 % of the UKCS offshore annual emissions and < 0.001 % of the annual UK national emissions. Refer to Appendix 3 for the emission calculations.

Impact Significance Assessment

Sensitivity: Very High

Magnitude: Negligible

Significance: Negligible- Not significant

Best practices will be employed to minimise this carbon footprint. This includes optimising logistical planning of vessels and operating effective environmental management systems minimising their emissions. As a result, no further assessment is required.

6.3.7 Accidental Events

6.3.7.1 Diesel Release during Bunkering

The use of the HLV and support vessels affords the risk of a release from these vessels. Instantaneous loss of total diesel inventory from the HLV or onboard a supply vessel may result from an incident such as a collision or incident occurring during bunkering (e.g., burst hose or tank overflow).

Based on OPEP Guidelines (BEIS, 2022b), an installation within a block greater than 40 km from a coastline does not require an Oil Spill Model. Trent is located in Block 43/24 which, at its closest point, is 116 km from the nearest UK coastline, and therefore does not require a spill model.

A diesel spill is possible, and the severity of the impact would be significant if there were no controls in place and the entire inventory of a vessel was released. The risk level is medium before mitigation measures. However, with the standard bunkering procedures, a spill during bunkering would be a small fraction of the total volume, and therefore of Minor severity. The overall risk from a diesel spill is Low with mitigation in place.

Risk Assessment

Likelihood: Unlikely

Severity: Minor

Risk: Low- Not significant

Trent installation will have an Oil Spill Emergency Plan (OPEP), and a Communication and Interface Plan (CIP) will be prepared and approved by OPRED prior to commencement of the decommissioning activity. A bunkering procedure will be in place control the bunkering process to limit potential for release of diesel during bunkering.

6.4 Potentially Significant Impacts Assessment

No activity was identified in the ENVID process as being significant.

6.5 Cumulative & Transboundary Impacts

Trent is located approximately 72 km from the UK/Netherlands median line. Due to the distance, a hydrocarbon release is very unlikely to cross the median line.

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Trent is located within a busy part of the Southern North Sea with high oil and gas activity, much of which is decommissioned, as well as windfarm developments. During the permit preparation stage for the decommissioning project, a review of the planned activities would be required to determine the cumulative impacts during the project execution.

Since the project will not have significant environmental impacts, it is unlikely to contribute to a cumulative impact on the wider area.

7 EA Conclusions

Following a detailed review of the proposed decommissioning activities, the environmental sensitivities present in the area, and the potential impacts on other sea users and the environment, it has been determined that the decommissioning of the Trent installations will not present any significant impacts.

All identified impacts associated with the decommissioning activities are well understood and managed through the implementation of established mitigation measures. All activities are considered to have either minor or insignificant impacts on the environment.

The EA is considered by PUK to be in alignment with the objectives and marine planning policies of the East Marine Plan area.

Based on the assessment findings of this EA, including the identification and subsequent application of appropriate mitigation measures it is considered that the proposed Trent decommissioning activities do not pose any significant impact to environmental or societal receptors within the UKCS or internationally.

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8 References

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Appendix 1 - Environmental Management

This section describes the arrangements that will be put into place by Perenco UK Ltd. (PUK) to ensure that the mitigation and other measures of control, including the reduction or elimination of potential impacts, are implemented, and conducted effectively. This section also serves to outline the key elements of relevant corporate policies and the means by which PUK will manage the environmental aspects of the Trent decommissioning operations.

A1.1. Introduction

PUK hold ISO 14001 standard certification. Additionally, PUK operates under a Safety and Environmental Management System (SEMS), which forms part of the PUK Operating Management System (POMS). The POMS provide the framework for PUK to achieve safe and reliable operations day-in and day-out and ensures compliance with PUK's HSSE Policy.

In addition to enabling the implementation of identified mitigation and control measures, the SEMS provides the means to monitor the effectiveness of these measures through check and environmental performance. The SEMS, by design, will enable PUK to control activities and operations with a potential environmental impact and provide the assurance on the effectiveness of the environmental management.

A1.2. Scope of the SEMS

The SEMS provides the framework for the management of Health and Safety Executive (HSE) issues within the business. This EMS is intended for application to all of PUK's activities as directed under the OSPAR recommendation 2003/5, promoting the design, use and implementation of Environmental Management Systems by the Offshore Industry.

PUK, as a business, is centred on oil and gas exploration activities both onshore and offshore, with the offshore components of their business including seismic and drilling operations. As a relatively small operator, PUK intends to source such projects through the utilisation of contractors, should these not be available within the business itself.

The SEMS focuses on:

- Clear assignment of responsibilities.
- Excellence in HSE performance.
- Sound risk management and decision-making.
- Efficient and cost-effective planning and operations.
- Legal compliance throughout all operations.
- A systematic approach to HSE critical business activities; and
- Continual improvement.

A1.3. Principle of the SEMS

The following sub-sections describe the principles followed through the utilisation of the SEMS.

Improvement Programmes and the Management of Change

The purpose of employing an improvement programme is to:

- Ensure the continuous development of the PUK policy commitment.
- Introduce changes and innovations that ensure the achievement of performance standards where current performance is below expectations.

The SEMS also makes provisions for the management of change. Changes may occur for a number of reasons, and at a number of levels. A 'management of change' procedure specifies the circumstances under which formal control of change is required to ensure that significant impacts remain under control and/or new impacts are identified, evaluated, and controlled.

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Roles and Responsibilities

PUK will review existing environmental roles and responsibilities for staff participating in the DP. These will be amended and recorded in individual job descriptions to ensure that they consider any changes required for the management of the impacts identified in this EA.

Training and Competence

The competence of staff with environmental responsibilities is a critical means of control. The SEMS, in conjunction with the Human Resources department of PUK allows for the appointment of suitably competent staff. The development and implementation of training programmes facilitates understanding and efficient application.

Communication

Internal environmental communication generally employs existing channels such as management meetings, minutes, poster displays, etc. External communication with stakeholders and interested parties is controlled through a communication programme. This establishes links between each stakeholder, the issues that are of concern to them, and the information they require to assure them that their concerns and expectations are being addressed.

This EA and the consultation process that informed its production will be used to design the ongoing communication programme. Communication and reporting will employ information derived from the monitoring programme.

Document Control

The control of the SEMS documents is managed in the PUK Document Control System.

Records

Records provide the evidence of conformance with the requirements of the SEMS and of the achievement of the objectives and targets in improvement programmes. The PUK SEMS specifies those records that are to be generated for these purposes, and controls their creation, storage, access, and retention.

Monitoring and Audit

Checking techniques employed within PUK's SEMS are a combination of monitoring, inspection activities and periodic audits.

The requirement for monitoring and inspection stems from the need to provide information to a number of different stakeholders, but primarily regulators, and PUK management. As such, there is a requirement for the results of monitoring and inspection to be integrated with the PUK internal and external communication programme.

Monitoring and inspection activities focus on:

- Checks that process parameters remain within design boundaries (process monitoring);
- Checks that emissions and discharges remain within specified performance standards – (emissions monitoring); and
- Checks that the impacts of emissions and discharges are within acceptable limits (ambient monitoring).

Incident Reporting and Investigation

The PUK SEMS stipulates documented procedures to control the reporting and investigation of incidents.

Non-Confidence and Corrective Action

The checking techniques outlined above are the means of detecting error or non-conformances. PUK's SEMS includes procedures for the formal recording and reporting of detected non-conformance, the definition of appropriate corrective action, the allocation of responsibilities and monitoring of close out.

Review

PUK's SEMS includes arrangements for a management review. This provides the means to ensure that the EMS remains an effective tool to control the environmental impacts of operations, and to re-configure the EMS in the light of internal or external change affecting the scope or significance of the impacts. Of particular importance is the role management review plays in the definition and implementation of the improvement programme, and the management of change.

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Appendix 2 – ENVID Summary

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Assessment Aspect	Project Activity / Event	Physical Receptors										Human Receptors										Potential Impact/Observations	Mitigation Built into the Design	Risk Assessment						Significance	Potential Additional Mitigation	
		Seabed Sediments & Features	Water Quality	Air Quality	Climate	Plankton	Benthic Communities	Fish & Shellfish	Seabirds	Marine Mammals	Marine Protected Areas	Shipping	Commercial Fisheries	Oil & Gas & CCS Activity	Subsea Cables	Renewable Energy Activity	Cultural Heritage	Military Activity	Disposal, Dredging & Aggregate	Seascape	Tourism & Leisure			Population & Human Health	Planned			Unplanned				
																									Sensitivity	Magnitude	Significance	Likelihood	Severity			Risk
Physical Presence	Physical presence of infrastructure (Trent installation, HLV, support vessels)							P			A	A	A		A		A	A	A			Interference to commercial shipping/fishing vessels (collision risk/loss in area (500m zone))	500m safety exclusion zone Aids to Naviagtion on vessels/installation Consent to Locate (CTL) will be obtained for the JUB/HLV	Low	Minor	Minor				Not significant		
Physical Presence	Potential Seabird Nesting Habitat removed							A			P	P	P	P	P	P	P	P	P			Loss of potential habitat upon removal of installation. Disturbance to nesting seabirds from project activities	Seabird survey showed no nesting seabirds from 2023-2025.	Medium	Negligible	Negligible				Not significant		
Physical Presence	Vessels transiting through the Greater Wash & Outer Thames Estuary SPAs							A		A												Disturbance to overwintering (November to March) seabirds by vessels transit from Lowestoft/Great Yarmouth port to Trent	Vessel transit only through short section of SPAs Non-winter months - no impact from vessel activites Information on best practices for vessel management communicated to ships accordingly	Medium	Minor	Minor				Not significant		
Physical Presence	Potential snagging hazards (post-installation removal)										A	A	A		A		A	A				Material on seabed post installation removal (snagging hazard for passing vessels)	Post-decommissioning survey to remove snagging hazards	Low	Minor	Minor				Not significant		
Seabed Disturbance	Rig move & Positioning of rig (spud cans)/ use of anchors	A	A				A			A												Sediment suspension (potential smothering of benthic habitat, changes in water quality, potential spreading of contaminants)	Development of site-specific positioning and anchor plan. Sediment plumes short-lived due to strong tidal currents in the area Volume of water in SNS and strong currents will dilute and mix contaminants	Low	Minor	Minor				Not significant		
Seabed Disturbance	Removal activities (dredging, use of ROV and tools/equipment, removal of debris & jackets)	A	A				A	A		A												Sediment suspension (potential smothering of benthic habitat, changes in water quality, potential spreading of contaminants)	Sediment plumes short-lived due to strong tidal currents in the area Volume of water in SNS and strong currents will dilute and mix contaminants	Medium	Negligible	Negligible				Not significant		
Marine Discharges	Discharge of deck drainage and rig chemicals from JUB/HLV		A				A	A	A	A	A		A									Changes in water quality Impacts on marine life and MPAs	Discharges minimal in nature Oil Discharge Permit and Chemical Permit will be in place Bilge oily water and sewage discharges controlled under MARPOL rules	Medium	Minor	Minor				Not significant		
Noise Emissions	Removal activities (dredging, subsea cuts, service vessel motors)							A	A													Impacts to marine mammals	JNCC guidance does not classify the cutting as a significant source of noise	High	Negligible	Negligible				Not significant		
Solid Waste Generation	Operational and non-operational wastes; Disposal of removal infrastructure.																					Unauthorised waste disposal leading to environmental damage and breach of waste regulations.	All waste generated will be handled, and recovered or disposed of, following the principles of the waste hierarchy and in line with existing waste management legislation. Only licensed contractors will be used for waste handling and treatment/disposal. The JUB/HLV and support vessels will have an approved MARPOL Garbage Management	Medium	Minor	Minor				Not significant		
Atmospheric Emissions	Operational activities of JUB/HLV, ERRV, and support vessels			A	A															A		Increased GHGs in atmosphere contributing to climate change Decreased air quality	Minimise carbon footprint by: Optimising logistical planning of vessels Operating effective environmental management systems to minimise emissions	Very High	Negligible	Negligible				Not significant		
Accidental Events	Loss of containment (diesel) during bunkering	A	A				A	A	A	A	A	A	A		A		A	A	A	A	A	Injury to personnel Marine pollution	Standard Bunkering Procedure, OPEP, CIP will be in place				Unlikely	Minor	Low	Not significant		

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Appendix 3 - Quantifying GHG Emissions

A3.1. Planned Activity and Potential Sources of GHG Emissions

The Trent decommissioning project is planned to be completed in 60 days for the entire campaign.

The greenhouse gas (GHG) emissions calculations are based on the estimated fuel usage of the Obana, support vessels and helicopters. These are classified as Perenco Scope 1 “Direct GHG Emissions” from the Obana, as well as the Scope 3 emissions “purchased goods and services” (ERRV, support vessels and helicopter trips).

Refer to Table A3.1 for estimated emissions concentrations. All other emissions (e.g., Scope 2 and other Scope 3) are outside of the scope of these calculations.

Table A3.1. Fuel consumption and GHG emissions from Trent for the duration of the decommissioning campaign.

Source	GHG Emissions (tonnes) ¹				Total Fuel Use (tonnes)	Notes	
	CO ₂ e ²	CO ₂	CH ₄	N ₂ O		Fuel usage (tonnes)	Frequency
Obana	1,165	1,152	1	12	361	6 tonnes/day	On location for 60 days
ERRV	387	383	0	4	120	2 tonnes/day	On location for 60 days
Supply Vessel	1,549	1,531	2	16	480	2 tonnes/day	4x supply vessels per week
Helicopters	535	530	0	4	168	0.655 tonnes/hr	3x two hour trips per week
Total	3,637	3,597	4	36	1,130	-	-

Note 1: Emission factors from DESNZ Greenhouse Gas Reporting: Conversion Factors 2025 (DESNZ, 2025a).

Note 2: CO₂e = CO₂ equivalent with a Global Warming Potential (GWP) for a 100-year time horizon. GWP factor: CO₂ = 1; CH₄ = 29.8; N₂O = 273, as per IPCC Sixth Assessment Report Global Warming Potentials (IPCC, 2023).

A3.2. UK National Carbon Budget

The Climate Change Act 2008 (as amended) requires the UK government to set legally-binding ‘carbon budgets’ to act as stepping-stones towards the 2050 Net Zero target. These carbon budgets restrict the total amount of Greenhouse Gas (GHG) that the UK can emit over five-year periods, ensuring continued progress towards the UK’s long-term climate target.

Table A2.2 presents information on the current Fourth Carbon Budget.

Table A3.2. UK Carbon Budgets (OEUK, 2024).

Carbon Budget	Carbon Budget Level	Reduction Below 1990 Levels	Due to Meet Target
Fourth carbon budget (2023 to 2027)	1,950 million tonnes CO ₂ e	52%	Off track

A3.3. Quantitative Comparison of GHG Emissions

A quantitative comparison between the predicted CO₂e emissions generated during the decommissioning campaign, compared to all UKCS offshore operations, UK total GHG emissions and the UK Carbon Budget are presented in Table A3.3.

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Table A3.3. Comparison of the Trent decommissioning campaign GHG emissions to industry and UK total emissions.

Metric	Estimated Annual GHG Emissions (tonnes CO _{2eq})	Project's % UKCS Offshore Emissions	Project's % of Total UK Emissions	Project's % UK 4 th Carbon Budget
Trent Decommissioning Campaign	3,637	-	-	-
UKCS Offshore GHG Emissions for 2024 ¹	9,600,000	0.0379	-	-
UK Total GHG Emissions 2024 ²	371,000,000	-	0.00098	-
UK Fourth Carbon Budget ³	1,950,000,000	-	-	0.00019

Note 1: Emissions Monitoring Report 2025 (NSTA, 2025).

Note 2: Total UK GHG Emissions from 2024 data (DESNZ, 2025b).

Note 3: NSTA (2025).