Perenco UK LIMITED

Ravenspurn North Central Complex Gas Compression Deck (RNCC GCD) Topside Decommissioning Programme

Consultation Version

Document Control

Approvals

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Global Marine Systems Limited	1

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Terms and Abbreviations

Abbreviation	Explanation
°	Degree
°C	Centigrade
“	Inch
%	Percentage
AtoN	Aid to Navigation
BGS	British Geological Survey
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CGS	Concrete Gravity Structure
CIP	Communication Interface Plan
CoP	Cessation of Production
CPP	Central Production Platform
DESNZ	Department for Energy Security and Net Zero
DGT	Dimlington Gas Terminal
DP	Decommissioning Programme
DTS	Deck Transition Structure
EAJ	Environmental Assessment Justification
EC	European Commission
EEC	European Economic Community
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EU	European Union
EUNIS	European Nature Information Systems

Abbreviation	Explanation
FPSO	Floating Production Storage and Offloading
GCD	Gas Compression Deck
HCS	Hydrocarbon Safe
HLV	Heavy Lift Vessel
HSEx	Health and Safety Executive
ICES	International Council for Exploration of the Sea
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
JUB	Jack-Up Barge
km	Kilometre
km^2	Kilometre Squared
LAT	Lowest Astronomical Tide
LSA	Low Specific Activity
m	Metre
m^3	Metre cubed
MAT	Master Application Template
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MESH	Mapping European Seabed Habitats
MHV	Mono Hull Crane Vessel
MMO	Marine Management Organisation
MoD	Ministry of Defence
MPA	Marine Protected Area
MU	UK North Sea Management Unit
N/A	Not applicable
NDT	Non Destructive Testing
NEO	NEO Energy Petroleum Limited
NFFO	National Federation of Fishermen's Organisation
NIFPO	Northern Ireland Fish Producers' Organisation
NORM	Naturally Occurring Radioactive Material
NSTA	North Sea Transition Authority
NUI	Normally Unattended Installation

Abbreviation	Explanation
OEUK	Offshore Energies UK formerly Oil & Gas UK
OPEP	Oil Pollution Emergency Plan
OPRED	Offshore Petroleum Regulator for Environment & Decommissioning
OSPAR	Oslo and Paris Convention
PUK	Perenco UK Limited
PEXA	Practice and Exercise Area
PETS	Portal Environmental Tracking System
PL	Pipeline
Premier Oil	Premier Oil E&P UK EU Limited
RADICLE	Ravenspurn Dimlington Cleeton
RNCC	Ravenspurn North Central Complex
RND	Ravenspurn North Development
RSA	Ravenspurn South Alpha
RSB	Ravenspurn South Bravo
RSC	Ravenspurn South Charlie
RSD	Ravenspurn South Development
S29	Section 29
SAC	Special Area of Conservation
SAT	Subsidiary Application Template
SFF	The Scottish Fishermen's Federation
SLV	Single Lift Vessel
SNS	Southern North Sea
SPA	Special Protected Areas
spp.	Species plural
SSA	Site Specific Assessment
ST2	Ravenspurn North Satellite Tower 2
ST3	Ravenspurn North Satellite Tower 3
Te	Tonne (s)
TFSW	Transfrontier Shipment of Waste
UK	United Kingdom
UKCS	UK Continental Shelf
UKHO	United Kingdom Hydrographic Office

Abbreviation	Explanation
WSB	West Sole Bravo
WT-1	Wellhead Tower 1

1. EXECUTIVE SUMMARY

1.1 Decommissioning Programme

This document contains a Decommissioning Programme (DP) for Ravenspurn North Central Complex (RNCC) Gas Compression Deck (GCD). This DP will cover the decommissioning of the RNCC GCD topside module only; the remainder of the infrastructure will be covered by separate DPs.

The other installations, which are part of the RNCC complex, remain in production and are not currently being considered for decommissioning and will be covered under a future DP(s).

Perenco UK Limited (PUK) has prepared this DP on behalf of all Section 29 (S29) Notice Holders.

1.2 Requirement for Decommissioning Programme

Topside:
In accordance with the Petroleum Act 1998, the Section 29 notice holders of the RNCC GCD Topside Table 1.2 are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the topside detailed in Section 2.1 of this programme. Section 29 notice holders' letter of support will be provided directly to the Offshore Petroleum Regulator for Environment & Decommissioning (OPRED) and will be included in the final version (Section 8).

In conjunction with public, stakeholder and regulatory consultation, the DP is submitted in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for a 3-year decommissioning project plan due to begin in 2026.

Pipelines:
There are no import or export subsea pipelines connected to the GCD topside or the shaft of the Concrete Gravity Structure (CGS) supporting the GCD platform.

There will be a separate DP for the decommissioning of the pipelines (PL) (PL729, PL730, PL669, PL670, PL671, PL989, PL990, PL991.1 & PL991.2) associated with the RNCC installation.

1.3 Introduction

The Ravenspurn North field is situated largely within blocks 43/26 and 42/30 of the United Kingdom Continental Shelf (UKCS) and is approximately 76 kilometres (km) east of the nearest landfall at Flamborough Head on the East Riding of Yorkshire coast, and 115km west of the United Kingdom (UK) / Netherlands median line.

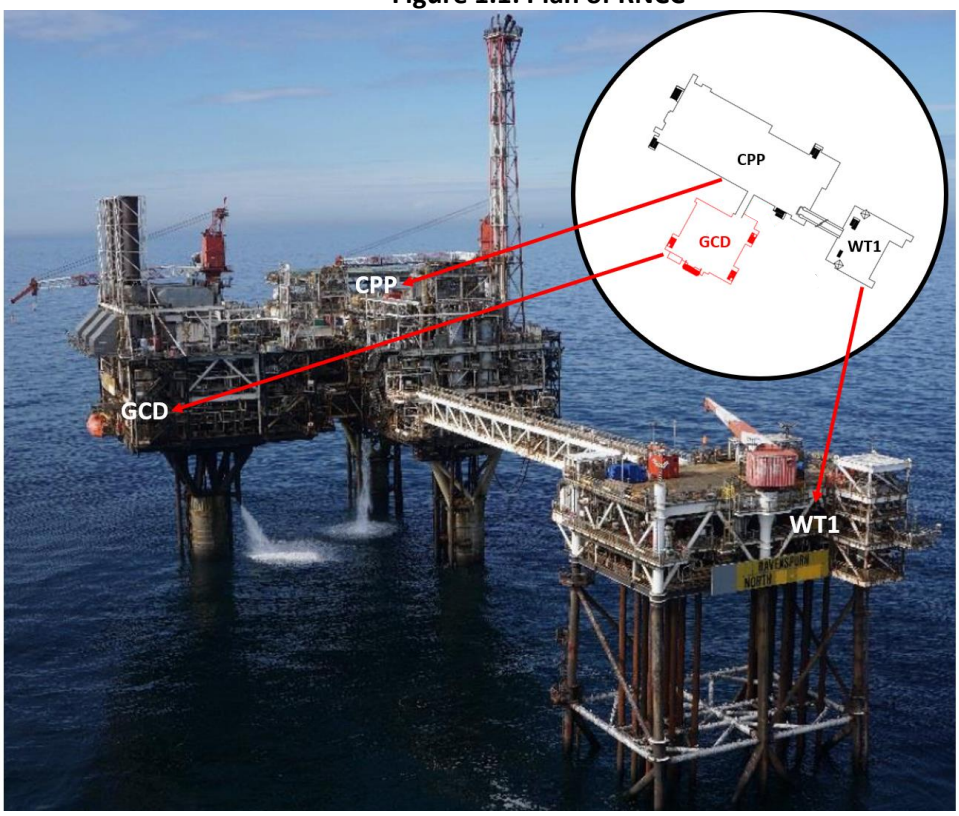
The Ravenspurn North Development (RND) consists of three installations: RNCC, which is normally attended, and Ravenspurn North Satellite Tower 2 (ST2) and Ravenspurn North Satellite Tower 3 (ST3), which are Normally Unattended Installations (NUI) (Figure 1-2).

RNCC provides accommodation for up to 51 persons, utilities (including mains power generation), and gas processing, metering, and export facilities. It comprises three installations as follows:

- Central Production Platform (CPP)
- Gas Compression Deck (GCD)
- Wellhead Tower 1 (WT-1)

The coordinates (in WGS84 format) for the CGS supporting both CPP and GCD topsides are Latitude: 54° 01' 50.2526" North and Longitude: 01° 06' 02.8286" East. The longitudinal axis of the installation lies approximately 30° west of true north.

Figure 1.1: Plan of RNCC



The WT-1 tubular steel structure was installed in 1988. In 1989, the CGS was installed, and CPP was lifted onto the CGS. The GCD was installed onto the CGS 4 years later in 1993. RNCC CPP receives gas from wells on WT-1, the two Satellite Towers ST2, ST3 and the Johnston subsea facility owned by Premier Oil E&P UK EU Limited and PUK. The gas is processed on CPP, and produced gas and condensate are exported from CPP via the 24 Inch (") export pipeline to Cleeton before being routed onto the Dimlington Gas Terminal (DGT).

Gas was previously compressed offshore using the facilities on the GCD, however, in 2017, when compression was no longer required, the gas compression facilities on the GCD platform were positively isolated and made gas safe as part of the PUK RADICLE project.

In 2020, to reduce maintenance and inspection requirements, the GCD topside module was de-powered and fully air gapped from CPP as part of the GCD Disconnect Project. The platform was verified as Hydrocarbon Safe (HCS) on 24th October 2020 by Lloyd's Register Group. All vessels and associated pipework were left open to the atmosphere.

The GCD topside module consists of three main deck levels; the cellar deck, mezzanine deck and weather deck which are each currently bridge linked to CPP. The three connecting bridges from GCD will remain in place during and following the pre-dismantlement campaign with permit only access to GCD. The bridges will be removed safely during the topside's dismantlement campaign.

The CPP and GCD topsides are supported by the same substructure, a CGS with 3 shafts, whilst WT-1 is supported by a conventional steel structure. The GCD is supported on a single shaft of the CGS, with a Deck Transition Structure (DTS) providing the interface between the shaft of the CGS and the GCD topsides module, as shown in Figure 3.1. The DTS consists of a tubular steel frame, with horizontal and diagonal I-beam members made of plate girders. There are no import or export subsea pipelines currently connected to the concrete shaft supporting GCD.

The GCD topside pipework has been fully air gapped from the CPP; the facilities have been flushed and purged and have been verified as HCS. However, some interconnecting cables and minor destruction work in the vicinity of the bridges and DTS are required before the topside's dismantlement campaign for GCD to allow for the removal of the interconnecting bridges and the full disconnection of CPP and GCD. These pre-dismantlement preparations and removal works have been shared with OPRED. Works include:

- Removal of obstacles beneath the cellar deck on GCD, including redundant access platforms, scaffolding, and tertiary structural steel.
- Removal of the caissons on GCD to their dead weight supports.
- Additional destruct of redundant minor lines and cables (connecting GCD and CPP) to facilitate the future removal of topside and bridges.
- Installation of strengthening steel required for topside removal.
- Installation of skid beam supports on the DTS.
- Reinforcement of the cellar deck guides.
- NDT of existing lift points on bridges (if feasible) and DTS.

OPRED has considered these proposals and are satisfied that PUK has demonstrated that they will not compromise or prejudice feasible decommissioning options for the remaining infrastructure and OPRED was also satisfied that the removal of the items mentioned above, will not obstruct, or hamper any future monitoring or sampling of the GCD, the jacket or the concrete gravity structure.

The CGS shafts and cells contain seawater, which was used during the installation of the substructure as ballast to control the upending sequence. The CGS has never been used for the storage of hydrocarbons. Samples will be taken from inside the CGS for analysis before topside removal. Collection of samples from the CGS will also be possible after removal of the GCD. After the removal of the topside, there will be no exposure of the interior of the CGS to the sea.

The GCD topside is being removed before the field Cessation of Production (CoP), currently planned for 2038, because of reasons around safety, economics, and vessel availability. The removal of GCD topside will not obstruct or hamper the operation of the CPP or WT-1.

1.4 Overview of Installation Being Decommissioned

1.4.1 Installations

Table 1-1: Installations Being Decommissioned			
Fields	Ravenspurn North Field	**Production Type (Oil/Gas/Condensate)**	Gas
Nominal Water Depth (m)	43	**UKCS Block**	43/26
Distance to median (km)	115	**Distance from nearest UK coastline (km)**	76
Surface Installations			
Number	Type	Topsides Weight (Te)	
1	GCD	3187[1]	
1	Mezz Deck Bridge	2[2]	
1	Cellar Deck Bridge	18[2]	
1	Weather Deck Bridge	11.5[2]	
Subsea Installations		**Number of Wells**	
Number	Type	Platform	Subsea
0	Not Applicable (N/A)	0	0
Drill Cuttings Piles			
Number of Piles	N/A	Total Estimated Volume (m^3)	N/A

Note: [1] (GCD operating weight ONLY, excludes CPP and WT1)
Note: [2] (GCD topside weight includes the weight of the 3 bridges)

Table 1-2: Installations Section 29 Notice Holders Details		
Section 29 Notice Holders	**Registration Number**	**Equity Interest (%)**
Perenco UK Limited	04653066	71.25
Premier Oil E&P UK EU Limited	02907493	28.75
Arco British Limited, LLC	FC005677 BR001713	0
BP Exploration Operating Company Limited	00305943	0
Britoil Limited	SC077750	0
Spirit Energy Resources Limited	02855151	0

1.5 Summary of Proposed Decommissioning Programme

Table 1-3: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason for Selection**
Topsides	
Topside is to be removed by (1) single lift removal, (2) modular removal, (3) through a combination of crane vessel lift and piece small dismantling or skidding of topsides (4). Re-use followed by recycling and other recovery routes before disposal as a final option is considered.	Complete removal and re-use, or disposal. Complies with Oslo and Paris Convention (OSPAR) requirements and OPRED guidelines and maximises recycling of materials
Subsea Installations	
There are no subsea import/export pipelines, flowlines, and umbilicals connected to the GCD topside.	
Wells	
There are no wells on GCD; all wells are on WT-1 and remain producing.	
Interdependencies	
Access to the top of the CGS shaft following the decommissioning of the GCD topside is not expected to be possible under normal operations. If cleaning is deemed to be required, it is anticipated that this could be provided by rope access. However, the shaft is flooded to sea level with seawater and has never been used for storage of hydrocarbons, so cleaning is not likely to be required; sampling of the shaft contents in support of this will be reviewed before the removal of the GCD topside. The sampling and the results of that sampling will be discussed with OPRED before removal of the RNCC GCD topside. There are no import or export subsea pipelines connected to the concrete shaft supporting GCD. The subsea infrastructure within the field, consist of various pipelines connected to the RNCC CPP installation. These pipelines import gas from the satellite fields, (i.e., ST-2 (PL670 & PL671), ST-3 (PL729 & PL730), and Johnston (PL989, PL990, PL991.1 & PL991.2)), and export gas to the Cleeton platform via PL669. Additionally, subsea power cables run from RNCC CPP to the satellite fields (ST2 & ST3). No pipeline or umbilical will be impacted by the removal of GCD. No third-party infrastructure will be disturbed as a result of the decommissioning proposals.	

1.6 Field Location Including Field Layout and Adjacent Facilities

Figure 1.2: Ravenspurn North Field Location in UKCS

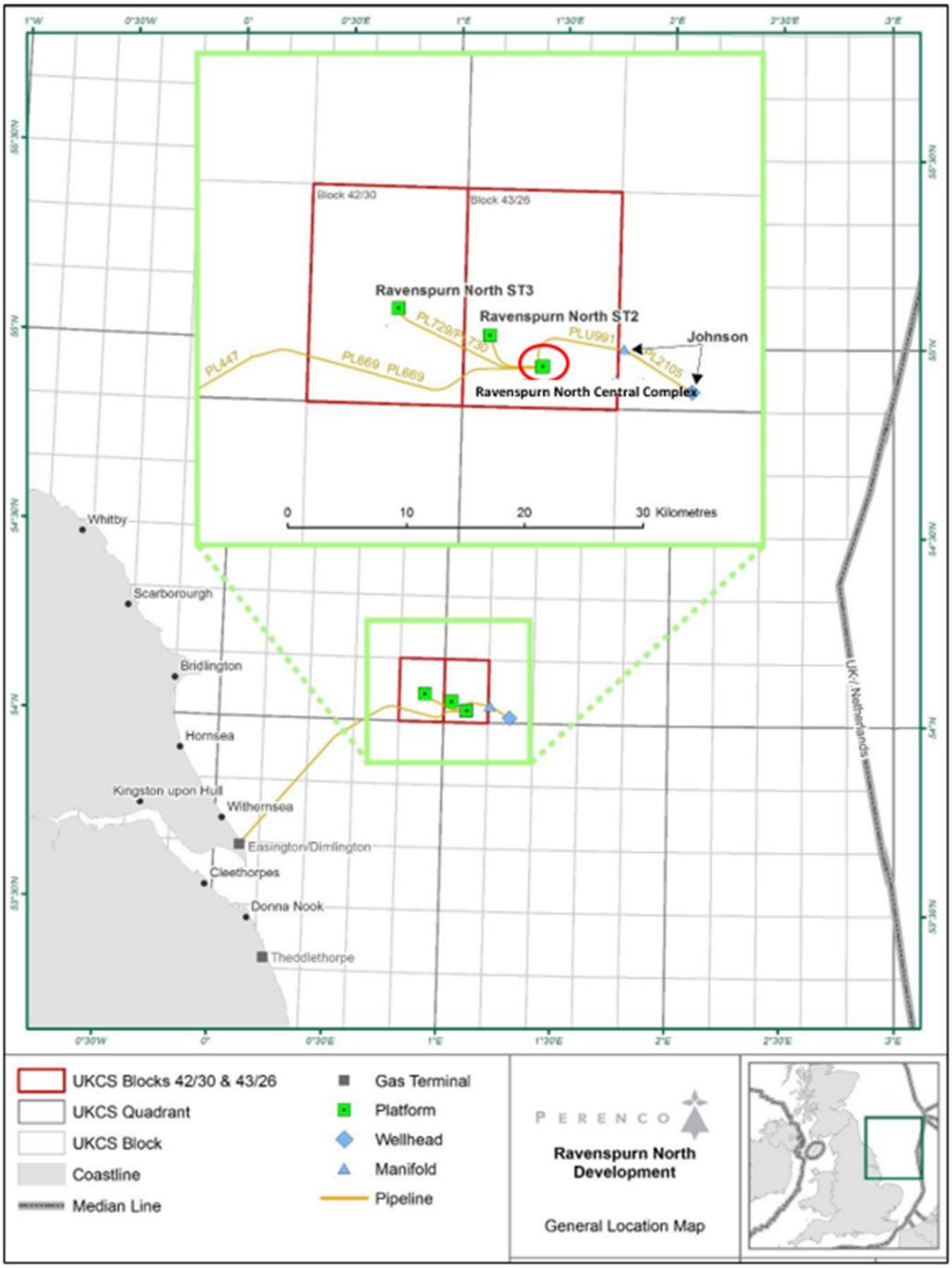


Figure 1.3: Ravenspurn North Field Layout

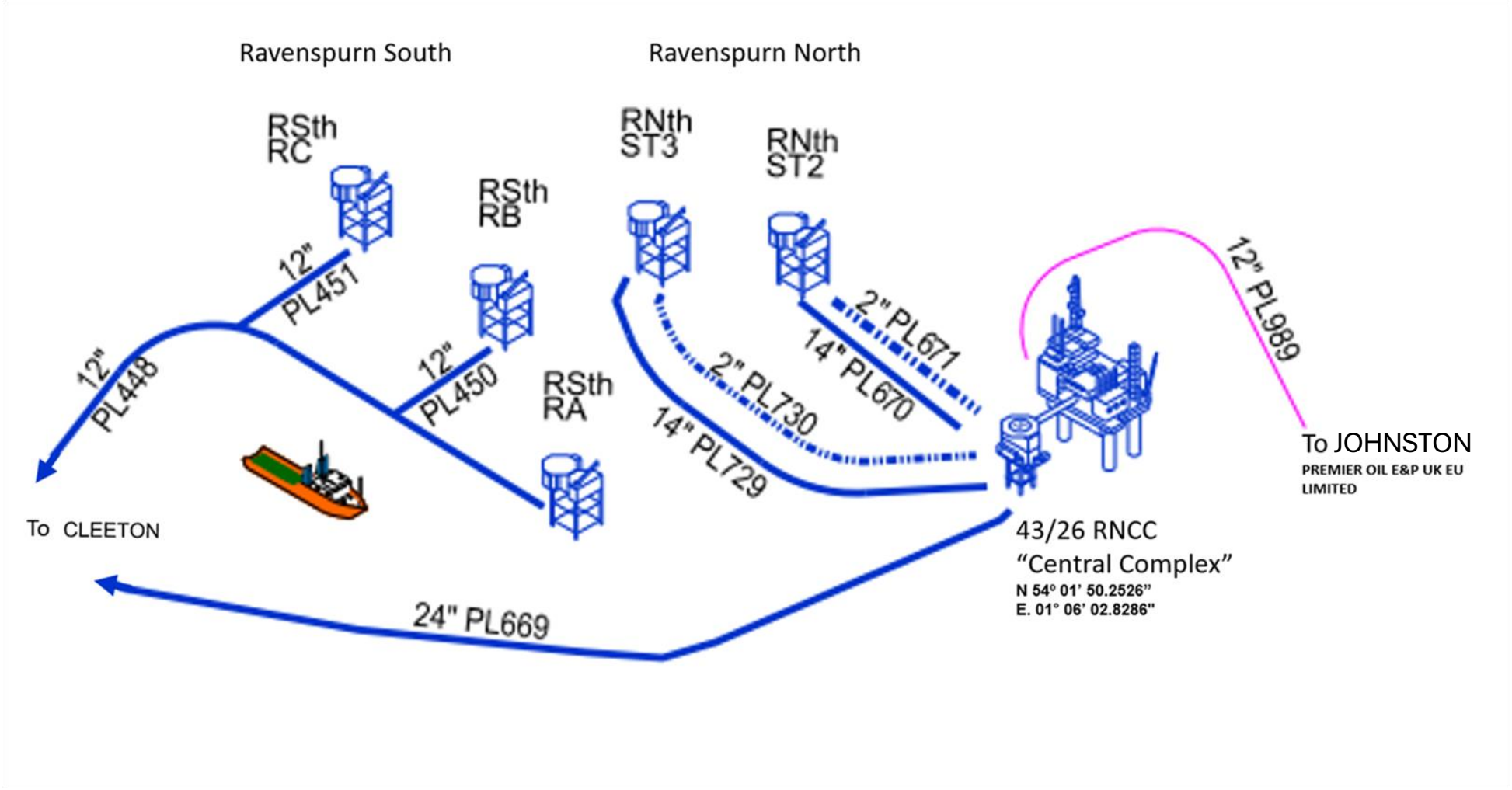
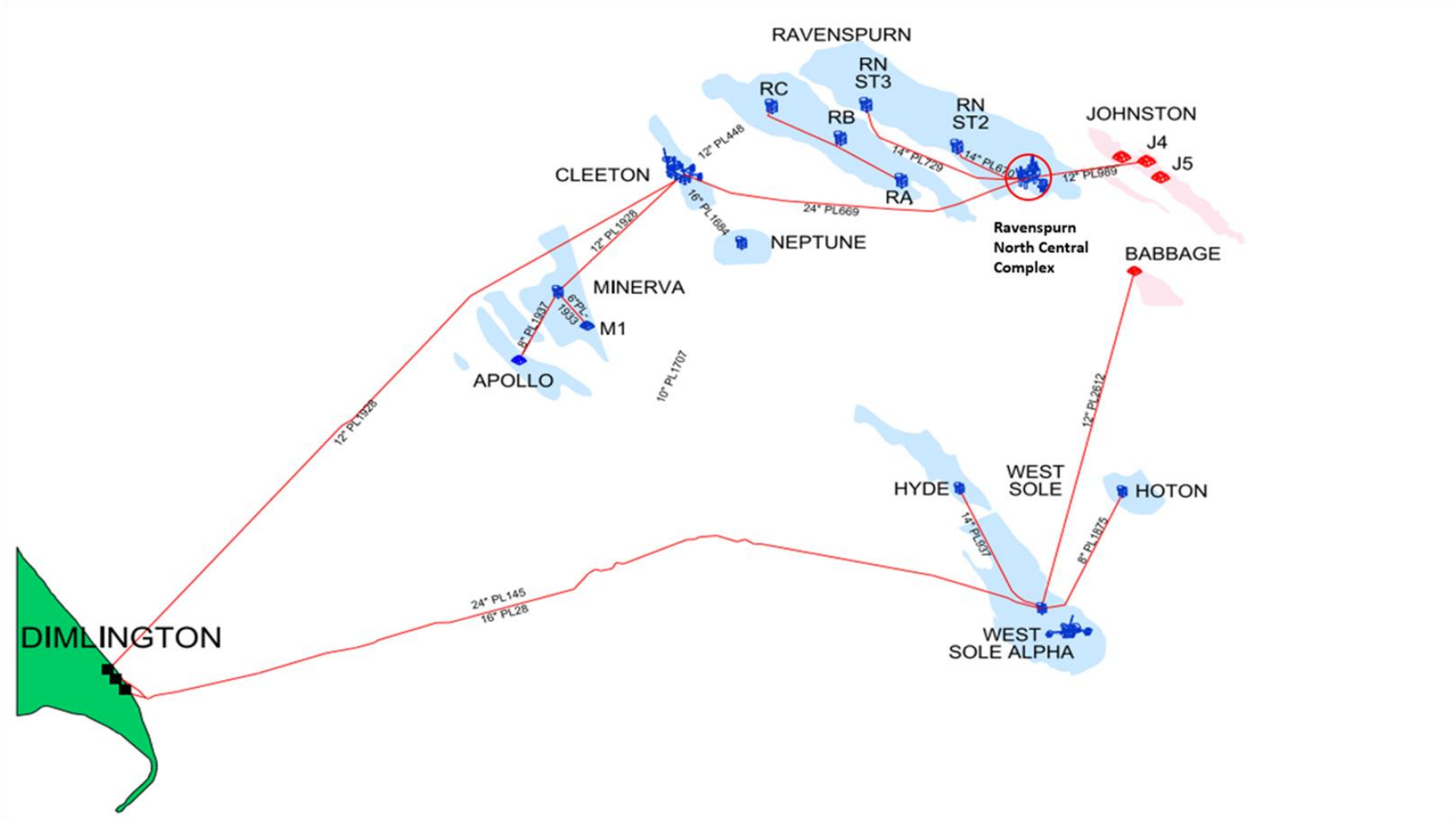


Table 1-4: Adjacent Facilities					
Operator/ Owner	**Name**	**Type**	**Distance & Direction**	**Information**	**Status**
Perenco UK Limited	Apollo Manifold	Subsea Wellhead	36km southwest	A subsea manifold exporting gas indirectly to the Cleeton platform via a 6.3km 8" pipeline to the Minerva platform.	Operational
NEO Energy Petroleum Limited (NEO)	Babbage	Platform	11km southeast	Gas produced from Babbage is transported through 28km 12" pipeline to West Sole Bravo (WSB) platform.	Operational
Perenco UK Limited	Cleeton	Platform	25km west	Four bridge linked jacket platforms: Cleeton Wellhead Tower, Cleeton Riser Tower, Cleeton Production / Quarters Platform and Cleeton Compression Platform. Production is exported to the onshore DGT via a 59km 36" pipeline (PL447).	Operational
Perenco UK Limited	Hoton	Platform	26km southeast	Gas produced from Hoton is transported through 11.7km 8" pipeline to WSB platform.	Operational
Perenco UK Limited	Hyde	Platform	25km southwest	Gas produced from Hyde is transported through 11.4km 14" pipeline to WSB platform.	Operational
Premier Oil E&P UK EU Limited	Johnston	Subsea Wellhead	7km east	The Johnston subsea development that produces gas and condensate to RNCC via a 9.5km 12" pipeline (PL989).	Operational
Perenco UK Limited	Minerva	Platform	35km southwest	A platform that produces gas and condensate directly	Operational

Table 1-4: Adjacent Facilities					
Operator/ Owner	**Name**	**Type**	**Distance & Direction**	**Information**	**Status**
				to the Cleeton platform via a 13.1km 16" pipeline (PL1934).	
Perenco UK Limited	Neptune	Platform	21km southwest	A NUI platform that produces gas and condensate to Cleeton Platform via a 6.9km 16" pipeline (PL1684).	Operational
Perenco UK Limited	Ravenspurn South Bravo (RSB)	Platform	14km northwest	A NUI platform that produces gas and condensate to Cleeton Platform via a 0.06km 12" pipeline (PL450).	Operational
Perenco UK Limited	Ravenspurn South Charlie (RSC)	Platform	19km northwest	A NUI platform that produces gas and condensate to Cleeton Platform 0.06km 12" pipeline (PL451).	Operational
Perenco UK Limited	RNCC CPP	Platform	37.5m northwest	This part of the RNCC and is connected to GCD.	Operational
Perenco UK Limited	Ravenspurn North ST2 (ST2)	Platform	6.5km northwest	A NUI platform that produces gas and condensate to RNCC Platform 6.5km 14" pipeline (PL670).	Operational
Perenco UK Limited	Ravenspurn North ST3 (ST3)	Platform	6.5km northwest	A NUI platform that produces gas and condensate to RNCC Platform 6.5km 14" pipeline (PL729).	Operational
Perenco UK Limited	WT1	Wellhead Tower	115m northeast	This part of the RNCC and is connected to GCD.	Operational
Impacts of Decommissioning Proposals					
Decommissioning of the RNCC GCD will have no impact on the adjacent facilities.					

Figure 1.4: Adjacent Facilities to Ravenspurn North Field



1.7 Industrial Implications

PUK's contract strategy, Supply Chain Action Plan and Pathfinder will result in an efficient and cost-effective execution of the decommissioning works.

The RNCC GCD DP is managed by PUK to ensure safe, efficient, and legally compliant delivery of the various elements of the decommissioning scope. The intention is to make efficient use of the supply chain to generate value through the application of knowledge, innovation, and technology, explore collaboration opportunities and to employ best practice in the management of the supply chain to deliver a cost effective and reliable service. Where appropriate existing framework agreements may be used for decommissioning activities.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 Installations: Surface Facilities (Topsides/Jacket(s)/FPSO etc.)

Table 2-1: Surface Facilities Information					
Name	Facility Type	Location		Topsides/Facilities	
				Weight (Te)	No. of Modules
RNCC GCD	GCD Topside	WGS84	54° 01' 50.2526" N 01° 06' 02.8286" E	3187[2]	1[1]

Note: [1] The GCD topside may be removed in a single lift or skidded as one module, as several modular lifts, or as small piece modules.
Note: [2] The 3 bridges are included in the weight of the GCD topside.

2.2 Wells

There are no wells on GCD, the wells are located on WT-1 and remain producing.

2.3 Drill Cuttings

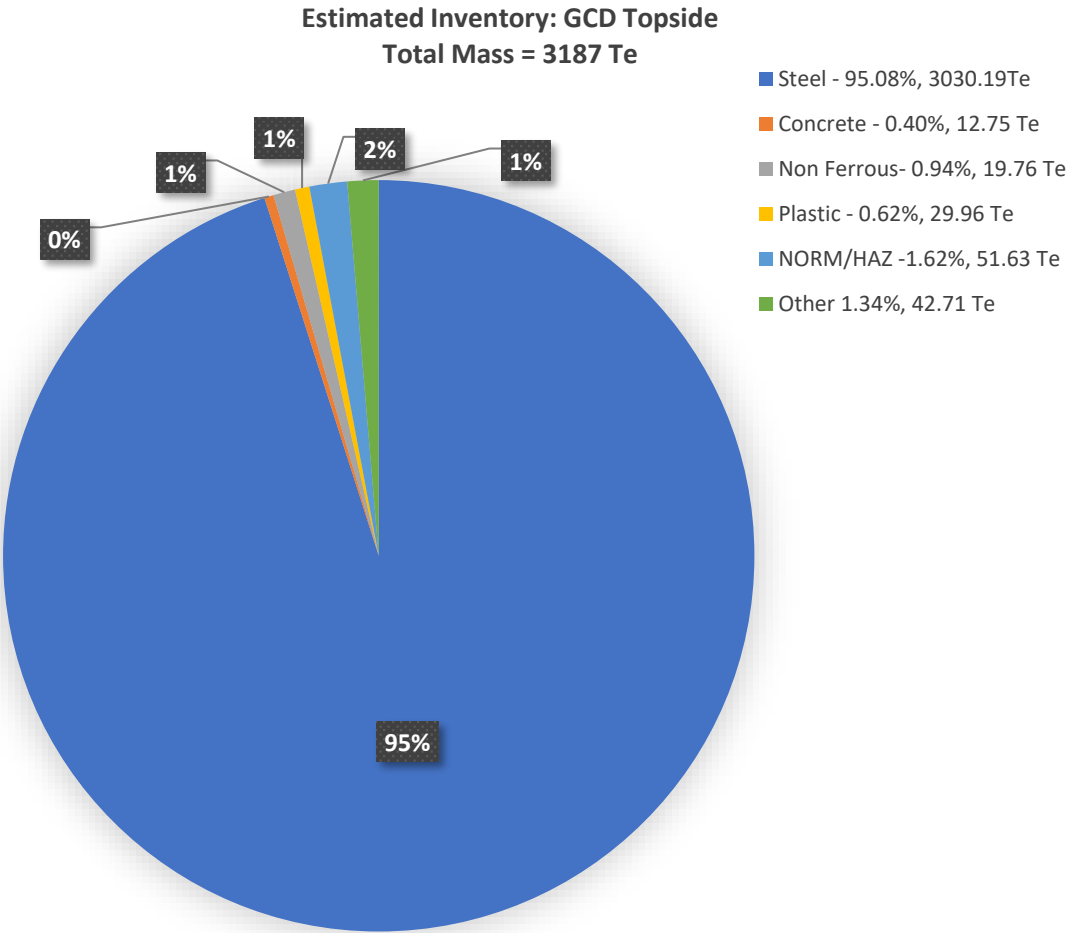
Table 2-2: Drill Cuttings Piles Information		
Location of Pile Centre	Seabed Area (m^2)	Estimated volume of cuttings (m^3)
N/A	N/A	N/A

2.4 Inventory Estimates

Figure 2.1 shows the estimated topside inventory to be decommissioned for RNCC GCD. The inventories exclude the CGS, which will be dealt with in a future Installation DP.

The removed equipment, appurtenances and steelwork will be transported onshore to a dismantlement yard for reuse, recycling, or disposal.

Figure 2.1: Pie Chart of Estimated Inventories (Topside)



3. REMOVAL AND DISPOSAL METHODS

In line with the waste hierarchy, in which the prevention of waste is preferred, PUK has assessed the options for extending the producing life of the GCD topside module, but this was considered not commercially viable.

Due to the ageing technology and high maintenance costs of the fabric and structural integrity, technically viable reuse options for individual components are unsafe or limited.

PUK will continue to review the GCD equipment inventories to assess the potential for adding to their existing asset spares inventory or for resale to the open market.

Recovered material will be landed ashore for disposal by a contractor. It is not possible to forecast the wider reuse market with any accuracy or confidence this far forward. PUK will continue to track reuse market trends in order to seize reuse opportunities at the appropriate time.

If the installation is to be disposed of outside of the United Kingdom, PUK will apply to the Environment Agency for International Waste Shipment (IWS) consent, in accordance with the International Waste Shipments (Amendment of Regulation (EC) No 1013/2006 and 1418/2007) Regulations 2021 and the Transfrontier Shipment of Waste Regulations 2007.

3.1 Topsides

3.1.1 Topsides Decommissioning Overview

The GCD topside is an integrated deck with three levels comprising a cellar deck at elevation (EL) +24.70m Lowest Astronomical Tide (LAT), a Mezzanine deck at EL +31.20m LAT, and a Weather deck at EL +37.7m LAT (see Figure 3.1).

The GCD topside module is positioned on the DTS shaft 3; it is connected to the CPP topside by three short bridges at weather, mezzanine, and cellar deck level. These bridges have been air gapped as part of previous platform rationalisation projects; however, prior to the final removal of GCD topside the bridges shall be fully removed by means of lifting.

In preparation for removal, the topside facilities have already been rendered HCS and the platform is no longer accessed except for maintenance related activities. This has resulted in the north-east and south-east stairways being barriered off, whilst the south-west stairway and the three bridges between CPP and GCD remain available and maintained for planned structural surveys and Aid to Navigation (AtoN) system maintenance. PUK is discussing and will agree the final requirements (if any) with relevant parties, such as Trinity House, for lighting of shaft 3.

Figure 3.1: Photograph of GCD Topside Structure, Transition Steel Frame (DTS) and Shaft 3

Figure 3.2: Diagram of GCD Topside East Elevation Looking West

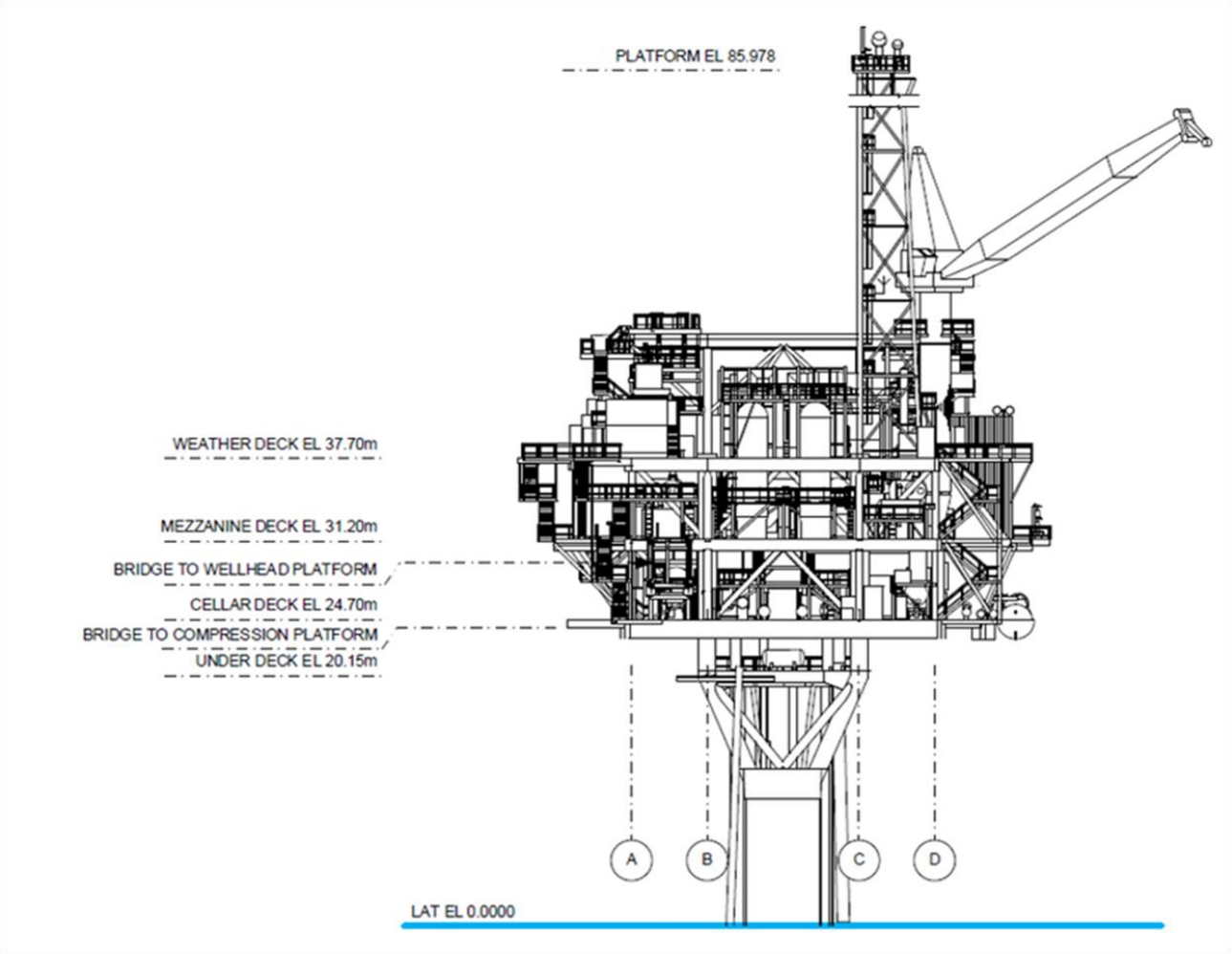
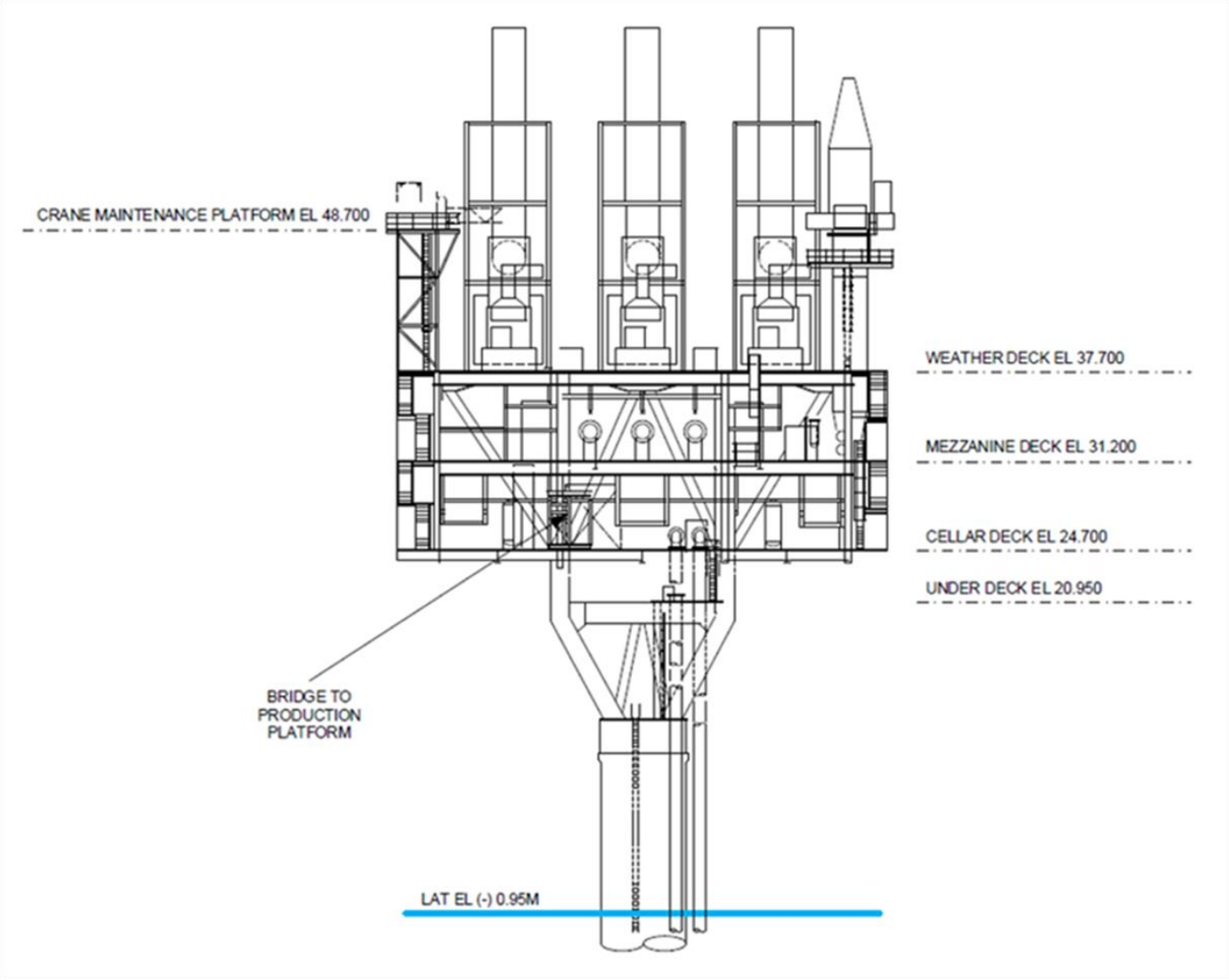


Figure 3.3: Diagram of GCD Topside North Elevation Looking South



Preparation/Cleaning

Table 3-1: Cleaning of Topside for Removal		
Waste Type	**Composition of Waste**	**Disposal Route**
Onboard Hydrocarbons	Process fluids, fuels and lubricants	GCD topside facilities have been rendered HCS, and therefore on-board hydrocarbons are not expected. Any residual hydrocarbons found during onshore dismantlement will be disposed of by dismantlement contractor.
Other Hazardous Materials	NORM/Low Specific Activity (LSA) Scale, any radioactive material, instruments containing heavy metals, batteries	Transported ashore for re-use, recycling or disposal by appropriate methods. If a Transfrontier Shipment of Waste (TFSW) permit is required, PUK will liaise with the relevant Waste Authority and ensure all relevant permits/consents are in place.
Original Paint Coating	Lead-based paint	Quantitative testing will be required at the dismantling facility. Transported ashore for re-use, recycling, or disposal by appropriate methods. If a TFSW permit is required, PUK will liaise with the relevant Waste Authority and ensure that all relevant permits/consents are in place.
	Chromium (VI) paints	
Asbestos and Ceramic Fibre	Minor quantities	Appropriate control and management will be enforced. Items will be transported ashore for disposal by appropriate methods.

Removal Methods:

Table 3-2: Topside Removal Methods	
1) HLV (semi-submersible crane vessel) ☑ 2) SLV ☑ 3) JUB ☑ 4) Piece small or large ☑ 5) Other ☐	
Method	**Description**
Single lift removal by SLV/HLV/MHV	Removal of the topside as a complete unit followed by transportation to shore for re-use of selected equipment, recycling, break up and/or disposal. Single lift dependant on vessel availability and suitability.
Modular removal and re-use/recycle by HLV/MHV	Removal of parts/modules of topside for transportation and reuse in alternate location(s) and/or onshore recycling/disposal.

Table 3-2: Topside Removal Methods	
1) HLV (semi-submersible crane vessel) ☑ 2) SLV ☑ 3) JUB ☑ 4) Piece small or large ☑ 5) Other ☐	
Method	**Description**
Skidding by JUB	Removal of the topside by skidding. The JUB will be positioned alongside the platform. The skidding system will be deployed to move the topside onto the rig's deck. Transportation to shore for re-use of selected equipment, recycling, break up and/or disposal at a selected disposal yard to comply with relevant legislation and company policy.
Piece small - Offshore removal 'piece small' for onshore reuse/disposal	Removal of topside by breaking up offshore and transporting to shore using work barge. Items will then be sorted for re-use, recycling or disposal.
Proposed removal method and disposal route	**The topside will be removed to shore and disposed of at a selected disposal yard to comply with relevant legislation and company policy. All necessary permits and consents required for trans-frontier shipments of waste will be in place prior to leaving UK waters.** **A final decision on decommissioning method will be made following a commercial tendering process and OPRED informed.**

3.2 Wells

Table 3-3: Well Plug and Abandonment
The plugging and abandonment of the wells is not relevant to GCD, as there are no wells on GCD. The Ravenspurn complex will remain producing via WT-1 and the satellite platforms, with gas imported/exported via CPP.

3.3 Waste Streams

Table 3-4: Waste Stream Management Methods	
Waste Stream	**Removal and Disposal Method**
Bulk Liquids	Vessels, pipework, and sumps have been drained as part of the HCF campaign. Residual oil may remain in storage tanks that will be disposed of onshore.
Marine Growth	Removed onshore. Disposed of according to guidelines.
NORM/LSA Scale	Tests for NORM/LSA will be undertaken offshore by the Radiation Protection Supervisor and any NORM encountered will be dealt with and disposed of in accordance with guidelines and company policies and under appropriate permit.

Table 3-4: Waste Stream Management Methods	
Waste Stream	**Removal and Disposal Method**
Asbestos	Tests for asbestos will take place offshore and will be dealt with / disposed of according to guidelines and company policies.
Other Hazardous Wastes	Detailed survey for other hazardous wastes will be undertaken offshore and will be dealt with / disposed of according to guidelines and company policies.
Onshore Dismantling Sites	Appropriate licenced sites will be selected. The chosen facility must demonstrate a proven disposal track record and waste stream management throughout the deconstruction process and demonstrate its ability to deliver recycling options. OPRED will be made aware once a decision has been made.

Table 3-5: Inventory Disposition			
	Total Inventory (Te)	**Planned (Te) to Shore**	**Planned Left in Situ**
Installations	3187 [1]	3187 [1]	0

Note: [1] – Topside weight represents current operational weight as per the latest weight report.

4. ENVIRONMENTAL APPRAISAL

4.1 Executive Summary

The RNCC is located within Block 43/26 in the Southern North Sea (SNS), 76km east of the nearest landfall at Flamborough Head on the East Riding of Yorkshire coast, and 115km west of the UK / Netherlands median line.

Based on the findings of this EA, including the identification and subsequent application of appropriate mitigation measures and project management according to PUK's Environment Policy and Environmental Management System (EMS), it is considered that the proposed decommissioning activities do not present any significant impact to environmental or societal receptors within the UKCS.

As the Topside DP will result in minimal environmental interactions (i.e. solely seabed disturbance, noise and atmospheric emissions from the Jack Up Barge (JUB), PUK plans to assess these impacts via an Environmental Assessment Justification (EAJ) document. The EAJ will be attached to the Consent to Locate Subsidiary Application Template (SAT), which is under the existing RNCC GCD Production Master Application Template (MAT) in the OPRED Portal Environmental Tracking System.

PUK will also undertake a full Environmental Appraisal to support the future RNCC Installation and Pipeline DPs for the decommissioning of the CGS and the remaining RNCC installations, and the associated pipeline decommissioning activities.

The EA section of this DP is made up of the following parts:

- Regulatory Summary – a description of how the decommissioning activities will be regulated during the topside removal campaign.

- Baseline Environmental and Socioeconomic Sensitivity – a summary of the baseline sensitivities with respect to the seabed and sediment environment, fish and shellfish, marine mammals, seabirds, conservation, fisheries and shipping, and other users.
- Impact Assessment – a summary of the aspects that may occur during decommissioning and an assessment of their impacts.
- Environment Management – an overview of the performance management and internal assurance systems in place to ensure activities take place in a safe, compliant, and acceptable manner, and according to agreed plans.
- Potential Environmental Impacts and Their Management – Overview of impacts and mitigation measures to be implemented during decommissioning activities.

4.2 Regulatory Summary

Any MATs, SATs, Oil Pollution Emergency Plans (OPEPs) and other regulatory requirements will be submitted using the Portal Environmental Tracking System (PETS) comprising in particular:

1. A Standalone MAT for JUB co-location and interim lighthouse mode.
2. Activities to prepare the seabed for placement of the JUB under a Stand-Alone MAT.

Should any other regulatory requirements arise, these will be addressed via the relevant permitting process at the appropriate time.

All decommissioning activities will come under the RNCC OPEP, and a suitable Communication Interface Plan (CIP) will be used to interface between OPEPs covering the installation and any support vessels or barges.

PUK will undertake a full EA to support the DP for the future jacket removal and pipeline decommissioning activities.

4.3 Baseline Environmental and Socioeconomic Sensitivity

4.3.1 Metrological and Oceanographic Conditions

The SNS extends from the Flamborough front in the south to north of the Dover Strait in the south, with a transition from south sea water to Atlantic water. This region is shallow (generally 0-50m), with a predominantly sandy seabed.

The SNS has many extensive sandbanks features at less than 25m depth; these include areas which have been designated under the European Union (EU) Habitats Directive (92/43/EEC) such as Dogger Bank SAC and the North Norfolk Sandbanks SAC.

The RNCC is located in the SNS, where waters are generally shallow compared to the northern and central North Sea. Water depths at the Ravenspurn North Field range between 40.2m and 43.4m Lowest Astronomical Tide (LAT). Site survey data associated with the nearby Johnston (J4) well in Block 43/27a noted that the water depth around the well is 39.4 m LAT (Gardline, 2004). The area of Block

43/26 is typical of offshore regions in the SNS, where hydrographical, meteorological, geological and biological characteristics are relatively constant over large areas.

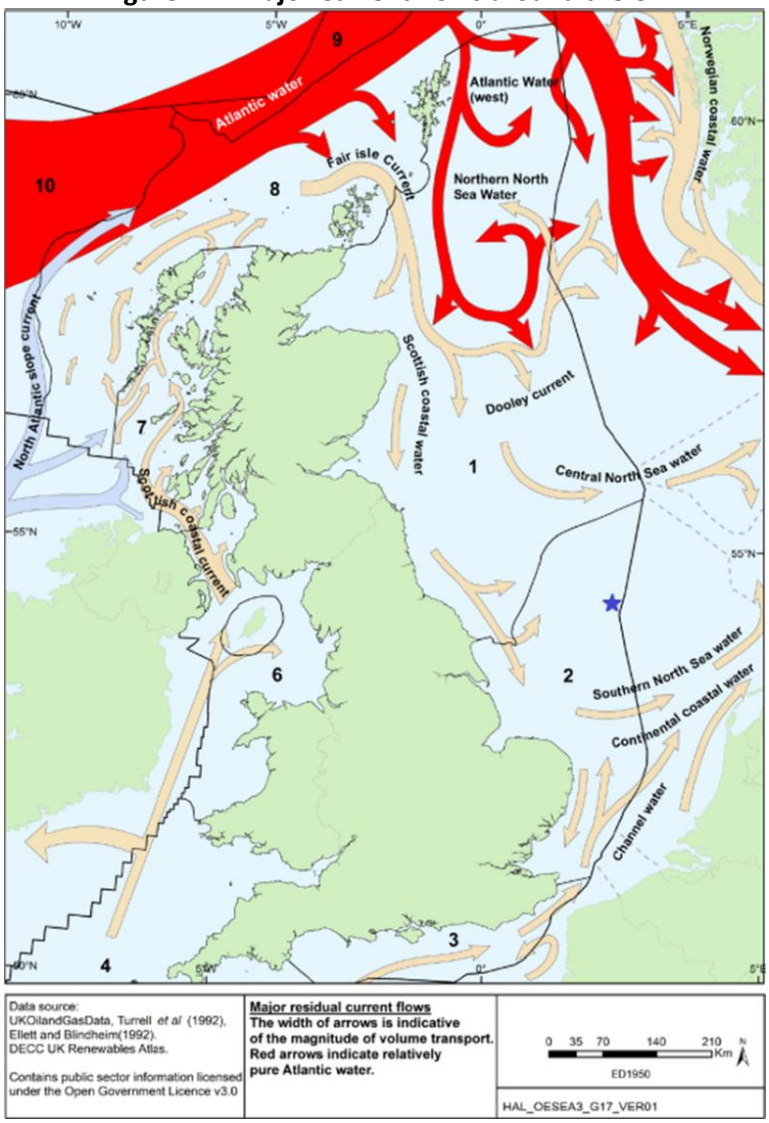
The general circulation of near-surface water masses in the North Sea is cyclonic, mostly driven by the ingression of Atlantic surface water in the western inlets of the northern North Sea. As a result, residual water currents near the sea surface tend to move in a south-easterly direction along the coast towards the English Channel (Neff, 2005; DESNZ, 2016). Data for this area of the SNS indicates current velocities ranging from 0.25 to 0.50 m/s for mean neap speeds, and 0.50 to 0.75 m/s for mean spring speeds (ABPmer, 2016). Mid-water velocities are similar to surface speeds, while near bottom velocities are generally lower. The tidal streams flow in a predominately north-westerly to south-easterly direction. The annual mean significant wave height is 1.51 to 1.75m, whilst the mean spring wave height range is between 1.26 and 1.5m (ABPmer, 2016).

The shallow bathymetry and relatively fast water circulation in this area of the SNS lead to a relatively well-mixed water column throughout the year (DESNZ, 2016). This leads to a consistent level of biological productivity throughout the year, with only minor peaks seen in spring and late summer, which are typical of deeper waters.

In general, all the areas south of 54˚N remain vertically mixed all year round due to the influence of strong tidal currents, whereas in the deeper water to the north, thermal stratification occurs during the summer months. Water masses remain vertically well mixed throughout the year with no thermocline forming in the summer months due to the influence of strong tidal currents (UKDMAP, 1998). Sea surface temperatures in the vicinity of the Ravenspurn North Development are lowest from January to April (6-7°C) and warmer between May and December (9-15°C), with peak sea surface temperatures occurring in August (NMPi, 2016).

Salinities decrease both towards the south and towards the coastline, reflecting the influence of freshwater inputs from the adjacent landmasses. The salinity at the RNCC platform location varies throughout the year. The mean annual salinity of the sea surface is 34.58 parts per thousand (ppt), while the mean salinity near the seabed is 34.587ppt (NMPI, 2018).

Figure 4.1: Major Current flows around the UK



The predominant wind direction throughout the year is westerly, although there are seasonal variations. Between September and February, winds predominantly originate from south-westerly directions, whereas between March and August winds originate from a north-westerly direction. Wind speeds in the area of the RNCC are mainly between 9.5 and 10 m/s (fresh to strong breezes). Wind speeds in spring can be between 9.0 and 9.5 m/s (ABPmer, 2016).

Air temperatures in this area of the SNS are at their lowest in January and February (mean 4 to 6°C) (DESNZ, 2016).

4.3.2 Seabed and Sediment Conditions

Mapped information indicates that the SNS generally comprises of sand and muddy sand with significant areas of coarse sediment, especially closer to shore. Sediments are highly mobile largely due to the increased near seabed currents (DESNZ, 2016). The Mapping European Seabed Habitats (MESH) Project identified that sediments in Regional Sea 2 largely comprise fine sand and sandy mud (DESNZ, 2016; EMODnet, 2022). In the vicinity of the Ravenspurn North Development the seabed

sediments largely comprise shallow coarse or mixed sediments, shallow sands and shelf sands (EMODnet, 2022). British Geological Survey (BGS) seabed mapping has also confirmed this with seabed sediments in the vicinity of the Ravenspurn North Development comprising Holocene sand and slightly gravelly sand (BGS, 2015; NMPi, 2016).

Sandbanks and sandwaves are a common feature of the SNS. Notable sandbank features in the vicinity of the Ravenspurn North Development include The Hills to the north of the RNCC, and the sandbanks associated with the Humber estuary to the west of the RNCC, including the Inner and Outer Dowsing Banks (Hydrographer of the Navy, 2011). Megaripples up to 0.3m high were observed throughout the area.

The following European Nature Information System (EUNIS) seabed classifications have been identified in the vicinity of the Ravenspurn installation (Connor et al, 2004; DESNZ, 2016; EMODnet, 2022).

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.

A5.37 Deep circalittoral mud - In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50-70 m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as Thyasira species (spp.), echinoderms and foraminifera.

A seabed debris survey was completed by Gardline in 2018 at the nearby Ravenspurn North Satellite Platform ST3. The seabed sediments were interpreted to comprise sand with megaripples up to 0.3m high observed throughout the survey area. Areas of coarser sediments accumulated in the vicinity of the Ravenspurn North Satellite Platform ST3 were present. The survey bathymetry and sonar data identified multiple magnetic anomalies along two trends (one orientated northeast-southwest and the other orientated northwest-southeast). They have been interpreted as being related to the North Satellite Platform ST3. The five objects observed on side scan sonar data were interpreted as an item of debris and four boulders. The largest, and the only item of debris interpreted within the survey area is 0.4m height and is located 335 m SSW from the Ravenspurn North Satellite Platform ST3 Centre. The closest boulder to the Ravenspurn North Satellite Platform ST3 Centre is 0.2 m high and lies 48 m towards the north-northeast (Gardline 2018).

4.3.3 Benthic fauna

A survey undertaken for the Ravenspurn North CPP by Hamilton in 1988 undertook grab sampling to identify faunal communities within the vicinity of the CPP. The benthic infaunal community was found to be dominated by polychaetes, including *Magelona mirabilis*, *Spio filicornis*, *Chaetozone setosa*, *Spiophanes bombyx* and crustaceans belonging to the genus *Bathyporeia* spp. (UK Benthos, 2015). Other taxa that were also found to dominate the samples included nemerteans (*Tubulanus* spp.) and brittlestars (juvenile and adults belonging to the genus *Amphiura* spp.) (UK Benthos, 2015).

Surveys were also previously undertaken at the Cleeton field in Block 42/29 by British Petroleum (BP) in 1988, which is located approximately 25 km west of the Ravenspurn North CPP. The predominant taxa in the benthic faunal communities at the survey included polychaetes (*Ophelia limacina*, *C. setosa, Nephtys* spp. (juv.), *Scoloplos armiger*), hydrozoans (*Corymorpha nutans*) and malacostracan

amphipods (*Bathyporeia* spp.). Another survey conducted by BP for the Ravenspurn South Charlie platform in 1988 found that the dominant taxa identified at the field were polychaetes (*Nephtys cirrosa, S. bombyx, M. mirabilis*), bivalves (*Tellina fabula*), brittlestars (*Amphiura* spp. (juv.)) and malacostracan amphipods (*Bathyporeia* spp.) (UK Benthos, 2015).

These species previously identified are frequently found within the wider SNS and are therefore likely to be characteristic of the Ravenspurn North Development area. Note that no results from more recent surveys undertaken at the field or the surrounding area are available.

4.3.4 Plankton

The collective term plankton describes the plants (phytoplankton) and animals (zooplankton) that live freely in the water column and drift passively with the water currents. Plankton form the base of the food chain, therefore changes in the abundance and composition of the planktonic community can have impacts on higher consumers. Typically, in the SNS a phytoplankton bloom occurs every spring, generally followed by a smaller peak in the autumn (DESNZ, 2016).

The SNS is characterised by shallow, well-mixed waters, which undergo large seasonal temperature variations (JNCC, 2004). The phytoplankton community is dominated by the dinoflagellate genus Tripos (*T. fusus, T. furca, T. lineatus*) along with higher numbers of the diatom, Chaetoceros (subgenera Hyalochaete and Phaeoceros) than are typically found in the northern North Sea. From November to May when mixing is at its greatest, diatoms comprise a greater proportion of the phytoplankton community than dinoflagellates (DESNZ, 2016).

The zooplankton community is dominated by copepods including *Calanus helgolandicus* and *C. finmarchicus* as well as *Paracalanus* spp., *Pseudocalanus* spp., *Acartia* spp., *Temora* spp. and cladocerans such as *Evadne* spp. (DESNZ, 2016). However, there has been a marked decrease in copepod abundance in the SNS, which has been linked to changes in global weather phenomena (DESNZ, 2016). The planktonic assemblage in the vicinity of the RNCC is not considered unusual.

4.3.5 Fish and Shellfish

The North-East Atlantic and North Sea is split into a statistical grids called International Council for the Exploration of the Seas (ICES) Rectangles in order to map statistical information about the area. The RNCC is located in the southwest corner of ICES Rectangle 37F1.

Generally, there is little interaction between fish and offshore developments, although some species congregate around platforms and along pipelines. Spawning individuals and juveniles can however be sensitive to seismic activities, seabed disturbance activities, discharges to sea and, in some cases, accidental spills.

The SNS provides spawning and nursery grounds for a number of fish and shellfish species. Species that have been identified as spawning in ICES Rectangle 37F1 include cod (*Gadus morhua*), lemon sole (*Microstomus kitt*), mackerel (*Scomber scombrus*), the crustacean Nephrops norvegicus, plaice (*Pleuronectes platessa*), sandeels (*Ammodytes* spp.), sole (*Solea solea*), sprat (*Sprattus sprattus*) and (Coull et al, 1998). Further spawning species have been identified in additional survey, including Spurdog (*Squalus acanthias*), whiting (*Merlangius merlangus*), Herring (*Clupea harengus*) within the area of interest (Ellis et al, 2012).

ICES Rectangle 37F1 also provides nursery grounds for anglerfish (*Lophius piscatorius*), blue whiting (*Micromesistius poutassou*), cod, European hake (*Merluccius merluccius*), herring, lemon sole, ling (*Molva molva*), mackerel, Nephrops, sandeels, sprat, spurdog (*Squalus acanthias*), and whiting (Coull et al, 1998; Ellis et al, 2012). Juvenile fish are vulnerable to predators and harsh conditions in the open water. Therefore, it is typical for juvenile fish to stay in sheltered nursery grounds, which also provide an abundance of food.

Herring and sandeels are commercially and ecologically important fish species, which exhibit a dependency on specific substratum for spawning. Such sediments would therefore be considered important for this species. Herring lay sticky eggs in dense aggregations in clean, coarse sandy and gravelly sediments (ICES, 2006). This dependency on a specific spawning substratum makes herring populations and larval recruitment particularly vulnerable to anthropogenic activities such as dredging, construction and marine discharges that may affect the seabed and the quality and integrity of the sediments (DESNZ, 2016). Herring are considered to be one of the most important pelagic species in the North Atlantic in terms of their commercial exploitation (ICES, 2006).

Sandeels lay their eggs in shallow sandy sediments in sticky clumps. Hatching success and recruitment can be affected by activities that disturb such sediments such as benthic fishing, seabed construction and dredging. Sandeels are also considered to be a key component of the North Sea fishery and are also a key food source for predatory fish and seabirds (DESNZ, 2016; ICES, 2006). A number of other species, including some demersal species such as cod, have pelagic eggs and/or larvae, and are therefore less reliant on specific sediment types for spawning (DESNZ 2016).

Elasmobranch species (sharks, skates and rays) are an important component of the North Sea marine ecosystem. Elasmobranchs have a low fecundity and slow growth rate, leaving them vulnerable to over-fishing pressures and pollution events, and subsequent recovery of populations in response to disturbance events is low. Historically, many elasmobranch species have been fishery targets due to their fins and liver oils (Kunzlik et al, 1988). While many species are no longer subjects of targeted fisheries, they are still under threat from commercial pelagic and demersal fishery by-catch. In a survey conducted by Centre for Environment, Fisheries and Aquaculture Science (CEFAS), 26 elasmobranch species were recorded throughout the North Sea and surrounding waters (Ellis, 2004). Of these species, seven may be present within the RNCC area throughout the year including: cuckoo ray (*Leucoraja naevus*), lesser spotted dogfish (*Scyliorhinus canicula*), spotted ray (*Raja montagu*i), spiny dogfish (*Squalus acanthias*), starry skate (*Amblyraja radiata*), starry smooth-hound (*Mustelus asterias*) and thornback ray (*Raja clavata*) (Ellis, 2004). Of these species, spiny dogfish and starry skate are all listed as Vulnerable on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, and the thornback ray is listed as Near Threatened (IUCN, 2022).

4.3.6 Seabirds

The offshore SNS area is an important area for numerous seabird species, mainly for feeding purposes in and around the shallow sandbanks (DESNZ, 2016), although total numbers are generally low in the Regional Sea 2 area, where RNCC is located (DESNZ, 2016). The Regional Sea 2 area also includes several areas suitable for cliff nesting seabirds and some of the most important sites for wintering and passage waterbirds in a national and international context, including the Wash and Thames Estuary. Individuals found offshore in the vicinity of the RNCC location may originate from these onshore colonies or be passing migrants.

A year-round frontal system is present from Flamborough Head, extending offshore and marks the boundary between Regional Sea 1 and 2 (DESNZ, 2016). The frontal system results in elevated productivity throughout much of the year and therefore attracts a number of foraging seabirds and coastal birds (DESNZ, 2016). Species frequently observed in the RNCC area include: auks, fulmar (*Fulmarus glacialis*), gannets (*Morus bassanus*), guillemot (*Uria aalge*), greater black-backed gull (*Larus marinus*), kittiwake (*Rissa tridactyla*), razorbills (*Alca torda*) and puffins (*Fratercula arctica*) (DESNZ, 2016).

Seabird distribution and abundance in the vicinity of the RNCC is expected to vary throughout the year, with peak numbers of birds present during the breeding season and throughout winter (DESNZ, 2016). Fulmars are present in highest numbers during the early and late breeding seasons, with peak densities in September. Kittiwakes are widely distributed in the area throughout the year. Lesser black-backed gulls (*L. fuscus*) are mainly summer visitors while in contrast guillemot numbers are greatest during winter months. In addition, substantial numbers of terns migrate northwards through the offshore North Sea in April and May, with return passage from July to September (DESNZ, 2016).

The most abundant species present in the vicinity of UKCS Block 43/26 are black-legged kittiwake and guillemot in the breeding season; black-legged kittiwake, herring gull and guillemot during winter; and guillemot during the post breeding dispersal period (JNCC, 2019; Kober et al, 2010).

Seabird sensitivity to oil in Block 43/26 is recorded as low in May, high in August, very high in February and July and extremely high in all other months of the year (RSK, 2023).

Historically, there have been no nesting birds on the RNCC. This was confirmed during offshore nesting bird surveys that were conducted by RSK Biocensus (RSK, 2023) and Xodus (Xodus, 2024). There was no evidence of nesting or the presence of any seabirds. The surveys took place in June 2023 and May 2024 (see extracts from the report in Appendices B & C).

4.3.7 Marine Mammals

Cetaceans

Cetaceans (whales, dolphins, and porpoises) are protected under Annex IV of the Council Directive 92/43/EEC (also known as the Habitats Directive). Cetacean abundance in the SNS is relatively low compared to the northern and central North Sea, with the exception of the harbour porpoise (*Phocoena phocoena*).

The relative abundance and density of cetaceans in the vicinity of Ravenspurn North field can be derived from data obtained during the Small Cetacean Abundance of the North Sea (SCANS-IV) aerial and ship-based surveys. This project identified the abundance and density of cetacean species within predefined sectors of the North Sea and North-East Atlantic. The Ravenspurn North field location is situated within SCANS-IV Block 'NS-C', in which harbour porpoise, bottlenose dolphin, minke whale, white-beaked dolphin and common dolphin have been recorded (Gilles et al, 2023). The density of the harbour porpoise is higher than the total surveyed area, suggesting that the area may be important for these species (Table 4-1). The remaining identified species have been detected at an order of magnitude lower.

Table 4-1: Cetacean Abundance and Density Recorded in SCANS-IV Aerial Survey		
Species	**SCANS-IV Block 'NS-C'**	
	Abundance	**Density** [Note1]
Harbour porpoise	36,286	0.6027
Bottlenose dolphin	2,520	0.0419
White-beaked dolphin	894	0.0149
Minke whale	412	0.0068
Common dolphin	192	0.0032
Note1: Density is the number of animals per km^2		

In addition to the aforementioned cetaceans, other species have been observed or have been modelled to have presence in the North Sea. These include the Atlantic white-sided dolphin (*Lagenorhynchus acutus*), Risso's dolphin (*Grampus griseus*), short-beaked common dolphin (*Delphinus delphis*) (Gilles et al, 2023).

The RND, including the surface and subsea tie-backs and associated infrastructure, is situated within the Southern North Sea SAC (see Appendix A). The objectives of this site require that favourable conservation status be maintained for the designating feature (harbour porpoise) by assessing the impacts of human activities within the area that may affect the integrity of the site. This includes ensuring they remain a viable component of the site, there is no significant disturbance of the species and that habitats and processes relevant to this species and their prey are maintained (JNCC, 2016).

Pinnipeds

Two species of seals; grey seal (*Halichoerus grypus*) and the harbour (or common) seal (*Phoca vitulina*) are found in the North Sea around the English east coast. Both species are listed under Annex II of the EC Habitats Directive and protected under the Conservation of Seals Act 1970 (from 0 to 12 nautical miles from the coast) and listed as UK Biodiversity Action Plan priority marine species.

Like all seals, grey seals spend a significant proportion of their time hauled out on land during the breeding, moulting and pupping seasons and also between tides and foraging trips. Grey seals forage down to depths of 100 m and at distances of up to 100km from their haul-out sites and, therefore, could be present in the vicinity of RNCC. This has been confirmed by tracking studies, which have determined that the distribution of grey seals within the RNCC area is generally low (0-15 individual per $25km^2$) (Russell et al, 2017).

Harbour seals tend to forage within 40 – 50km of its haul-out sites, and therefore is less likely to be encountered in the vicinity of the RND given the distance to the coast is 76km. Studies confirmed that the presence of harbour seals within the RND area is low (less than five individuals per $25km^2$) (Russell et al, 2017). In the vicinity of the RNCC itself, where the majority of emissions and discharges are undertaken, at-sea usage by harbour seals is less than one individual per 25 km^2 and is not considered to be significant.

PUK will continue to liaise with OPRED and the JNCC and apply latest informed guidance with regards to mitigating risk of harm to marine mammals.

4.3.8 Conservation

The UK is party to a number of international agreements to establish an ecologically network of MPA's in UK waters. As a signatory to the OSPAR Convention, the UK must establish an ecologically coherent and well-managed network of MPAs across the North-East Atlantic by 2016. These commitments are transposed through national legislation and regulations. The main types of MPA's in UK waters are:

- SAC's (Special Area of Conservation) which are designated for habitats and species listed under the EU Habitats Directive. These qualifying features include three marine habitat types (shallow sandbanks, reefs and submarine structures made by leaking gases) and four marine species (grey seal, harbour seal, bottlenose dolphin and harbour porpoise).
- Special Protection Areas (SPA's) 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.
- Marine Conservation Zones (MCZ's) 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 English, Welsh territorial or UK offshore waters.

The RNCC is located within the boundary of the Southern North Sea SAC, as represented in Appendix A. This site has been identified as an area of importance for harbour porpoises, supporting 17.5% of the UK North Sea Management Unit (MU) population. Harbour Porpoises is listed under Annex II of the Habitats Directive, which requires conservation areas to be identified to facilitate the protection of this species. The northern two thirds of the site are recognised as important for porpoises during the summer season (April – September), whilst the southern part supports persistently higher densities during the winter (October – March).

In addition, the RNCC is also located approximately 27km from the Holderness Offshore Marine Conservation Zone. This site has been recommended for designation due to the presence of Broad Scale Habitat features including subtidal coarse sediment and subtidal mixed sediment Joint Nature Conservation Committee (JNCC, 2022). Part of the Inner Silver Pit glacial tunnel valley feature also extends into this site. This site is also considered to be a significant fishing ground for the edible crab and lobster as the coarse sediments, occasional cobbles and boulders and rocky reef provide ample crevices for these species. Harbour and grey seals and harbour porpoises are also frequently observed foraging within this site.

All other marine protected areas are over 40 km from the RNCC topside. These include The Dogger Bank SAC at 51km north and the North Norfolk Sandbanks and Saturn Reef SAC at 45km southeast.

4.3.9 Fisheries and Shipping

The North Sea is one of the world's most important fishing grounds, and major UK and international fishing fleets operate in the SNS, targeting a mix of demersal, shellfish and pelagic fish stocks.

The RNCC is located within ICES Rectangle 37F1. Fishing effort for ICES Rectangle 37F1 averaged 152 days fished per year between 2017 – 2021 (Marine Scotland, 2021). Within ICES Rectangle 37F1 fisheries catches by weight averaged 398 Te between 2017 – 2021, which an approximate averaged value of £700,000 over the same period (Marine Scotland, 2021).

Fishing activity in the area primarily takes place between May to August months and it is primarily dominated by traps (49%), followed by trawls (41%), and minorly dredges (10%) (Marine Scotland, 2021). Shellfish and demersal species make up almost all of the fishery in terms of landed tonnages (with the exception of a very small amount of pelagic species) (Marine Scotland, 2021). Of the species caught between the years 2017 and 2021, Crabs (C.P. Mixed Sexes) landings are greatest tonnages, followed by Plaice and sand eels (Marine Scotland, 2021).

The density of shipping traffic in the SNS is relatively high due to the presence of fishing vessels, some ferries between the UK and the rest of Europe and cargo and offshore support vessels. The density of shipping traffic in the RNCC location UKCS Block 44/26 is described as 'High' (NSTA, 2016).

The 500m safety zone is linked to the RNCC and will be maintained throughout decommissioning activities, and until all other assets within the 500m safety zone are removed.

4.3.10 Other Users

Oil and gas

Oil and gas activity within the SNS is generally high and targets a number of existing gas fields. There is significant surface and subsurface infrastructure in the vicinity of RNCC location, as represented in Figure 1.2 and Table 1-4. The Ravenspurn South gas field is the closest producing gas field and is located in UKCS Block 42/30, same block as the ST-3 NUI. This field is also operated by PUK and produces to the PUK operated Cleeton host facility in Block 42/29. The Cleeton host facility also receives production from a number of satellite fields, the closest of these is the Neptune gas field in Block 47/4, for which PUK is the Licence Operator. The Babbage gas field, for which NEO is the Licence Operator, is located in Block 48/2 and produces to the PUK operated West Sole Development in Block 48/6. The nearest surface infrastructure to the RNCC is ST-2 NUI, situated within the same UKCS block 43/26 and gas field, at a distance of 5.1 km. This is followed by RSA NUI, which is located 9km away, ST-3 NUI at 13.2km, and RSB at a distance of 13.7km.

The pipelines passing through the UKCS block 34/26 include the PUK operated pipelines associated with the interfield export lines to the Cleeton host facility, the pipelines to ST-2 and ST-3, and the pipelines to Johnson field located to the west and operated by Premier Oil E&P UK EU Limited.

No subsea telecommunications cables pass through the blocks of interest (Crown Estate, 2022); (KIS-ORCA).

Offshore Wind Farms

There are no operational offshore wind farms within UKCS Block 43/26. The nearest operational offshore wind farm site is the Hornsea Project, located 22.4 km west in the UKCS Block 48/3 (Crown Estate, 2022).

Military Activity

The RNCC is located within a Royal Airforce practice and exercise area (PEXA) and danger area. The Royal Navy PEXA is located to the north of the RNCC (Crown Estate, 2022).

Block 43/26 is of concern to the Ministry of Defence (MoD) because it is situated within a MoD practice range (DESNZ, 2016). A licence condition is therefore attached to this block which states that the MoD

must be informed at least 12 months in advance of the siting of any installation related to oil and gas activity within the block, whether floating, resting or attached to the seabed (DESNZ, 2016). However, this is not relevant for decommissioning operations.

Marine Aggregates

There are no active licenced dredging areas or dredge disposal areas within UKCS Block 43/26 (Crown Estate, 2022).

Marine Archaeology

There are a number of charted wrecks located within the RNCC area including one located to the east of the Johnston subsea development (Hydrographer of the Navy, 2011). A number of charted wrecks are also located around Well Bank Flat where waters depth decrease from around 40 m LAT to 25 m LAT (Hydrographer of the Navy, 2011). However, none are recorded as protected (MMO, 2019).

Tourism and Leisure

Leisure based and tourist activities are fairly widespread along the east coast of England. The wild and unspoilt natural scenery of much of the northeast and east of England attracts many tourists in pursuit of open-air leisure activities including walking, bird watching, wildfowling and golf. Many of the area's coastal towns have had a long association with the tourism industry, most notably Mablethorpe, Skegness in Lincolnshire and Great Yarmouth in Norfolk (DESNZ, 2016).

Due to the distance between the RNCC and the nearest landfall (76 km), no recreational vessel use is known to occur in the area.

4.4 Impact Assessment

4.4.1 Activities with potential significant impact

Project Aspects which may impact on the environment through decommissioning activities have been identified in a receptor-based activity and events matrix Table 4-2. The matrix has been populated by PUK, with reference to the requirements of Article 3(1) of the EIA Directive, the BEIS OPRED EIA Guidance (2018).

As shown in Table 4-2, PUK has undertaken a preliminary assessment of the impacts identified to determine whether there is the potential for any significant effects on the environment to occur. Some Project activities / unplanned events have a potential impact with likely insignificant effects. These impacts have therefore been scoped out from further detailed assessment. Where it has been identified that a Project activity / unplanned event has the potential to result in a likely significant effect on the environment, a detailed assessment of the impact(s) has been undertaken.

In accordance with OPRED guidance (2018), there is no requirement to assess accidental events such as spills from vessels within the EA. This has therefore been scoped out of further assessment.

Hazards with the potential to have a significant impact are:

- Seabed disturbance by the supporting jack-up rig and barge (positioning and use of anchors).
- Physical presence of a supporting jack-up rig and barge and noise impacts from cutting the topside (e.g., bird nesting).
- Loss of nesting sites.

4.4.2 Detailed Assessment

Detailed assessment of these activities begins with an assessment of the relevant receptor sensitivity for each planned activity. Sensitivity is a function of the value of the receptor (importance, rarity and worth), and its resilience (resistance, recoverability).

Secondly, the significance of effects has been evaluated by considering the sensitivity of the receptor in combination with the magnitude of impact that is likely to occur. The overall significance of effects is then defined as:

- Major or Moderate effects ("Significant" in EA terms) where mitigation measures are required to prevent, reduce or offset the effect. The overall significance is then re-evaluated, taking the mitigation measures into consideration, to determine the residual effect.
- Minor effects are not considered to be significant and are usually controlled through good industry practice.
- Negligible effects are not considered to be significant.

A detailed assessment of these impacts will be carried out within the EAJ when applying for individual SATs, however a brief description is provided below.

Quantification of Seabed Disturbance

Seabed disturbance will be limited to the positioning of the JUB at the RNCC location. It is anticipated that topside removal will be carried out using the Obana JUB. The Obana is a 6-legged heavy-lift JUB. The six identical spudcans have a circular shape, with following dimensions:

- Spudcan diameter: 18.14m
- Spudcan total height: 5.49m
- Spudcan base height: 1.83m
- Side height: 0.91m
- Spudcan area: 258.19m^2

The resulting seabed area impacted by JUB spun cans is 1,549.14m^2. In addition to the spud cans a series of anchors will be used to secure the JUB in position. It is assumed that the total area impacted by the use of anchors will be 2,500m^2.

The total area of seabed assumed to be impacted by the positioning of the JUB is 4,050m^2 (0.004km^2).

Physical Presence and Noise

While shipping activity in block 43/26 is designated as 'High' (NSTA, 2016), all project activities will take place within the existing RNCC 500m exclusion zone limiting impacts on other sea users. The positioning of the JUB next to the platform will be consented via a variation to the RNCC platform consent to locate. Additionally, Kingfisher notifications will be submitted in advance of operational activities.

Once on location, the JUB will take primacy for navigational lighting ensuring visibility to other sea users.

Noise generation during topside removal operations will be limited to noise generated by the positioning of the JUB on location, jacking up of the JUB and topside cutting.

Noise levels from the positioning and jacking up of the JUB are not anticipated to be higher than other shipping activity in the area. While there may be a cumulative impact from additional noise, this is not expected to be significant with block 43/26 being designated as having high shipping activity (NSTA, 2016).

Noise levels from cutting activities are expected to be moderate in the immediate vicinity of the cuts. As cutting activity will be undertaken above sea level, noise propagation into the water and subsequent disturbance of marine species is not expected. There is the potential for noise from cutting activities to disturb birds, however this disturbance is not expected to be greater than that caused by the JUB's presence and subsequent activities on the platform in general.

Recent ornithological surveys have not identified the presence of nesting birds on the RNCC platform (see below).

None of these noise sources are expected to occur at levels which will disturb or injure birds or marine mammals.

Loss of Nesting Sites

The UK is home to over 8 million breeding seabirds (Mitchell et al, 2004) which typically nest in natural sites such as coastal cliffs and remote islands (JNCC, 2021). Recent findings have identified one species, the black legged kittiwake (*Rissa tridactyla*), as commonly nesting on offshore installations (Christensen-Dalsgaard et al., 2019; SMP, 2020).

There are an estimated 205,000 breeding pairs within the UK (JNCC, 2019), comprising 5% of the world's breeding population of kittiwakes (CAFF, 2020). However, evidence shows that our colonies have declined by around 60% since 1986 and have recently been red listed as a species of conservation concern (Eaton et al., 2015).

The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) transpose the EU Wild Birds Directive and secure protection of wild birds, their eggs, and nests in the offshore marine area, including offshore marine installations. It is an offence under Regulation 40 to deliberately injure, kill or disturb any wild bird or take, damage or destroy the nest whilst in use or being built or take or destroy an egg, whilst Regulation 42 prohibits certain methods of capturing or killing wild birds.

PUK commissioned an ornithological assessment in 2023 to assess the presence of kittiwake nesting on its assets across its SNS portfolio. The 2023 survey indicated that there were no nesting kittiwakes on the RNCC platform.

Potential Significant Impacts on Protected Areas

The RNCC is located within the Southern North Sea SAC. The qualifying feature for the SAC is the presence of Annex II species Harbour porpoise (*Phocoena phocoena*).

The site has been identified as an area of importance for harbour porpoise and supports 17.5% of the UK North Sea Management Unit (MU) population. This site covers an area of 36,951 km^2. 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 supports persistently higher densities during the winter (October – March).

The conservation objectives for the site are to maintain site integrity by ensuring:

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

The proposed operations are not expected to impact on the conservation objectives of the SAC. Impacts will be limited to seabed disturbance whilst positioning the JUB and noise (see above).

Through a review of the identified potential impacts from the proposed operations and sensitive receptors, significant impact on the SNS, namely degradation of its conservation objectives, is not anticipated.

A detailed assessment of potential impacts will be presented in the EAJ supporting the JUB consent to locate.

In Combination Effects

In combination effects may occur as a result of incremental changes caused by other past, present or reasonably foreseeable projects/proposals together with the Project itself.

The impacts from project activities which may have a cumulative effect include:

- Seabed disturbance.
- Noise.

To date no infrastructure has been decommissioned within block 43/26 and there are currently no other activities taking place within block 43/26. There are no aggregate extraction sites within close proximity to the RNCC platform.

The closest offshore windfarm development is the operational Hornsea 1 and 2 windfarms located around 22 km southeast of the RNCC platform.

The limited nature of seabed disturbance from the proposed operations, which is limited to the positioning and anchoring of the JUB is not expected to contribute significantly to any cumulative effects on seabed disturbance in this area.

Similarly, as noise generation is limited to the jacking up of the JUB and above water level cutting on the platform no significant cumulative noise impacts have been identified.

A detailed assessment of potential impacts will be presented in the EAJ supporting the JUB consent to locate.

Impact Summary

Key sensitivities identified above include impact to seabirds, air quality, the seabed, water column noise and discharges to sea (both operational and accidental), while the impact of solid wastes are a potential risk later during the disposal of the topsides and jacket. A summary of the mitigation measures in place for these impacts is given in Table 4.2. This mitigation is reflected in the Mitigated Risk outcome in Table 4.3.

Table 4-2: Receptor-based activity and events matrix

Activities	Direct Hazards	Physical Receptors			Biological Receptors					Human Receptors		Mitigated Risk		
		Seabed Sediments & Benthic Habitats	Water Quality	Air Quality & Climate	Plankton	Fish & Shellfish	Seabirds	Marine Mammals	Conservation Areas	Shipping & Fisheries	Other Sea Users	Receptor Sensitivity*	Magnitude of Impact	Mitigated Risk
Barges & Support Vessels (Presence and positioning activity, use of anchors and fuel combustion)	Seabed Disturbance	PS	NS	-	-	PS	-	-	PS	NS	NS	High	Moderate	Moderate
	Physical presence: risk to sea users	-	-	-	-	-	NS	-	-	NS	NS	Negligible	Negligible	Negligible
	Physical presence: seabirds	-	-	-	-	-	PS	-	-	-	-	High	Minor	Minor
	Discharge to Sea (inc. runoff)	-	NS	-	NS	NS	NS	NS	NS	NS	NS	Moderate	Negligible	Negligible
	Atmospheric Emissions	-	-	NS	-	-	NS	-	-	-	-	Moderate	Negligible	Negligible
Topside Removal/Dismantlement	Noise	-	-	-	-	NS	-	PS	PS	NS	-	High	Minor	Minor
	Loss of nesting sites	-	-	-	-	-	PS	-	PS	-	-	High	Moderate	Moderate
	Discharge to Sea (Inc. runoff)	-	NS	-	NS	NS	NS	NS	NS	NS	NS	Moderate	Negligible	Negligible
	Hazardous & High-Volume Waste	-	NS	NS	-	-	-	-	-	-	NS	Moderate	Negligible	Negligible

PS – Potentially Significant impact,
NS – Potentially Non-Significant Impact. *The highest sensitivity receptor is considered in this risk assessment matrix.

4.5 Environmental management

Performance management and internal assurance systems will ensure activities take place in a safe, compliant and acceptable manner, and according to agreed plans. All activities will be undertaken in accordance with PUK's Environmental Policy and ISO14001:2015 accredited Environmental Management System.

A PUK Project Management team will be appointed to manage suitable sub-contractors for the removal campaign. PUK will monitor and track the progress of consents and the consultations required as part of this process. Performance monitoring will be used to ensure regulatory requirements are met, as well as to assess fulfilment of wider project objectives and commitments. Any major changes to the decommissioning programme will be discussed and agreed with OPRED.

A summary of the mitigation measures that will be implemented to minimise impacts are presented below (see Table 4-3).

Table 4-3: Environmental Appraisal Impacts

Main Impacts	Management
Potentially significant effects	
Seabed Disturbance	An as-found survey and Site Specific Assessment (SSA) will determine the location of any potential reef structures. Locations will be selected to avoid areas identified as having reef structures. No seabed disturbance is expected from the proposed geophysical survey operations. All operations will occur within the RNCC 500m safety zone. Seabed disturbance will be limited to the approach, anchoring and leg positioning of the supporting of the JUB. Rig move procedures will be developed utilising information from subsea surveys and the SSA. Repositioning of the JUB will be minimised to avoid additional seabed disturbance.
Physical Presence and noise of Vessels and cutting equipment	Careful planning to mitigate conflicts with fishing and shipping interests and consultation with Fisheries and Maritime Agencies Kingfisher Information Services notified at least two weeks prior to commencement of the activities. Vessel operations will be minimised where practical with work programmes planned to optimise vessel time in the field. Operations will take place within existing Ravenspurn North 500m safety zone. Cutting and removal operations will take place outside of bird nesting periods.

Table 4-3: Environmental Appraisal Impacts	
Main Impacts	**Management**
Loss of nesting sites	There is no history or evidence of nesting birds on the platform. However, consideration will be given to implementing environmental management best practice, potentially through a bird management plan, to firstly avoid impacts before having to consider mitigation measures (Appendix B). PUK intends to avoid the nesting seasons when removing the topside. If not possible, alternative measures will be put in place to reduce the likelihood of birds nesting e.g., the installation of gel/spikes/nets. Advice will be sought from OPRED on acceptable mitigation measure if required.
Potentially insignificant effects	
Atmospheric Emissions	Atmospheric emissions will be limited to those generated by the JUB on location. These are not expected to significantly contribute to total UKCS emission levels. The remote location (115km from the transboundary median line and 76km from nearest UK Coast) combined with open space and weather atmospheric mixing, minimises the exposure pathway for any acute emissions, beyond receptors in the immediate vicinity. Vessel operations will be minimised where practical with work programmes planned to optimise vessel time in the field. All engines, generators on the vessel will be well maintained to minimise energy use and gaseous emissions. Vessels will be audited as part of selection and pre-mobilisation.
Sub-Marine Noise	Cutting of the topside will be above the waterline, avoiding noise propagation in the water column and avoiding the disturbance of marine mammals and fish. All other noise sources (e.g. welding and cutting within the modules, load transfer operations, vessel repositioning etc) will be within the normal scope for operation of the RNCC. All species are highly mobile and likely to move away from a disturbance before noise emissions reach injury criteria thresholds. Furthermore, the short duration of the proposed activities will ensure that any behavioural effects are extremely short lived.
Solid Waste	A Waste Management Plan will be implemented detailing all waste management procedures including adherence to the Waste Management Hierarchy and the use of licensed waste disposal sites. Materials will be reused and recycled where possible. Waste transfer notes/consignment notes will have a traceable chain of

Table 4-3: Environmental Appraisal Impacts	
Main Impacts	**Management**
	custody for waste management, shipment, treatment and onshore recovery/disposal.
Discharge to Sea	A chemical risk assessment will be undertaken to identify the risk profile of chemicals being used and / or discharged in accordance with the requirements of the Offshore Chemicals Regulations 2002 (as amended). Where practicable, chemicals with a higher risk profile will be substituted out in favour of those with an improved environmental profile. Appropriate design and maintenance of drains and drain management system, segregation of light and heavily contaminated runoff from deck working areas. Only permitted effluent streams will be discharged to sea. If required, Chemical and OPPC SATs will be applied for to cover intended discharges to sea.

5. INTERESTED PARTY CONSULTATIONS

Consultations Summary:

PUK, as part of the Topside DP consultation process, plans to include the following statutory stakeholders of the DP, listed in Table 5-1.

Table 5-1: Summary of Stakeholder Comments		
Who	**Comment**	**Response**
Statutory Consultations		
NFFO		
SFF		
NIFPO		
Global Marine Systems		
NSTA		PUK has consulted with NSTA under S29(2A) of the Petroleum Act
Other Consultations		
Public		
Informal Stakeholder Consultations		
MCA		
HSEx		
Environment Agency		
MMO		
UKHO		
Trinity House		

6. PROGRAMME MANAGEMENT

6.1 Project Management and Verification

A PUK Project Management team will be appointed to manage suitable contractors for the removal of the GCD Topside. The team will ensure the decommissioning is executed safely in accordance with legislation and PUK Policies and Principles.

PUK standard procedures for operational control and hazard identification and management will be used. Where possible, the work will be coordinated with other operations in the SNS. PUK will monitor and track the progress of consents and the consultations required as part of this process. Any major changes to the DP will be discussed and agreed upon with OPRED.

PUK's project management team completed a competitive tender process for the key aspects of this decommissioning plan, namely for the selection of a suitable removal contractor and appointment of a marine warranty surveyor. Contracts were awarded following a detailed review of tender submissions, which were completed in accordance with PUK standard procedures.

The PUK project management team will manage the removal contractor and their development of detailed engineering, removal procedure(s), risk assessments and other activities required to ensure offshore operations are completed safely and efficiently. A project plan shall be developed by the removal contractor for this phase, with final offshore execution dates aligning with the schedule presented in Figure 6.1.

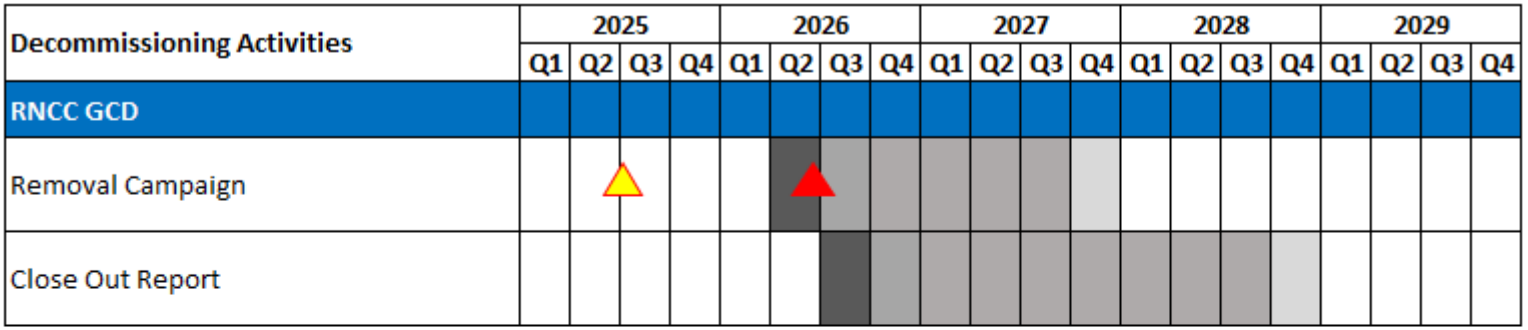
6.2 Post-Decommissioning Debris Clearance and Verification

This DP only covers the GCD topside removal. Post-decommissioning surveys will be dealt with in the subsequent Installation and Pipeline DPs.

Any objects dropped during the preparations or topside removal will be notified to OPRED via the PON2 process and their subsequent recovery reported via the PON2 and DP Progress Reporting processes.

6.3 Schedule

Figure 6.1: Gantt Chart of Project Plan



KEY	
▲	Anticipated Start
△	Preparation Work
	Earliest Start
	Period in which completion is expected
	Latest End

6.4 Costs

The decommissioning costs detailed within this Topside DP have been provided to OPRED. The costs provided cover the scope of work associated with dismantlement preparation and the removal of the topside and dismantlement onshore.

6.5 Close Out

After the topside has been removed, OPRED will be notified and a Close Out report will be submitted within 12 months of completion of the offshore decommissioning scope. In the intervening period, updates concerning the DP for the GCD topside will be in Progress Reports submitted to OPRED.

6.6 Post-Decommissioning Monitoring and Evaluation

Following removal of the GCD topside the integrity of the shaft shall be monitored at intervals determined in accordance with PUK's integrity management procedures until such time that the CGS is to be decommissioned. Interval inspections can be provided as and when they are conducted and sent with the progress reporting. The CGS will still be supporting the CPP, and the integrity shall be monitored accordingly. No NAVAIDs will be required on the remaining concrete gravity stub or any of the remaining assets.

7. SUPPORTING DOCUMENTS

Table 7-1: Supporting Documents	
Ref	**Title**
1	Admiralty 2022 Marine Data Solutions, [Internet], available: https://www.admiralty.co.uk/publications/publications-and-reference-guides/admiralty-tide-tables [Accessed 31/05/2022].
2	BGS (British Geological Survey) (2015) Offshore marine information products – WMS, British Geological Survey (GBS). [Online] Available at: https://www.bgs.ac.uk/technologies/web-map-services-wms/web-map-services-wms-offshore-marine/
3	CAFF, 2020. International Black-legged Kittiwake Conservation Strategy and Action Plan. Conservation of Arctic Flora and Fauna, Akureyi, Iceland.
4	Christensen-Dalsgaard S, Langset M, Anker-Nilssen T, 2019 – Offshore oil rigs – a breeding refuge for Norwegian Black-Legged Kittiwakes.
5	Connor 2004. The Marine Habitat Classification for Britain and Ireland
6	Coull, K.A., Johnstone, R. & Rogers, S.I. (1998), Fisheries Sensitivity Maps in British Waters. Published and distributed by UKOOA Ltd.
7	Crown Estate (2022) Maps and GIS data. Available from: Maps and GIS data | Maps and GIS data (thecrownestate.co.uk) [Accessed February 2022].
8	DESNZ (2016), OESEA3 Future Leasing/Licensing for Offshore Renewable Energy, Offshore Oil & Gas, Hydrocarbon Gas and Carbon Dioxide Storage and Associated Infrastructure [Internet], available: UK Offshore Energy Strategic Environmental Assessment 3 (OESEA3) - GOV.UK (www.gov.uk)
9	Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D., Gregory, R., 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. Br. Birds 108, 708746.
10	Ellis, J. R. Cruz-Martínez, A., Rackham, B. D. and Rogers S. I. (2004) The Distribution of Chondrichthyan Fishes Around the British Isles and Implications for Conservation.
11	Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. & Brown, M.J. (2012), spawning and nursery grounds of selected fish species in UK waters. [Internet], available : https://www.cefas.co.uk/data-and-publications/fishdac/uk-national-inshore-fishing-activities-data-layer [Accessed 31/05/2021]
12	EMODnet (2022) Seabed Habitats. [Internet], available: EMODnet Seabed Habitats - Homepage (emodnet-seabedhabitats.eu) [Assessed 17/06/2022].
13	Gilles, A, Authier, M, Ramirez-Martinez, NC, Araújo, H, Blanchard, A, Carlström, J, Eira, C, Dorémus, G, Fernández-Maldonado, C, Geelhoed, SCV, Kyhn, L, Laran, S, Nachtsheim, D, Panigada, S, Pigeault, R, Sequeira, M, Sveegaard, S, Taylor, NL, Owen, K, Saavedra, C, Vázquez-Bonales, JA, Unger, B, Hammond, PS (2023). Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys. Final report published 29 September 2023. 64 pp. https://tinyurl.com/3ynt6swa
14	Hydrographer of the Navy (2011) Admiralty Chart 2182B North Sea Central Sheet. ICES (2006) ICES FishMap Species Factsheet – Herring. [Online] Available at: http://www.ices.dk/marine-data/maps/Pages/ICES-FishMap.aspx
15	Ian Mitchell P, Stephen F. Newton, Norman Ratcliffe and Timothy E. Dunn (Eds.). 2004. Seabird Populations of Britain and Ireland: results of the Seabird 2000 census (1998-2002). Published by T and A.D. Poyser, London

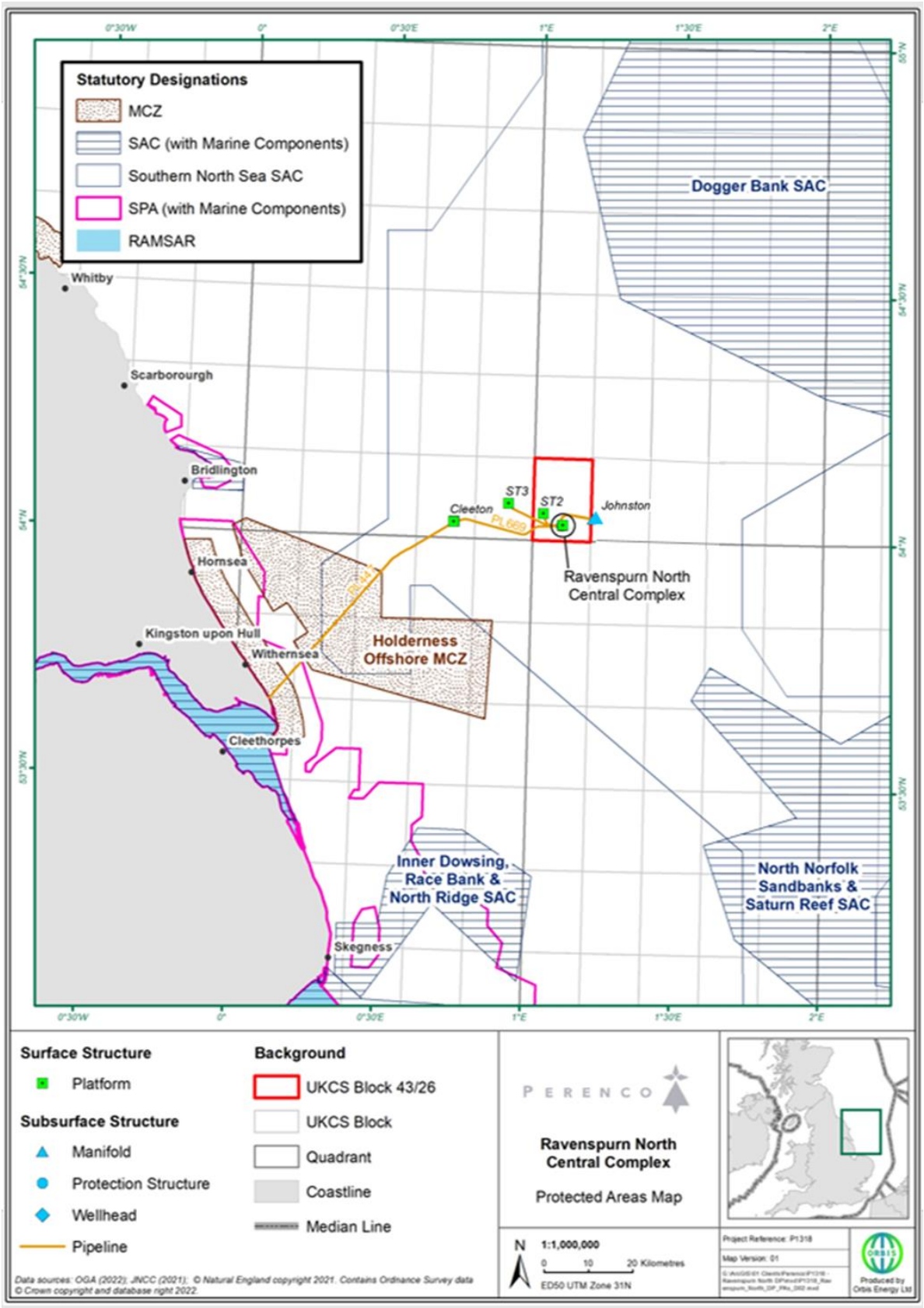
Table 7-1: Supporting Documents	
Ref	**Title**
16	ICES (2006) ICES FishMap Species Factsheet – Herring. [Online] Available at: http://www.ices.dk/about-ICES/projects/EU-RFP/Pages/ICES-FishMap.aspx
17	IUCN (2022). The IUCN Red List of Threatened Species. Version 2021-3. [Internet], available: https://www.iucnredlist.org [Accessed 31/05/2022]
18	JNCC (2004) Developing regional seas for UK waters using biogeographic principles. Report by Joint Nature Conservation Committee to the Department for Environment, Food and Rural Affairs (DEFRA), 12 pp.
19	JNCC (2016) Harbour porpoise (Phocoena phocoena) possible Special Area of Conservation. Draft conservation objectives and advice on activities. January 2016. [Online] Available at: http://jncc.defra.gov.uk/page-7059
20	JNCC (2019) At Sea Densities for Seabirds by Season. [Shapefiles]. [Internet], available:http://data.gov.uk/search?filter%5Bformat%5D=&filters%5topic%5Btopic%5D=&q=krigged [Accessed 17/06/2022].
21	JNCC (2021). Seabird Survey Methods for Offshore Installations: Black-legged kittiwakes. By Danni Thompson
22	JNCC (2022) About Marine Protected Areas [Online] Available from: https://jncc.gov.uk/our-work/about-marine-protected-areas [Accessed July 2022].
23	KIS-ORCA (2022) Interactive Map, Kingfisher Information Systems – Offshore Cable and Renewables Awareness project (KIS-ORCA). [Online] Available at: http://www.kis-orca.eu/map#.Vr4UMjpFCPx
24	Kober K., Webb, A., Win, I., Lewis, M., O'Brien, S., Wilson, L.J. and Reid, J.B. (2010) An analysis of the numbers and distribution of seabirds within the British Fishery Limit aimed at identifying areas that qualify as possible marine SPAs. JNCC, Report, No. 431. JNCC, Peterborough.
25	Kunzlik, P.A., 1988. The basking shark. Dept. Agric. Fish. Scotland, Scottish Fisheries Information Pamphlet (14), 21 p.
26	Marine Scotland (2021). Final 2021 landings data by ICES rectangle – 2017 to 2021. Available from:https://data.marine.gov.scot/dataset/2021-scottish-sea-fisheries-statistics-fishing-effort-and-quantity-and-value-landings-ices [Accessed September 2023].
27	MMO (2019). Receiver of wreck: protected wrecks. Accessed from: 29r_shipping_density_table.pdf (nstauthority.co.uk) [Accessed July 2023].
28	Neff, J. M. (2005). Composition, Environmental Fates, and Biological Effect of Water-Based Drilling Muds and Cuttings Discharged into the Marine Environment: Asynthesis and Annotated Bibliography. Duxbury, MA: Petroleum Environmental Research. Forum and API.
29	NSTA (2016) 29th Licensing Round Information – Levels of Shipping Activity. https://www.nstauthority.co.uk/media/1419/29r_shipping_density_table.pdf [Accessed April 2024].
30	NSTA (2022) Data Registry for UK Offshore Oil and Gas [Online] Available at: https://ndr.nstauthority.co.uk/
31	Russell, D.J.F., Jones, E.L. and Morris, C.D. (2017) Updates Seal Usage Maps: The Estimated at-sea Distribution of Grey and Harbour Seals. Scottish Marine and Freshwater Science, 8 (25). DOI: 10.7489/2027-1.
32	RSK Biocensus PUK Asset Ornithological Assessment Ref:2485017 June 2023
33	Scottish National Marine Plan Interactive (NMPi) at: National Marine Plan: key documents - gov.scot (www.gov.scot)

Table 7-1: Supporting Documents	
Ref	**Title**
34	Smith, S. (1988) Coefficients for Sea Surface Wind Stress, Heat Flux, and Wind Profiles as a Function of Wind Speed and Temperature. Journal of Geophysical Research: Oceans, 93, 15467-15472
35	SMP, 2020 – Seabird Monitoring Programme Database: Seabird Monitoring Programme | JNCC (bto.org)
36	The Crown Estate Wave and Tidal Leasing. Report produced by ABPmer April 2016 R.2590.
37	UK Benthos (2015) UK Benthos Database, Oil and Gas UK. [Internet] available: https://oeuk.org.uk/product/ukbenthos-database-5-17/ [Accessed 17/06/2022].
38	UKDMAP (1998) United Kingdom Digital Marine Atlas Project - Third Edition, July 1998, Natural Environment Research Council.
39	Weight Estimate Report – PED-TGCD-REP-WCR-001 Rev 00
40	Xodus Ornithological Support Perenco Asset Survey 2024, Ref: A-304100-S00-A-REPT-001

8. S29 HOLDER(S) LETTER(S) OF SUPPORT

9. APPENDICES

Appendix A: Features of Conservation Interest in the Vicinity of the Blocks 43/26.



Appendix B: Extract of PUK Assets Ornithological Assessment [Ref 32] relating to RNCC

RSK biocensus
EXPERTS IN ECOLOGY

Asset/ aspect	Kittiwake results			Other observations
	Occupied nests	Trace nests	Birds recorded on platform	
Trent	**0**	**0**	**28**	On water below MOAB: 22x kittiwake, 2x guillemot Roosting on MOAB: 28x kittiwake, 14x great black-backed gull, 6x herring gull
N	0	0		
E	0	0		
S	0	0	28	
W	0	0		
MOAB	0	0		
Ravenspurn North Central Complex	**0**	**0**	**0**	On water c. 400 m from asset: 4x razorbill Offshore near asset: 16x guillemot, 3x fulmar Flying E c. 200 from asset: 2x gannet
N	0	0		
E	0	0	0	
S	0	0		
W	0	0		
Amethyst C1D	**0**	**0**	**44**	On jacket: 44x loafing kittiwakes, also 1x black-headed gull, 11x herring gull and 3x great black-backed gull
N	0	0		
E	0	0	44	
S	0	0		
W	0	0		
Amethyst A2D	**0**	**0**	**19**	On jacket: 1x herring gull, 1x common gull Flying W c. 200 from asset: 2x gannet Of the 19 kittiwakes, 5 were immature.
N	0	0		
E	0	0	19	
S	0	0		
W	0	0		
Inde 18A	**0**	**0**	**6**	Flying W c.200 from platform: 2x great black-backed gull Flying N c.200 from platform: 1x gannet, 1x fulmar Kittiwakes on 'AD' side of rig, including two pairs, but no breeding evidence recorded. No birds on 'AP' side of rig.
N	0	0		
E	0	0	6	
S	0	0		
W	0	0		
Inde 23A	**0**	**0**	**0**	No birds recorded
N	0	0	0	
E	0	0		

Perenco
Perenco Assets – Ornithological Assessment 2023
2485017 14

Asset	Occupied nests	Trace nests	Kittiwakes recorded on platform
Trent	0	0	28
Davy	1	0	17
Inde 18A	0	0	6
Inde 23A	0	0	0
Leman 27A	0	0	0
Leman 27J	0	0	0
Leman 27H	469	1	717
Galahad	0	0	2
Pickerill A	40	37	16
Pickerill B	36	37	11
Amethyst A1D	0	0	8
Amethyst A2D	0	0	19
Amethyst B1D	0	0	11
Amethyst C1D	0	0	44
Ravenspurn North Central Complex	0	0	0

Ravenspurn North Central Complex

Photograph 44. Ravenspurn North Central Complex.

Survey dates and weather conditions for the nesting kittiwake surveys undertaken between 13th and 19th June 2023 are provided below.

Asset	Date	Cloud cover	Start time (BST)	End time (BST)	Sea state	Swell	Sun	Rain	Wind (Beaufort & direction)	Visibility	Comments/observations
Amethyst A1D	13/06/2023	0	06:55	07:12	2	Low	Strong	1	3	Excellent	Kittiwakes loafing on platform and flying close by.
Amethyst B1D	13/06/2023	0	08:47	09:15	3	Low	Strong	1	4	Excellent	Herring gulls and kittiwakes loafing.
Pickerill A	13/06/2023	0	10:10	10:35	3	Low	Strong	1	4	Excellent	Nesting kittiwakes. Occupied nests and trace nests, also loafing birds.
Pickerill B	13/06/2023	1	11:33	11:59	3	Low	Strong	1	4	Excellent	Nesting kittiwakes. Occupied nests and trace nests, also loafing birds.
Galahad	14/06/2023	0	07:14	07:27	4	Low	Strong	1	5	Excellent	Two loafing kittiwakes.
Trent	17/06/2023	2	08:30	09:30	2	Low	Strong	1	3	Excellent	28 kittiwakes roosting on MOAB.
Ravenspurn North Central Complex	17/06/2023	8	11:00	12:45	2	Low	Moderate	1	2	Good	No kittiwakes present.
Amethyst C1D	17/06/2023	8	17:05	18:00	1	Low	Weak	1	2	Good	44 kittiwakes loafing on structure, other gull species present.

Appendix C: Extract of Ornithological Support Perenco Asset Survey 2024 [Ref 40]

3.22 Ravenspurn North

Boat Survey Date – 26/05/2024, **Boat**: Putford Jaguar.
Observer Position: Bridge Deck for 500m survey. **Visibility**: Moderate.
Remarks: Data was collated during favourable conditions and completed in a day.
Summary: No nesting birds were observed during the vantage point surveys conducted at Ravenspurn North. It is unlikely that there will be any successful nesting activity initiated during the 2024 breeding season.

ASPECT	AON	PNL	EVIDENCE OF BIRD ACTIVITY	SPECIES RECORDED
North Face	-	-	-	-
East Face	-	-	-	-
South Face	-	-	-	-
West Face	-	-	-	-
Undersides/Cellar Deck	-	-	-	-
Topsides	-	-	-	-
Derrick, Cranes	-	-	-	Kittiwake (1)
Flare Booms	-	-	-	-
Vicinity - 500 m zone	N/A	N/A	-	Fulmar (2), Guillemot (3), Razorbill (2), Gannet (3), Kittiwake (5)