ANDREW TOPSIDES AND JACKET DECOMMISSIONING PROGRAMMES

ENVIRONMENTAL APPRAISAL

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	Name	Signature	Date
Prepared by	Genesis		04/09/2026
Reviewed by	Phil Brunton		04/09/2026
Approved by	Caitlin Philips		04/09/2026

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SUMMARY INFORMATION SHEET

Project Name	Andrew Topsides and Jacket Decommissioning Project
Block Numbers	16/27 and 16/28
Type of Project	Decommissioning
Undertaker	BPEOC (BP Exploration Operating Company Limited) Chertsey Road, Sunbury on Thames, Middlesex, TW16 7BP
Licensees/Owners	BPEOC
Short Description	This document considers the environmental and socio-economic impact of the activities associated with the decommissioning of the Andrew platform (topsides and jacket) in the Central North Sea. The Andrew Area comprises five fields including Andrew, Cyrus, Farragon, Kinnoull and Arundel, which produce through the Andrew platform. Oil is exported from the Andrew platform into the Forties Pipeline System (FPS) via the Brae-Forties C pipeline and gas is exported to the Central Area Transmission System (CATS). Some gas is used for gas-lift in the Cyrus field. BPEOC is at present preparing to decommission the Andrew Area. This EA supports the Decommissioning Programmes for the decommissioning of the Andrew platform (topsides and jacket). In line with existing regulations the topsides and jacket will both be recovered to shore for management via the waste hierarchy. The impact assessment presented in this Environmental Appraisal determined that there are no significant environmental or socio-economic impacts associated with the proposed decommissioning activities.
Company Document Number	DC104-EV-REP-040-00004
EA Prepared By	BPEOC and Genesis Energies.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Purpose

As operator, BP Exploration Operating Company Limited (hereafter referred to as BPEOC) has prepared this Environmental Appraisal (EA) under the Petroleum Act 1998, in support of the Decommissioning Programme submission (DP; BPEOC, 2025a) that is being submitted to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED), to seek approval for the decommissioning of the Andrew platform (topsides and jacket) and a number of rigid risers (PL1078, PL1079, PL1080, PL1081, PL1082, PL2798.1, PL2798.2 and PL2798.3) and umbilical risers (PLU2121, PLU2798 and PLU5003 and PL1083.1, PL1083.2, PL1083.3, PL1083.4, and PLU5003).

Background Information

The Andrew Area comprises five fields including Andrew, Cyrus, Farragon, Kinnoull and Arundel, which produce through the Andrew platform. The Andrew field is located *c*. 198 kilometres (km) northeast of the Scottish coastline and *c*. 23 km from the United Kingdom (UK)/Norway median line. Oil is exported from the Andrew platform into the Forties Pipeline System (FPS) via the Brae-Forties C pipeline and gas is exported to the Central Area Transmission System (CATS).

The Andrew Area is currently in operation with a forecast Cessation of Production (CoP) between Q1 and Q3 2027. BPEOC has prepared this EA under the Petroleum Act 1998, in support of the Andrew topsides and jacket DP.

Stakeholder Engagement

In January 2025, as part of the informal stakeholder engagement process, BPEOC issued a Scoping Report (BPEOC, 2025b) to a number of stakeholders. The Scoping Report provided an overview of the Andrew topsides and jacket facilities, the proposed decommissioning activities and an overview of the impacts to be assessed in this EA. Stakeholders were invited to comment on the Scoping Report with respect to any concerns they may have, and comments received have been addressed in this report.

Planned Decommissioning Activities

In line with existing regulations the topsides and jacket will be fully recovered. The decommissioning activities will be carried out using a heavy lift vessel (HLV). At the time of writing the base case is that three separate lifts will be undertaken to remove the Andrew topsides while the jacket will be removed in two sections. However, engineering studies are ongoing to finalise the optimal number of lifts to be performed during decommissioning. Following recovery of the drill template under the Andrew Area Subsea Decommissioning Programme and remediation activities, BPEOC will carry out a post-decommissioning survey to ensure safe seabed. Preference will be given to methods not resulting in seabed disturbance e.g. side scan sonar (SSS)/multi beam echo sounder (MBES) surveys, however if deemed necessary over trawl trials will be commissioned.

Environmental and Socio-economic Baseline

The dominant seabed habitat across the Andrew field, as defined by the Marine Strategy Framework Directive (MSFD), is classified as 'Deep circalittoral mud' (A5.37).

The nearest designated sites to the Andrew field are:

- The Norwegian Boundary Sediment Plain Nature Conservation Marine Protected Area (NCMPA), *c*. 15 km; and
- Scanner Pockmark Special Area of Conservation (SAC), *c*. 35 km.

The plankton, benthic and fish species in the area are typical of the CNS. Several commercial fish species are known to use the Andrew Area as a nursery ground. Additionally, cod, lemon sole, mackerel, *Nephrops*, Norway pout and spotted ray also use the area for spawning. Of the fish identified in the area, a number of them are considered to be Scottish Priority Marine Features (PMFs) (Tyler-Walters *et al*., 2016).

The Atlas of Cetacean Distribution in Northwest European Waters (Reid *et al*., 2003) has indicated that the following cetaceans are likely to be present in the Andrew Area: harbour porpoise, killer whale, white-beaked dolphin, Atlantic white-sided dolphin, and minke whale. Grey seals also have potential to be present in the vicinity of the Project area.

European Seabirds at Sea (ESAS) data (Kober *et al*., 2010) indicates the presence of a number of bird species in the area of the Andrew platform. This includes, but is not limited to, northern fulmar, manx shearwater, European storm-petrel, northern gannet and razorbill. Drone and visual surveys of the Andrew platform found no evidence of birds nesting on the platform.

The Andrew platform falls within the International Council for the Exploration of the Sea (ICES) rectangle 45F1. When compared across all ICES rectangles in the UKCS, fishing effort within 45F1 accounted for an average of 0.8 % of the overall fishing effort between 2019 and 2023. Fishing effort within these rectangles is therefore considered Moderate.

The vessel density in Blocks 16/27 and 16/28 ranges from *c*. 0 to 15 hours per km^2 per month. Smaller areas of higher vessel activity in the near vicinity of the proposed Project are associated with oil and gas activities, either drilling or provision of support to existing installations.

Impact Assessment

In order to determine the significance of the impact of the proposed decommissioning activities an ENVironmental Impacts IDentification (ENVIID) was undertaken. Receptors considered in the workshop included: air quality, climate, water quality, sediment quality, plankton, benthic species, fish, marine mammals, seabirds, fisheries, shipping, landfill resources, local communities and resource use. The impacts associated with emissions to air, discharges to sea, seabed disturbance, underwater noise, waste production, the physical presence of the vessels during operations and the legacy impacts of the lower sections of the jacket piles (3 m below seabed)[1] and the drill cuttings pile to be decommissioned *in-situ* were considered on each of the receptors. Should shallower cuts be required due to technical issues, BPEOC will discuss and agreed with OPRED.

[1] The topsides are to be fully removed and the jacket is to be removed to a target depth of 3 m below the reference seabed level with the final depth below seabed to be agreed following consultation and subject to detailed investigations.

Applying industry standard mitigation measures (see Table 1), the impact significance of each of the planned activities was considered to be Low, except for 'Disturbance to the seabed/drill cuttings during jacket removal (Short term impact)', which was considered to be Moderate.

Environmental Management

The proposed decommissioning activities are aligned to BPEOC's goal to 'minimise the impact to the environment'.

Atmospheric emissions will be managed by inspection of the vessels contracted to carry out the work and by planning vessel schedules to ensure efficient operations.

The inventory of decommissioned items will distinguish equipment that can be reused, materials that can be recycled and waste for appropriate disposal. Waste management activities will be conducted in full compliance with all relevant legislation and regulatory controls. Disposal to landfill will be the waste management option of last resort.

Following the decommissioning activities, independent verification of the seabed state will be obtained, and evidence of clearance will be provided to all relevant governmental and non-governmental organisations. A post-decommissioning environmental survey will be carried out following decommissioning activities to establish the condition in which the seabed is left.

Stringent control measures and operational procedures will be implemented to prevent accidental events involving the release of hydrocarbons or chemicals.

Table 1 lists procedural and technical controls and mitigation measures identified in the ENVIID workshop and during the preparation of this EA to reduce impacts to a level that is 'as low as reasonably practicable'.

Table 1: Andrew topsides and jacket Decommissioning Project Specific Commitments.

Aspect	Commitment
Physical Presence	• Ongoing consultation with Scottish Fishermen's Federation (SFF). • Notice to mariners will be circulated. • Vessel use will be optimised. • A Collision Risk Management Plan will be produced if required. • All vessels engaged in the project operations will have markings and lightings as per the International Regulations for the Prevention of Collisions at Sea (COLREGS) (International Maritime Organisation, 1972). • Location of remaining material (cuttings pile) will be marked on FishSafe. • A safe seabed survey will be carried out on completion of the decommissioning activities.
Atmospheric Emissions and Energy Use	• As part of the tendering process, proposed vessels will go through a detailed assurance process which will include a review of generator and engine maintenance which leads to better efficiency in line with manufacturer's specifications. • Decommissioning vessel schedules and survey vessel schedules will be planned to minimise vessel use. • Prior to the contract award, BPEOC, or its appointed duty holder, (if different), will audit the decommissioning yards to ensure suitable permits are in place and that atmospheric emissions are being managed. • Activities will be carried out in line with BPEOC's environmental policy (or their appointed Duty Holders (if different) environmental policy) which includes minimising emissions.
Discharges to Sea	• BPEOC, or its appointed duty holder (if different), will carry out a detailed assurance process on all vessels prior to contract award. • Work procedures will be in place to minimise offshore campaigns. • Only Maritime Pollution (MARPOL) compliant vessels will be used. • Flushing and cleaning of topsides has been completed in line with Best Available Technique (BAT) / Best Environmental Practice (BEP) requirements. • All contracted vessels will be signed up to the International Maritime Organisation (IMO) and will adhere to their guidelines. • Any associated discharges will be managed to minimise impact.
Physical Disturbance of the Seabed and Marine Species	• Jacket piles will be cut internally such that excavation of seabed around the piles will not be required. • Location of the cuttings piles will be marked on FishSafe. • Preference will be given to the use of side scan sonar surveys (or similar e.g. multibeam sonar) to determine a clear seabed. • Post decommissioning environmental survey will be carried out.
Onshore Activities.	• Contract award will be to an established yard with appropriate experience, capability, licences, consents, and community engagement in place.
Waste Generation and Resource Use.	• The Project will have in place a Waste Management Plan (WMP) developed to describe and quantify waste arising from decommissioning activities and identify available disposal options for those wastes. • Waste management options will take account of the waste hierarchy. • As part of the Andrew Duty of Care, contract award will be to an established yard with appropriate experience, capability, licences and consents in place.

Aspect	Commitment
Accidental Events.	• Any infrastructure decommissioned *in-situ* will be marked on FishSafe and communicated accordingly. • Work procedures in place. • Vessel assurance inspections. • Pre-hire vessel audits. • Emergency response plans in place.

Conclusion

This EA has assessed the environmental and socio-economic impacts associated with the proposed Andrew topsides and jacket decommissioning activities in the context of the environment within which the infrastructure is situated. With implementation of the proposed mitigation measures, the environmental impact of the decommissioning activities is likely to be minimal, and the proposed decommissioning activities will leave the area in a condition suitable for re-colonisation by local species and which presents no additional risk to fishermen.

In addition, the EA has considered the objectives and marine planning policies of the Scottish National Marine Plan (NMP) across the range of policy topics including biodiversity, natural heritage, cumulative impacts and oil and gas. BPEOC considers that the proposed decommissioning activities are in broad alignment with such objectives and policies. Similarly, BPEOC considers that the proposed activities are aligned with the oil and gas specific marine planning policies.

ACRONYMS

%	Percentage
<	Less Than
°C	Degrees Celsius
µm	Micrometres
‰	Parts per thousand
%	Percent
°	Degree
µg/L	Microgram per litre
µm	Micrometre
AUMS	Aberdeen University Marine Studies
BAT	Best Available Techniques
BEIS	Department for Business, Energy and Industrial Strategy
BEP	Best Environmental Practice
BLP	Bridge-linked Platform
BPEOC	BP Exploration Operating Company
CA	Comparative Assessment
CATS	Central Area Transmission System
CCC	Committee on Climate Change
cm	Centimetre
CMID	Common Marine Inspection Documents
CNS	Central North Sea
CNSFTC	CNS Fibre Optic Telecommunication Cable
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon dioxide equivalent
COLREGS	Collision Regulations
CoP	Cessation of Production
CRI	Cuttings Reinjection
DES	Drilling Equipment Set
DESNZ	Department for Energy Security and Net Zero
DFPV	Drain Flush Purge Vent
DP	Decommissioning Programme
DREAM	Dose-related Risk and Effects Assessment Model
EA	Environment Appraisal
EC	European Commission
EEMS	Environmental Emissions Monitoring System
EET	Ecological Effects Threshold
EIA	Environmental Impact Assessment
EMODnet	European Marine Observation and Data Network
EMS	Environmental Management System
ENVID	Environmental Impacts Identification
EPS	European Protected Species
ERL	Effects Range Low
ESAS	European Seabirds at Sea
ESIA	Environmental and Socio-Economic Impact Assessment
ESRA	Environmental and Socio-Economic Risk Assessment
EU	European Union
FPS	Forties Pipeline System
FRS	Fisheries Research Services
GES	Good Environmental Status
GHG	Greenhouse Gas
GWP	Global Warming Potential
HLV	Heavy Lift Vessel
HSSE	Health Safety Security and Environmental
IAMMWG	Inter-Agency Marine Mammal Working Group
ICES	International Council for the Exploration of the Sea
IMO	International Maritime Organisation
INTOG	Innovation and Targeted Oil and Gas
IOGP	International Association of Oil and Gas Producers
IoP	Institute of Petroleum
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature

JNCC	Joint Nature Conservation Committee
km	Kilometre
km^2	Square Kilometre
km^2/yr	Square Kilometres per year
LAT	Lowest Astronomical Tide
m	Metre
m/s	Metre per Second
m^2	Square Metre
MarLIN	Marine Life Information Network
MARPOL	Maritime Pollution
MBES	Multi Beam Echo Sounder
MCA	Marine and Coastguard Agency
mm	Millimetre
MoD	Ministry of Defence
MPA	Marine Protected Area
m/s	Metres per second
MSFD	Marine Strategy Framework Directive
MU	Management Unit
NCP	National Contingency Plan
nm	Nautical Mile
NMP	National Marine Plan
NNS	Northern North Sea
NORM	Naturally Occurring Radioactive Material
NOx	Nitrogen Oxides
N_2O	Nitrous Oxide
NSTD	North Sea Transition Deal
OEUK	Offshore Energies UK
OGUK	Oil and Gas UK (now Offshore Energies UK; OEUK)
OiW	Oil in Water
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OPRU	Oil Pollution Research Unit
OSPAR	Oslo/Paris Convention
PAH	Polycyclic Aromatic Hydrocarbons
PMF	Priority Marine Features
PNEC	Predicted No Effect Concentration
ppm	Parts per Million
RSD	Relative Standard Deviation
SAC	Special Areas of Conservation
SACFOR	Superabundant, Abundant, Common, Frequent, Occasional, Rare
SCANS	Small Cetacean Abundance in the North Sea
SFF	Scottish Fisheries Federation
SIMOPS	Simultaneous Operations
SNS	Southern North Sea
SO_2	Sulphur Dioxide
SOPEP	Shipboard Oil Pollution Emergency Plan
SOSI	Seabird Oil Sensitivity Index
SSCV	Semi-Submersible Crane Vessel
SSS	Side Scan Sonar
te	Tonne
te/yr	Tonnes per year
THC	Total Hydrocarbon
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
UNFCCC	United Nations Framework Convention on Climate Change
UKHO	United Kingdom Hydrographic Office
UKOOA	UK Offshore Operators Association
UNFCCC	United Nations Framework Convention on Climate Change
VOC	Volatile Organic Compounds
WMP	Waste Management Plan

1. INTRODUCTION

The Andrew Area comprises five fields including Andrew, Cyrus, Farragon, Kinnoull and Arundel, which produce through the Andrew platform. The Andrew field is located *c*. 198 kilometres (km) northeast of the Scottish coastline and *c*. 23 km from the United Kingdom (UK)/Norway median line (Figure 1-1). The water depth at the field is *c*. 117 m lowest astronomical tide (LAT) and the associated infrastructure span across UK Continental Shelf (UKCS) Blocks 16/27 and 16/28.

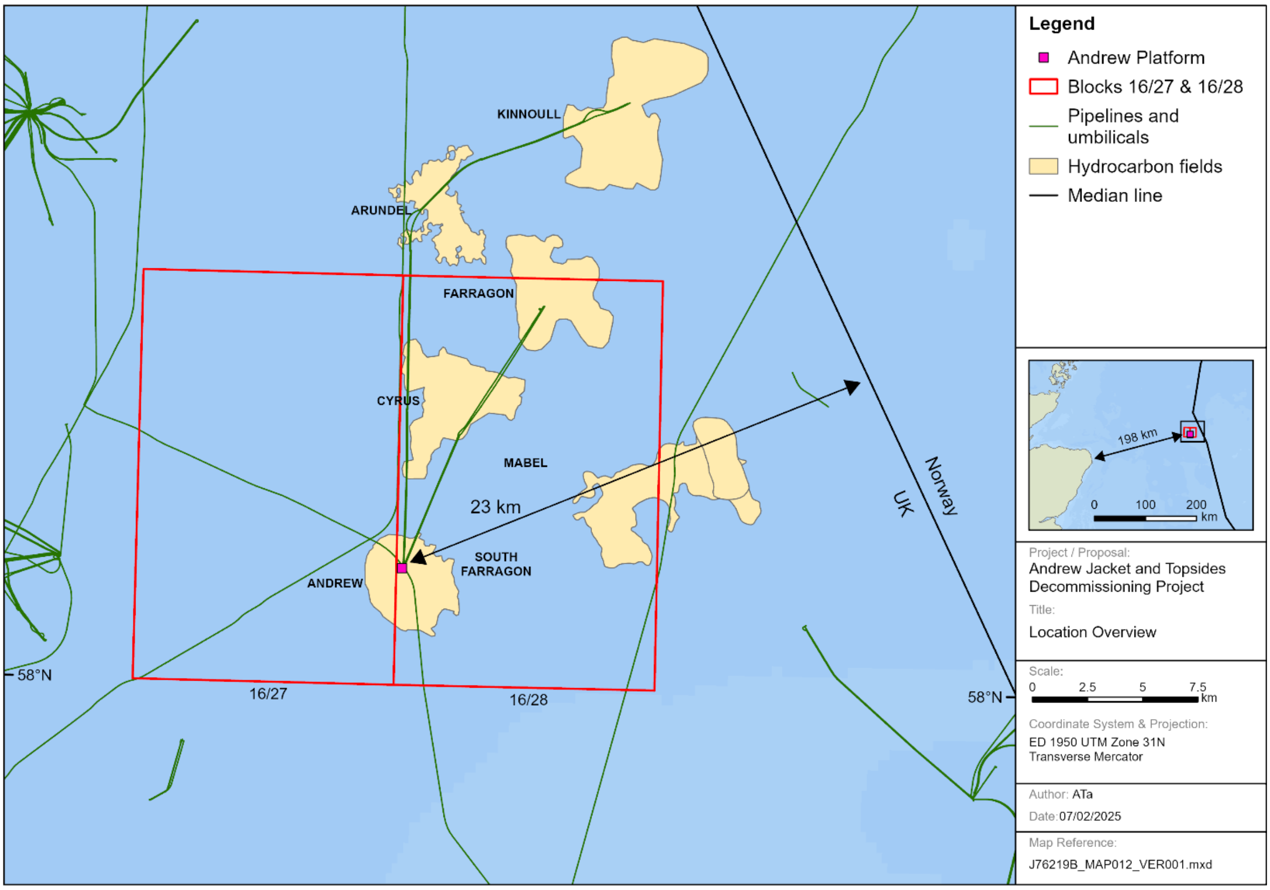

Figure 1-1: Location of the Andrew platform.

BP Exploration Operating Company Limited (BPEOC) originally discovered oil in the Andrew field in 1974. At the time, the small size of the field made it uneconomical to develop. BPEOC subsequently put together an alliance resulting in the field being developed and first oil in 1996. The Andrew Area is currently in operation with a forecast Cessation of Production (CoP) between Q1 and Q3 2027. Oil is exported from the Andrew platform into the Forties Pipeline System (FPS) via the Brae-Forties C pipeline and gas is exported to the Central Area Transmission System (CATS). Some gas is used for gas-lift in the Cyrus field.

BPEOC is at present preparing to decommission the Andrew Area. It has been agreed with the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED), that the proposed decommissioning activities will be captured over two Decommissioning Programme (DP) submissions. The first DP submission is supported by this EA and captures the Andrew platform (jacket and topsides) and a number of rigid risers and riser umbilicals (riser and riser umbilical numbers are provided in Section 3.2.4.2). The second DP submission will capture the subsea infrastructure for the five fields and will be supported by a separate EA.

BPEOC has prepared this EA under the Petroleum Act 1998, in support of the Andrew Topsides and Jacket DP submission (BPEOC, 2025a).

1.1 Overview of the Andrew Platform

The Andrew platform comprises a four-legged jacket with an integrated topside structure that provides production, drilling utilities and living facilities, a drilling support module, wellheads, and a temporary refuge. The platform accommodates 24 well slots and 10 caissons and has a flare tower, crane and two lifeboats.

In line with existing regulations the Andrew topsides will be fully recovered. In addition, given its size (i.e. < 10,000 te) the Andrew platform jacket is not considered a derogation candidate, such that it will also be fully recovered.

1.2 Purpose of the Document

The purpose of the EA is to assess and describe, in a proportionate manner, the potential environmental and socio-economic impacts associated with the proposed decommissioning activities, and to identify mitigation measures to reduce the level of these impacts to as low as reasonably practicable.

1.3 Regulatory Context

The UK's international obligations on decommissioning are governed principally by the 1992 Oslo and Paris (OSPAR) Convention for the Protection of the Marine Environment of the North-East Atlantic. OSPAR Decision 98/3 requires that all installations should be completely removed and recovered to shore for re-use, recycling or final disposal unless a derogation is granted.

The decommissioning of offshore oil and gas infrastructure in the UKCS is principally governed by the Petroleum Act 1998, as amended by the Energy Act 2008. This Act sets out the requirements for a formal DP, which must be approved by OPRED before the owners of an offshore installation or pipeline may proceed with decommissioning.

There is no statutory requirement to undertake an Environmental Impact Assessment (EIA), but OPRED's decommissioning guidance notes (BEIS, 2018) advise that any DP is supported by an assessment of the environmental impacts of undertaking the decommissioning activities described. This EA has been prepared to meet this requirement.

1.4 Document Layout

Table 1-1 details the structure of the EA report.

Table 1-1: Structure of the EA Report.

Chapter No	Title	Contents
	Non-Technical Summary	A summary of the EA Report.
1	Introduction	Introduction to the project and scope of the EA. This chapter also includes a summary of applicable legislation.
2	Stakeholder Engagement	Details of the consultation process to date.
3	Project Description	A description of the infrastructure to be decommissioned, the proposed decommissioning activities and an indicative schedule of activities.
4	Environmental Baseline	A description of the environmental and socio-economic receptors in the project area.
5	Scoping of Potential Environmental Impacts	Overview of the methodology used to determine the environmental and socio-economic impact significance of the proposed decommissioning activities. Results of the Environmental Impacts Identification (ENVID) and justification for selecting those aspects not requiring further assessment in the EA. Justification is also provided for those aspects that are assessed further.
6	Seabed Disturbance	Assessment of seabed disturbance during decommissioning.
7	Legacy Impacts	Assessment of legacy impacts on other sea users and on the environment.
8	Atmospheric Emissions	Assessment of the impacts from atmospheric emissions from vessels used during the decommissioning.
9	Environmental Management	A description of BPEOC's Environmental Management Procedures and how they apply to the Andrew jacket and topsides Decommissioning Project.
10	Conclusions	Key findings including a register of commitments.
11	References	Data sources used to support the EA.
Appendix A	Impact Assessment Methodology.	
Appendix B	Scotland's National Marine Plan.	

2. STAKEHOLDER ENGAGEMENT

Consulting with stakeholders is an important part of the decommissioning impact assessment process, as it allows any concerns or issues which stakeholders may have, to be communicated and addressed.

As part of the informal stakeholder engagement process BPEOC issued a Scoping Letter in January 2025 to a number of stakeholders (BPEOC, 2025b).

The Scoping Letter provided an overview of the Andrew Area and the Andrew platform, summarising the impacts to be considered in the EA. Recipients of the Scoping Letter were invited to comment on it with respect to any concerns they may have. Table 2-1 summarises the stakeholder comments received on the Letter.

The formal statutory and public consultation process will be triggered by the submission of the consultation draft of the DP and this EA report to OPRED. As the project progresses, further consultation will be undertaken in line with BPEOC's stakeholder engagement process.

Table 2-1: Summary of Stakeholder Comments on the Scoping Report received in April 2025 (BPEOC, 2025b).

Who	Comment	Response
Informal Stakeholder Consultations		
Response from Joint Nature Conservation Committee (JNCC)		
Depending on the timing of planned works, there is potential for disturbance of nesting seabirds during the breeding season. The applicant should be aware that regulation 40 of The Conservation of Offshore Marine Habitats and Species Regulations 2017 makes it an offence to: (a) capture, injure, or kill any wild bird, (b) take, damage or destroy the nest of any wild bird while that nest is in use or being built, or (c) take or destroy an egg of any wild bird, The Scoping Report does not state whether breeding birds have been observed at the Andrew platform, and we advise that consideration should be given as to whether seabird surveys of the platforms will be required to ascertain if nesting and/or roosting seabirds are or have been using the structures. The species mostly likely to be observed breeding is black-legged kittiwake (although a range of other species have been recorded as breeding on offshore platforms) and we recommend that JNCC's "Seabird Survey Methods for Offshore Installations: Black-legged kittiwakes" advice note is followed : Kittiwake_survey_advice_v2.1.pdf The advice note gives recommendations on survey methods, timing of surveys, recording data (amongst other advice), and suggested recording forms for supplying along with any licence applications. Further resources can be found here : https://www.gov.uk/guidance/oil-and-gas-offshore-environmental-legislation#conservation-of-offshore-marine-habitats-and-species-regulations-2017. Should breeding seabirds be present then it is likely that a wildlife licence issued by OPRED under regulation 55 would be required for the proposed works, and the results of the surveys outlined		The following text has been included in the EA to address the potential for nesting birds: Details of drone and visual surveys to date are provided in Section 4.3.4. Note these surveys identified no evidence of nesting birds. In addition, BPEOC's commitment to carry out annual surveys to assess for nesting birds (between mid-April and late May), until jacket removal is also captured in Section 4.3.4.

Who	Comment	Response
Informal Stakeholder Consultations		
	above would be required to inform that application. JNCC notes that the risk of an offence, should breeding birds be present on the Andrews platform, if works took place outside the breeding season (April to September inclusive).	
	Seabird Oil Sensitivity Index We would recommend that where possible the Seabird Oil Sensitivity Index (SOSI) is used. We highlight, however, that this index is not intended to inform environmental baselines on seabird populations. We recommend consideration of other data sources when describing the baseline biological environment in the EIA e.g. Kober et al., 2010 . We advise that the SOSI is included for each block of interest and the surrounding eight blocks. We would like to highlight that the infill methods for any blocks/months with no data can be found on our website (http://data.jncc.gov.uk/data/e97d9ba7-7f4b-47a3-921d-60b62bddf110/Using-the-SOSI-to-inform-contingency-planning-2017.pdf).	Section 4.3.4 of the EA provides seabird densities from Kober *et al.* (2010) and the SOSI data.
	Marine Mammals The jacket piles will be cut internally and best endeavours will be made to achieve a pile cut at a minimum of 3m below seabed. No information has been provided on the underwater cutting methodology and whether explosive cutting will be utilised. JNCC 2025 guidelines for minimising the risk of injury to marine mammals from explosive use in the marine environment should be followed before all detonations during the proposed operations if explosives are to be used for cutting purposes and the pile cut would be made within 100m of the seabed. These are available here: https://hub.jncc.gov.uk/assets/24cc180d-4030-49dd-8977-a04ebe0d7aca. In addition, a noise risk assessment should be carried out to determine the potential injury range of the operations for the marine mammal hearing groups. JNCC also recommend using published literature (e.g. SCANS IV survey data) to determine the expected density of marine mammal species within the vicinity, and therefore the number of mammals potentially affected by the proposed works, should explosives cuttings take place.	Potential impacts associated with underwater noise from cutting activities have been addressed in the ENVID. This includes listing mitigation measures and acknowledging that no explosives will be used. The results from the ENVID are included in the Scoping of Potential Impacts chapter (Chapter 5). SCANS IV survey data is presented in Section 4.3.5.
	Sufficiency of survey evidence JNCC note that bp are committed to carrying out an environmental survey across the Andrew Area prior to the commencement of the subsea decommissioning activities, however this survey will not be completed on time to inform the Andrew Area DP submissions and supporting Environmental Appraisals (EA). The data from a number of surveys carried out in the vicinity of the area will be used to inform the DPs however the details of these surveys have not been provided. The following list provides more detail on what information JNCC would expect to see: • If survey data are not site-specific to the operations, a justification should be provided as to why wider area	Surveys carried out in the vicinity of the Andrew Area have been assessed and utilised to support the baseline description and the impact assessment.

Who	Comment	Response
Informal Stakeholder Consultations		
	surveys are sufficiently representative of conditions at the site of proposed operations. • Survey data should provide adequate evidence that habitats and species of nature conservation concern (including Annex I habitats) are or are not present. • Any gaps or limitations in environmental information should be acknowledged with, where appropriate, strategies to address these gaps or limitations. • It is good practice to include a diagram indicating the surveyed area in the context of the proposed activity and to identify any sample points or the location of photographic evidence. Data provided should also include high resolution acoustic data, video and/or still images.	
	Drill Cuttings JNCC welcome the commitment to modelling of the disturbed cuttings to determine the subsequent environmental impact.	Results of the drill cuttings disturbance modelling is presented in Section 6.2.
	While JNCC recognise that the proposed operations are not expected to have a significant impact on seabed features, we would expect that subsequent licence applications associated with the decommissioning works include an assessment of the worst-case scenario. Where there is the possibility that anchored vessels or rigs will be required this should include the impact of potential associated seabed disturbance.	The worst-case scenario for seabed impact is discussed in the Seabed Disturbance chapter of the EA. There will be no anchored vessels or rigs associated with the activities captured in the DP (and this EA). BPEOC note JNCCs request that subsequent licence applications include an assessment of the worst-case scenario.
Scottish Fishermen's Federation (SFF)		
SFF responded to advise they had no comments on the Scoping Letter detailing the decommissioning of the Andrew platform.		

3. PROJECT DESCRIPTION

This section describes the Andrew jacket and topsides to be decommissioned and outlines the proposed decommissioning activities.

3.1 Andrew Installation Overview

As discussed in Section 1.1, the Andrew Area encompasses five fields including Andrew, Cyrus, Farragon, Kinnoull and Arundel, which produce through the Andrew platform. The Andrew platform comprises a four-legged jacket with an integrated topside structure that provides production, drilling support module, living facilities, wellheads, and a temporary refuge. A helideck is cantilevered from the roof of the living quarters. The platform accommodates 24 well slots and 10 caissons and has a flare tower, crane and two lifeboats. The total weight of the topsides facilities (less the weight of the Drilling Equipment Set (DES) which has previously been removed) is *c*. 10,173 tonnes (te) while the jacket weight is 9,714 te, including conductors (1,139 te) and marine growth (estimated to be around 512 te).

3.2 Proposed Activities

3.2.1 Schedule

The Andrew Decommissioning Project propose to progress Andrew jacket and topsides decommissioning activities in line with the indicative schedule shown in Table 3-1.

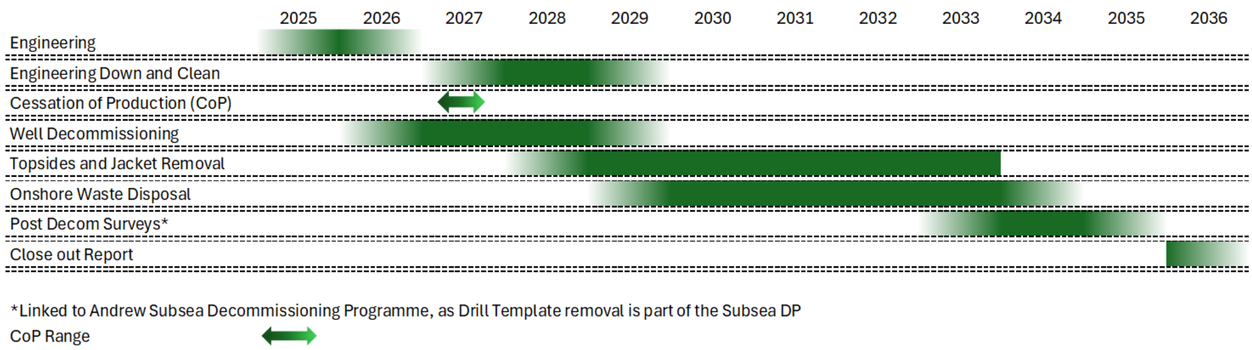

Table 3-1: Indicative schedule for the decommissioning of the Andrew topsides.

3.2.2 Preparatory Works

Platform cleaning will commence post cessation of production (CoP) in 2027 and will be completed in line with Duty Holder Drain, Flush, Purge and Vent (DFPV) philosophy ahead of the preparatory work to support removal of the topsides. During the final cleaning and disconnect activities, all the processing systems on the platform will be progressively depressurised, purged with inert gas (most likely nitrogen) and rendered safe for removal operations. The pipework and tanks will be visually inspected where possible and may be treated should any sources of solids, oils and other fluids be identified.

3.2.3 Plug and Abandonment

The 17 wells at the Andrew platform will be plugged and abandoned (P&A) in accordance with Offshore Energies UK (OEUK) well decommissioning guidelines (OEUK, June 2018) and the Well Operator standards prior to decommissioning of the jacket and topsides. P&A of the Andrew installation wells is scheduled to commence in 2026 through to 2028 and thus is expected to commence prior to CoP in Q1-Q3 2027.

3.2.4 Decommissioning Activities

The Andrew jacket and topsides facilities will be removed using a heavy lift vessel (HLV). It is envisaged that Andrew will move to lighthouse mode after engineering down works are completed and prior to the Heavy Lift window. This could be as early as the last quarter of 2028 and dependent on the Heavy Lift window could last through to 2033. When on-site the HLV will maintain position using dynamic positioning and as such every effort will be made to reduce the need to deploy anchors. At the time of writing the base case is that three separate lifts will be undertaken to remove the Andrew topsides while the jacket will be removed in two sections. Engineering studies will be carried out to finalise the optimal number of lifts to be performed during decommissioning. An overview of the recovery activities is provided in the following subsections.

3.2.4.1 Topsides

As described in Section 1.1, the DES structure has previously been recovered from the Andrew topsides. The base case is that the remaining topsides will be recovered in three separate lifts, though this may change as engineering progresses. Figure 3-1 illustrates the structures to be recovered with each lift: (i) the Kinnoull module, (ii) the flare stack and (iii) the integrated deck. The Kinnoull module and flare stack will be laid on the vessel deck for return to shore, while the integrated deck will be held on-hook (Figure 3-2) during the transit to shore. The topside facilities will be transported to a European yard for dismantling and management via the waste hierarchy. Prior to transport onshore, BPEOC or its appointed duty holder (if different) will audit the yard. The Kinnoull module, flare tower and integrated deck will all be transported to shore in a single trip. As part of their due diligence BPEOC will audit the selected yard to ensure safe handling of the returned infrastructure in adherence with the waste hierarchy.

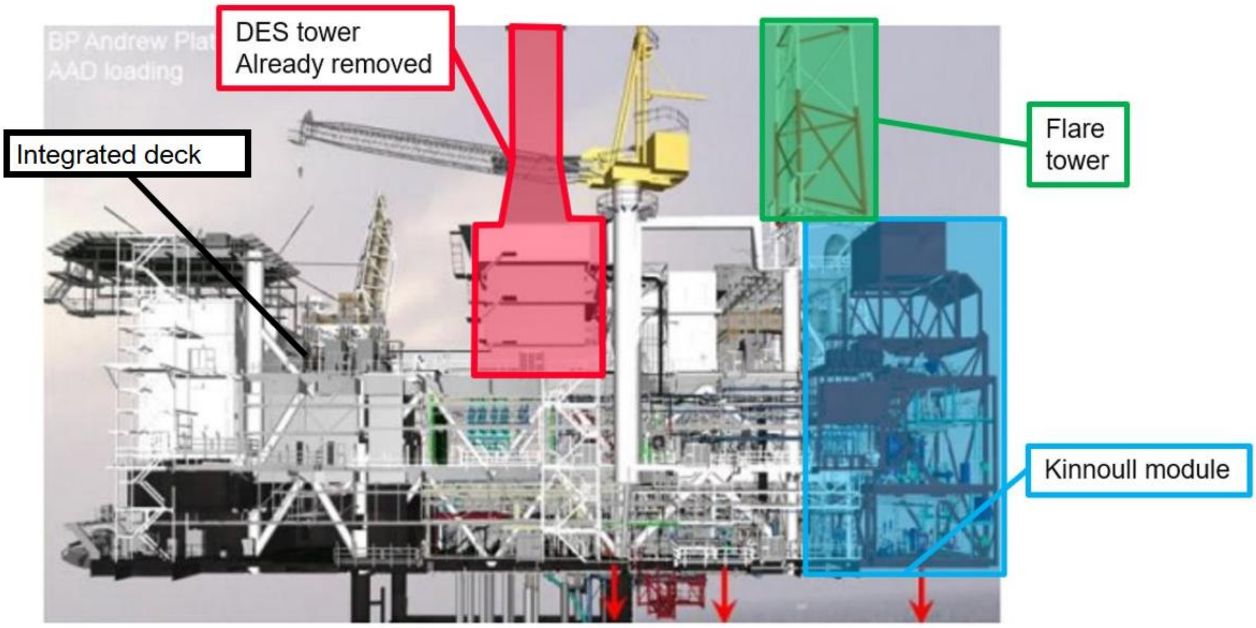

Figure 3-1: Illustration showing the previously removed DES tower, and the separate Kinnoull module and flare tower lifts.

Figure 3-2: Photograph showing an integrated deck being transported on-hook.

3.2.4.2 Jacket, rigid risers and umbilical risers

The jacket will be recovered as a single lift with a cut to a target elevation depth[1].

In addition to recovering the jacket a number of rigid risers (PL1078, PL1079, PL1080, PL1081, PL1082, PL2798.1, PL2798.2 and PL2798.3) and umbilical risers (PLU2121, PLU2798 and PLU5003 and PL1083.1, PL1083.2, PL1083.3, PL1083.4, and PLU5003) will be recovered with the jack lift(s).[2]

There are three 96" piles associated with each of the four jacket legs (i.e. 12 in total). At each leg the three piles pass through a single mud mat and each mud mat has an area of *c*. 233 m^2. It is planned that an abrasive water jet cutting (AWJC) tool will be used to cut the piles internally. To allow the tool to cut at the target depth of 3 m below the seabed, *c*. 7.5 m depth of sediment will require to be dredged from within each pile (i.e. *c*. 35.03 m^3 from each pile and *c*. 105.1 m^3 across the three piles at each jacket leg). It is expected that this sediment will be deposited on the seabed within 10 m of each jacket leg. Following internal cutting of the jacket piles, *c*. 119 m of each 122 m pile will remain beneath the seabed to be decommissioned *in-situ*. Note if a shallower cut depth is agreed the volume of sediment to be dredged will be less.

Depending on when decommissioning execution occurs, the lifting execution may be completed over multiple seasons. In the event of this, temporary navigation systems will be installed post-topsides removal (e.g. nav-aid lighting and/or marker buoy(s)). The FishSafe system will maintain details of the Andrew 500 m safety zone, which will remain *in-situ*. When the platform and subsea decommissioning activities have been

[1] The jacket is to be removed to a target depth of 3 m below the reference seabed level with the final depth below seabed to be agreed following consultation and subject to detailed investigations. Should shallower cuts be required due to technical issues, BPEOC will be discussed and agreed with OPRED.

[2] For note: the lengths of rigid risers to be removed shall be approximately equal to the length of line pipe from the topsides emergency shut-down valves (ESDV) to where the protective structure terminates, and the lengths of the riser umbilicals sections to be removed shall be approximately equal to the length from the topsides to where the protective structure terminates.

completed, and a safe seabed ensured, the subsequent surrendering of the 500 m safety zone will be updated on the Admiralty Charts and FishSafe system.

It will not be necessary to dredge the cuttings/sediments from the top of the mud mats during jacket recovery. Instead, following internal cutting of the piles, the mud mats and the piles will be lifted with the jacket, and it is expected that any sediment and cuttings that have accumulated on top of the mud mats will drop off and fall to the seabed as the lifting is carried out.

The upper section of the jacket (and upper section of rigid risers and riser umbilicals) will be placed on the weather deck of the HLV and sea fastened. The lower section will be held "on-hook" (suspended on the vessel crane) for transport to an audited European yard for management in line with the waste hierarchy. Note the audit will be carried out by BPEOC or its appointed duty holder (if different).

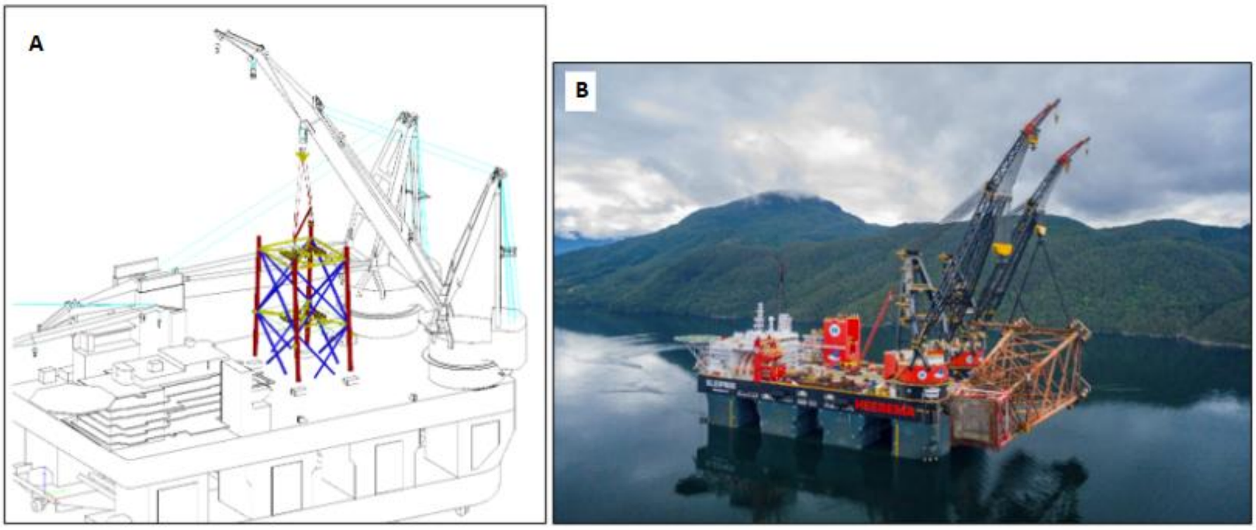

Figure 3-3: Illustration of jacket being laid on vessel deck and (B) photograph of a jacket being transported on-hook.

3.2.4.3 Management of Andrew Drill Cuttings Pile

In May 2019, BPEOC commissioned Subsea 7 to carry out a survey at the Andrew platform which included a visual inspection of the cuttings pile, and collection of data using a multibeam echosounder (MBES) and a sub-bottom profiler. In addition, five samples were taken from the cuttings pile (Subsea 7, 2019). Fugro were commissioned to analyse the samples collected by Subsea 7 to determine the potential for contaminants within the drill cuttings and to assess any risk of these being activated during decommissioning activities at the site (Fugro (2019a). Full details are provided in Section 4.2.5.

In 2006, OSPAR agreed Recommendation 2006/5 (OSPAR, 2006) on a Management Regime for Offshore Cuttings Piles. Stage 1 of the Recommendation required the assessment of drill cuttings piles against two criteria:

- A rate of oil loss to the water column of less than 10 te/yr; and
- A persistence, over the area of seabed contaminated, of less than 500 km^2/yr (Note: a persistence of 500 km^2/yr could mean an area of 1 km^2 is contaminated for 500 years, or an area of 500 km^2 is contaminated for one year).

Where both the rate and persistence are below the set thresholds and no other discharges have contaminated the cuttings pile, no further action is considered necessary, and the cuttings pile may be left in situ to degrade naturally.

The mean leachate concentration (85.0 µg/L) was used to calculate the yearly oil loss to the water column. This was estimated to be 0.24 te/yr, below the OSPAR (2006) oil loss threshold of 10 te/yr. The 50 ppm sediment hydrocarbon footprint of the Andrew cuttings pile is estimated to be 0.26 km^2 (Fugro, 2019).

The Andrew drill cuttings pile will be disturbed during the decommissioning of the jacket and drilling template (decommissioning of which is to be captured in the Andrew Subsea Infrastructure DP submission; BPEOC, 2025c). As a result of this anticipated disturbance, The Andrew Decommissioning Project commissioned a BAT (Best Available Technique) assessment (Genesis, 2025a) to determine the optimal approach for decommissioning the whole Andrew cuttings pile (Genesis, 2025b). In accordance with OSPAR Recommendation 2006/5 the options considered in the BAT assessment were:

Option 1 – Leave undisturbed *in-situ*

Option 2 – Offshore treatment and disposal

Option 3 – Onshore treatment and disposal

Option 4 – Cuttings spreading

Further options suggested in OSPAR 2006/5 include Cuttings Re-Injection, Bioremediation *in situ* and Covering *in situ*. A drill cuttings re-injection feasibility study was conducted by BPEOC, and it was determined that cuttings re-injection is not feasible. It was therefore screened out of the assessment. Bioremediation *in situ* and Covering *in situ* were also screened out on the basis of assessments by United Kingdom Offshore Operators Association (UKOOA) (2002) and Oil and Gas UK (OGUK) (2011) which identified the former technique to be insufficiently demonstrated for it to be considered “Available” and the latter technique to provide little or no environmental benefit.

The assessment undertook a high-level comparative evaluation of several key environmental aspects (resuspension of the cuttings material, emissions to air (associated with vessel use), chemical use (likely to be required for reinjection), underwater noise, waste generation and accidental events for each option. In addition, safety, technical feasibility, regulatory clarity and cost were considered. Modelling was undertaken to determine the fate of the disturbed cuttings, and the results were used to support the BAT assessment (Genesis, 2025a).

As both the hydrocarbon release and footprint persistence of the cuttings pile is below the respective OSPAR thresholds (Recommendation 2006/5) the BAT concluded that the preferred option for decommissioning the whole Andrew cuttings pile is to leave it *in situ* after the jacket has been removed.

Table 3-2 details the drill cuttings pile dimensions utilised in the Genesis (2025b) modelling study.

Table 3-2: Drill cuttings pile dimensions.

Name	Estimated area (m^2)	Estimated height (m)	Estimated volume (m^3)	Estimated mass (tonnes)[1]	Estimated oil content (tonnes)[1]
Andrew platform	**5,280.89**	**2.34**	**3,212.93**	**7,068.45**	**14.71**

[1] Estimated mass and oil content aligns with that presented in the drill cuttings modelling report (Genesis, 2025b).

3.2.5 Vessel Use

Anticipated vessel and associated fuel use is detailed in Table 3-3.

Table 3-3: Vessel use.

Vessel Type	Duration (days)[1]	Fuel Consumption Rate (te/day)[2]	Fuel usage (te)
HLV (mobilisation/demobilisation)	7	10	70
HLV (transit)	8	50	400
HLV (working)	36	20	720
Post decommissioning survey vessel (mob/demob)	4	1	4
Post decommissioning survey vessel (transit)	2	10	20
Post decommissioning survey vessel (working)	2	1.5	3
TOTAL			**1,217**

1. Vessel day estimates include a 25% contingency for waiting on weather (WoW).
2. Institute of Petroleum guidelines (IoP, 2000).

3.3 Survey and Monitoring Programme

At the end of offshore activities associated with the decommissioning of the Andrew platform and the Andrew Area subsea infrastructure, an as left seabed survey will be carried out. The survey results will be used to ensure a safe seabed before surrendering of the 500 m zone. Preference will be given to an approach not impacting on the seabed for example using side scan sonar data to show a safe seabed. However, if deemed necessary, an over trawl trial may be carried out.

A post decommissioning environmental seabed survey (centred on the sites of the jacket legs and cuttings pile) will also be carried out. The objective of the survey will be to identify any chemical or physical disturbances to the seabed following decommissioning. The survey reports will be submitted to OPRED.

5. SCOPING OF POTENTIAL ENVIRONMENTAL IMPACTS

5.1 Methodology

To determine the significance of the potential impacts associated with the proposed decommissioning activities, an ENVID was undertaken following a structured methodology as summarised here.

The ENVID identified the key environmental and societal sensitivities, discussed all the sources of potential impact, and ultimately highlighted those impacts which required further assessment within the EA. The decision on which impacts required further assessment was reinforced by a review of industry experience of decommissioning impact assessment and on an assessment of wider stakeholder interest (informed in part by the stakeholder engagement described in Section 2).

Where relevant, the aspects considered in the ENVID for the proposed activities included:

- Physical presence/interaction with other sea users;
- Emissions to air;
- Discharges to sea;
- Seabed disturbance;
- Under water noise;
- Waste generation;
- Resource use;
- Dismantling yard activities;
- Legacy impacts; and
- Unplanned events.

Where relevant, the following environmental receptors were considered in the ENVID for each activity:

- Air quality;
- Climate;
- Water quality;
- Plankton;
- Sediment quality;
- Benthic communities;
- Fish;
- Marine mammals;
- Birds;
- Designated areas;
- Cultural heritage (e.g. wrecks);
- Shipping;
- Fisheries;
- Resource availability (e.g. landfill and fuel); and
- Local communities (e.g. yard activities).

During the ENVID, the significance of the environmental/social impact of planned activities on each of the susceptible receptors was derived by considering the 'Receptor Sensitivity' in relation to the 'Magnitude of Effect' of the aspect. This was carried out by applying the Environmental and Socio-Economic Impact Assessment (ESIA) methodology described in Appendix A.

Worst case accidental events were also identified and assessed in the ENVID. To determine the environmental and social risk of an unplanned event, firstly the significance of the environmental impact of the event was determined. The likelihood of the unplanned event was then considered. Finally, a level of environmental risk (low, medium or high) was assigned by combining the impact significance and the likelihood of the event occurring using the Environmental and Socio-Economic Risk Assessment (ESRA) matrix presented in Appendix A.

5.2 Scoping

Applying the industry standard mitigation measures, the significance of impact for the majority of the planned activities was considered in the ENVID to be Negligible, such that any environmental and social impacts are considered to be Low. The ENVID concluded that the majority of the aspects could be screened out and would not require further assessment within the EA. Table 5-1 presents the findings of the ENVID and provides justification for the aspects not being assessed further.

The following aspects were not screened out and will be assessed further in the EA:

- Seabed disturbance impacts on the environment (Section 6);
- Legacy impacts on the environment and on other sea users (Section 7); and
- Atmospheric emissions impacts on the environment (Section 8).

The potential impact of unplanned accidental events was also assessed in the ENVID, including the loss of vessel diesel inventory and the dropping of a module. The results from this assessment are presented in Table 5-1.

Table 5-1: ENVID results and justification for selecting / deselecting the impact for further assessment in the EA.

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Node 1: Vessel Use										
Physical presence	Physical presence of vessels in relation to other sea users, birds and marine mammals.	Receptor: Other sea users. Navigation hazard, and restriction of fishing operations.	Campaign, logistics, sharing vessels (across BPEOC portfolio) optimising vessels to minimise use. UK Hydrographic Office (UKHO) standard communication channels including Kingfisher, Notice to Mariners and radio navigation warnings. Collision risk assessment. Stakeholder consultation. Logistics plan. Andrew platform has existing 500 m exclusion zone.	A	1	Low	N/A	N/A	Fishing activity in the area is considered relatively moderate, however the activities will take place within an existing 500 m exclusion area from which vessels are excluded. In addition the development is located within a well-developed oil and gas area such that vessels in transit are the norm, therefore Sensitivity of other sea users to the proposed activities is considered Low (A). In addition the activities will occur within the Andrew platform 500 m zone. Therefore the Magnitude of Effect on other sea users is considered Negligible (1) Impact Significance is considered Low and is not considered further in the EA.	No
		Receptors: Birds and marine mammals. Possible behavioural changes in marine mammals e.g. could be attracted to the vessel or may move away from the area. The vessels and their lights also have the potential to cause displacement of seabirds from foraging habitat and may cause migrating birds to detour from their flight routes.	Optimise vessel use.	B	2	Low	N/A	N/A	Sensitivity of marine mammals as a receptor is Medium (B) given that Under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 they are considered to be species whose conservation requires the designation of SACs. In addition some of the species present are considered EPS and Scottish PMFs. The Central North Sea is a busy shipping area and has well developed fishing and oil and gas industries, such that marine mammals in the region are habituated to the presence of vessels. In addition, the evidence for lethal injury from boat collisions with marine mammals suggests that collisions with vessels are very rare (Cetacean Stranding Investigation Programme, 2022). The	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
									Magnitude of Effect on marine mammals is therefore considered Minor (2) such that the Impact Significance of vessels on marine mammals is considered Low and is not considered further in the EA. The Project area lies within an area where up to 15 species of seabirds may visit throughout the year and as such the Sensitivity of birds as a receptor is considered Medium (B). Though evidence suggests that the presence of the vessels could cause some bird species to be displaced from their foraging area, the very small proportion of their overall available habitat that will be occupied by the vessels means the impact is not considered to be noticeable. In addition, given the existing oil and gas vessel activity in the area, it is expected that the impact of the vessels on bird migration routes (e.g. they could be attracted to the vessel lights at night) is not significant. Therefore, the Magnitude of Effect on birds is considered Minor (2) such that the Impact Significance of vessels on birds is considered Low and is not considered further in the EA.	
Emissions to air	Atmospheric emissions associated with vessel use	Receptor: Climate change. Emissions to atmosphere resulting in a contribution to global warming.	Low sulphur diesel. BPEOC Contractor selection - maintenance programme. International Convention for the Prevention of Pollution from Ships (MARPOL) compliance. Campaign, logistics, sharing vessels (across BPEOC portfolio) optimising vessels to minimise use.	D	1	Low	N/A	N/A	Sensitivity of climate change as a receptor is considered Very High (D) given the cumulative impact. Given the low anticipated CO_2e emissions (3,883 te) the Magnitude of Effect is considered Negligible (1) such that the Impact Significance is considered Low. Due to the cumulative impacts of emissions on climate change, the impact of atmospheric emissions from the vessels on climate change is considered further in the EA.	Yes

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
		Receptor: Air quality. Possible reduction in local air quality.	Review vessel Common Marine Inspection Documents (CMID) as part of vessel assurance (evidence of maintenance). During contract award, bp will consider non marine diesel operated vessel and other options to minimise emissions.	A	1	Low	N/A	N/A	Given the offshore location the Sensitivity of air quality as a receptor is considered Low (A). Given the relative short vessel campaigns, the Magnitude of Effect is considered Negligible (1) such that the Impact Significance is considered Low. As the impacts on air quality are not considered significant this aspect is not considered further in the EA.	No
Discharges to sea	Routine vessel discharges (e.g. greywater, ballast discharges, biofouling)	Receptor: Water quality. Water quality in immediate vicinity of discharge may be reduced (deoxygenation), but effects are usually minimised by rapid dilution in receiving body of water and non-continuous discharge.	Minimise use of vessels, through efficient journey planning. Review vessel CMID as part of vessel assurance. Vessels will be MARPOL compliant. All contracted vessels will originate from countries adhering to the International Maritime Organisation (IMO) Convention. Audit procedures will ensure that the contracted vessels ballasting procedures are in line with IMO Convention aimed at preventing associated harmful effects. All discharges of ballast water will be monitored, and records maintained. As part of the Company's auditing process, only vessels adhering to the IMO 2011 Guidelines for the Control and Management of Ships' Biofouling to Minimize the	B	1	Low	N/A	N/A	Receptors include water quality, plankton, fish, marine mammals etc. Due to the presence of marine mammals (EPS), receptor Sensitivity is considered Medium (B). Discharges will be in line with MARPOL requirements such that the Magnitude of Effect is considered Negligible (1) and the Impact Significance Low. The impact of routine vessel discharges on water quality is therefore not considered further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
			Transfer of Invasive Species will be used. All member states of IMO are signed up to these guidelines.							
Seabed Disturbance	No vessels will be anchored, all will adopt dynamic positioning (DP). Depth of water is such that DP thrusters would not cause resuspension of sediments in the area. No seabed disturbance associated with vessels anticipated and so this is not further assessed in the EA.									
Underwater noise	Underwater noise from vessels	Receptors: Marine mammals and fish. Noise from vessels has the potential to cause disturbance to marine mammals and fish in the form of temporary displacement from the area.	Optimising vessels to minimise use.	B	2	Low	N/A	N/A	Sensitivity of marine mammals as a receptor is Medium (B) given that Under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 they are considered to be species whose conservation requires the designation of SACs. The Central North Sea is a busy shipping area and has well developed fishing and oil and gas industries, such that marine mammals and fish in the region are habituated to the presence of vessels. Any impacts from vessel noise on these receptors is expected to be behavioural rather than physical, such that they may cause marine mammals or fish to vacate the area, however they would be expected to return once the vessels have left the location. The Magnitude of Effect of underwater noise from vessels on marine mammals and fish is therefore considered Minor (2) such that the Impact Significance is considered Low. The impact of underwater noise from vessels on marine mammals and fish is therefore not considered further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Waste generation	General vessel operational waste.	Receptor: Resource availability (landfill take). Waste to landfill.	Compliance with MARPOL requirements. The Andrew Decommissioning Project will look to vessel owner to minimise all wastes during the project (monthly reporting of waste sent to shore; Waste Management Plan (WMP) and Waste Record Book; Waste Management Duty of Care audit). Waste minimisation and supply chain management. Waste will be managed in line with the waste hierarchy.	A	1	Low	NA	NA	MARPOL Annex V applies to all ships/vessels and generally prohibits the discharge of all garbage into the sea (there are some exceptions which relate for example to food waste and cleaning agents). As vessels will be compliant with MARPOL, there will be no significant impact offshore. Sensitivity of landfill as a receptor is considered Low (A) as landfill options are considered abundant. BPEOC recognise landfill sites as a finite resource, however as the vessels will have WMPs in place that will adhere to the waste hierarchy principle of reduce, reuse recycle, the Magnitude of Effect is considered Negligible (1), and the Impact Significance is considered Low. As the impact significance of any waste from the vessels is considered Low and given that Section 12.8 of OPRED’s Guidance Notes (BEIS, 2018) advises that an assessment of wastes returned to shore is not required in the EA (as it is not relevant to the impacts in the marine environment), the onshore impacts associated with vessel waste is not discussed further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Resource use (Offshore)	Energy consumption (fuel use by offshore and onshore plant/equipment)	Receptor: Resource availability. Energy use.	Compliance with MARPOL Vessel and equipment maintenance. Monitor fuel use. Scheduling/design to optimise opportunities to use resources more efficiently (i.e. minimise transits, ensure vehicles are fully loaded).	A	1	Low	N/A	N/A	Sensitivity of fuel availability as a receptor is considered Low (A). BPEOC recognise that hydrocarbon-based fuel is a finite resource, however given the relatively short duration of the proposed vessel activities and the use of MARPOL compliant vessels the Magnitude of Effect of fuel use is considered Negligible (1) such that the Impact Significance is considered Low. The impact of energy consumption on resource availability is therefore not considered further in the EA.	No
Unplanned event and related discharges to sea	Accidental loss of vessel (sinks) and associated fuel inventory (worst case).	Receptor: Water quality and flora and fauna in the water column. Water quality deterioration, impact on marine flora and fauna. Immediate oxygen demand on receiving water with consequential impacts on marine fauna.	Ship Oil Pollution Emergency Plan (SOPEP) (inc. spill kits etc). Collision risk assessment. Maintenance procedures. Simultaneous Operations (SIMOPs). Vessels will be selected which comply with IMO/ Marine and Coastguard Agency (MCA) codes for prevention of oil pollution. Maintenance procedures. Pre-mobilisation audits will be carried out including a comprehensive review of spill prevention procedures.	B	2	Low	Remote	Low	Receptors include water quality, plankton, fish, marine mammals etc. Given the potential presence of ocean quahogs and sea pens, Sensitivity is considered Medium (B). Would expect most diesel to evaporate with none reaching the seabed such that the Magnitude of Effect is considered Minor (2), and the Impact Significance is considered Low. The likelihood of a vessel collision is considered Remote such that the Environment Risk is considered Low. In line with Subsection 12.4 of the OPRED Decommissioning Guidance (BEIS, 2018), the impacts of accidental events are not assessed in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Node 2: Jacket and Topsides Recovery										
Physical Presence	Legacy impact of the cuttings pile decommissioned in situ in relation to other sea users	Receptor: Other sea users. Navigation hazard, and restriction of fishing operations.	Stakeholder consultation, especially discussion of issues with fisheries representatives and Ministry of Defence (MoD) Notifications and notice to mariners	A	1	Low	N/A	N/A	Fishing activity in the area is considered relatively moderate, however the cuttings pile will remain within an area from which vessels are currently excluded. Sensitivity of fishing as a receptor is therefore considered Low (A). Magnitude of Effect assumes that though the 500 m exclusion zoned will be surrendered, fishers may avoid trawling gear over the area of the remaining cuttings. Though removal of the 500 m zone will give fishers more access, the Magnitude of Effect is considered Negligible (1) rather than Positive (0) to take cognisance of the fact that fishers would likely avoid the cuttings pile. Given the legacy impact of the cuttings pile remaining in situ it is considered further it the EA.	Yes
Discharges to Sea	Chemicals/Hydrocarbon/ Naturally Occurring Radioactive Material (NORM) discharges (from topsides). Note it Is possible there is NORM in the dead leg areas.	Receptor: Water quality. Water quality in immediate vicinity of discharge may be reduced (deoxygenation), but effects are usually minimised by rapid dilution in receiving body of water and non-continuous discharge.	Selection of chemicals with less potential for environmental impact Topsides will be flushed and cleaned. Predefined cleanliness achieved through hydrocarbon freeing Drain Flush Purge Vent (DFPV). Umbilical and pipework disconnected and capped.	B	1	Low	N/A	N/A	Sensitivity considered Medium (B) due to presence of PMFs in the water column. Given that the topsides will be flushed and cleaned prior to dismantling, the impact of any discharges due to releases are considered Negligible (1) resulting in an Impact Significance of Low. This is therefore not considered further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
	Resuspension of disturbed cuttings.	Receptor: Water quality. Water quality in immediate vicinity of discharge may be reduced (deoxygenation), but effects will be minimised by rapid dilution in receiving body of water. Resuspended sediments expected to settle out relatively quickly.	Internal cutting of the piles means minimal disturbance to the cuttings pile.	B	1	Low	N/A	N/A	As above for Sensitivity rating. Jacket removal via internal cuttings of the piles will result in limited disturbance to the drill cuttings pile whilst any resuspended sediments are expected to settle relatively quickly resulting in short term impacts to the water column such that the Magnitude of Effect is considered Negligible (1). Impact Significance on the water column is therefore considered Low such that this is not considered further in the EA.	No
Seabed Disturbance	Disturbance to the seabed/drill cuttings during jacket removal. **Short term impact.**	Receptor: Marine flora and fauna. Seabed disturbance, loss of habitat, temporary suspended solids, loss of benthic organisms and PMFs.	Limit the footprint of disturbance due to piles being cut internally.	B	3	Moderate	N/A	N/A	Seabed sensitivity considered Medium (B) due to presence of designated habitat (sea pens and burrowing megafauna) and species (e.g. *A. Islandica*). Recognised that contaminated cuttings may settle on seabed over a wider area than currently showing elevated hydrocarbons. Therefore, the short-term impact on seabed of recovering the jacket is considered Serious (3) such that the Impact Significance is considered Moderate. This impact is therefore considered further in the EA.	Yes
	Disturbance to the seabed/drill cuttings during jacket removal. **Long term impact.**	Receptor: Marine flora and fauna. Seabed disturbance, loss of habitat, temporary suspended solids, loss of benthic organisms and PMFs.	Limit the footprint of the activities Minimise disturbance of cuttings piles Modelling study for cuttings disturbance Review of survey data for distribution of sensitivities Stakeholder consultation as deemed appropriate.	B	2	Low	N/A	N/A	Seabed sensitivity considered Medium (B) due to presence of designated habitat (sea pens and burrowing megafauna) and species (e.g. *A. Islandica*). Modelling suggests that the area of risk significantly reduces over time such that the long-term Magnitude of Effect is considered Minor (2), and the Impact Significance is Low. Given the presence of designated habitats and species and the legacy impact of the cuttings pile remaining in situ this impact is considered further in the EA.	Yes

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Underwater Noise	Underwater noise from cutting activities	Receptors: Marine mammals and fish. Noise from cutting of the piles has the potential to cause disturbance to marine mammals and fish in the form of temporary displacement from the area.	- Suitable technology for cutting will be selected to ensure the effectiveness of the cutting, minimising the duration, disturbance and risk of requiring the activity to be repeated - No explosives use planned.	B	1	Low	N/A	N/A	Given the presence of marine mammals and fish, receptor Sensitivity is considered Medium (B). There is no published information on the response of marine mammals or fish to sound generated by underwater cutting. However, reported source levels are relatively low compared with those generated by vessels (Pangerc *et al*., 2016; . Anthony *et al*. 2009). Therefore, any noise generated from cutting operations is not likely to cause significant disturbance to marine fauna. The Magnitude of Effect is therefore considered Negligible (1), and the Impact Significance is Low such that this impact is not considered further in the EA.	No
Waste Generation	Non-hazardous waste including marine growth	Receptor: Resource availability (landfill take). Waste to landfill.	Waste management strategy will be adhered to. Project waste management plan, use of licensed waste contractors/sites, waste transfer notes Develop WMP prioritising reuse and recycling Contractor to maintain a waste audit trail through to recycling or disposal facility Contractor to report waste inventories Audit of yard/contractor waste management systems	A	1	Low	N/A	N/A	Sensitivity of landfill as a receptor is considered Low (A) as landfill options are considered abundant. Onshore yard location currently unknown, but assumed an existing yard will be used, with experience in handling decommissioning waste and suitable treatment/ disposal/recycling/reuse routes will be identified. Given adherence to waste hierarchy, quantities of material to landfill will be minimised such that the Magnitude of Effect is considered Negligible (1) and therefore the Impact Significance Low. As a result, this impact is not considered further in the EA. Section 12.8 of OPRED's Guidance Notes (OPRED, 2018) advises that an assessment of wastes or waste management returned to shore for treatment or disposal is not required in the EA as it is not relevant to the impacts in	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
									the marine environment. For this reason, the processing of waste returned to shore and any onshore impacts associated with the returned material is not discussed further in the EA.	
	Hazardous and radioactive sources (on board the platform) and radioactive waste NORM.		Waste management strategy will be adhered to. Project waste management plan, use of licensed waste contractors/sites, waste transfer notes. Licensed facility capable of taking contaminated material under appropriate licence and disposing appropriately (e.g. incineration) Radioactive sources will be managed in line with applicable regulations. Contractor to maintain a waste audit trail through to recycling or disposal facility Contractor to report waste inventories. Audit of yard/contractor waste management systems.	B	1	Low	N/A	N/A	Due to more limited availability of landfill for hazardous waste, receptor Sensitivity is considered Medium (B). Onshore yard location currently unknown, but assumed an existing yard will be used, with experience in handling decommissioning waste (including NORM) and suitable treatment/disposal/recycling/reuse routes identified. Any remaining NORM contaminated materials will be cleaned and the metal recycled, and NORM disposed. However, the amounts are likely to have no real discernible use of landfill resource or result in any public/stakeholder concerns. With mitigation measures identified, the Magnitude of Effect is considered Negligible (1) and therefore the Impact Significance Low. Section 12.8 of OPRED's Guidance Notes (OPRED, 2018) advises that an assessment of wastes or waste management returned to shore for treatment or disposal is not required in the EA as it is not relevant to the impacts in the marine environment. For this reason, the processing of waste returned to shore and any onshore impacts associated with the returned material is not discussed further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Onshore Dismantling Yard Activities	Emissions to Air: Atmospherics associated with material processing/recycling	Receptor: Climate change. Emissions to atmosphere resulting in a contribution to global warming.	Maintenance plans for onshore equipment Use of approved decommissioning yard(s) Selected yard will have required permits in place, which will include consideration/approval of environmental emissions. Transportation vehicles will be well maintained and emissions compliant.	D	1	Low	N/A	N/A	Sensitivity of climate change as a receptor is considered Very High (D) given the cumulative impact. Given the relatively small volume of material to be returned, the Magnitude of Effect is considered Negligible (1) such that the Impact Significance is considered Low. For this reason, any impacts from onshore dismantling yard activities are not considered further in the EA.	No
		Receptor: Air quality. Possible reduction in local air quality.		A	1	Low	N/A	N/A	Given the commitment to use permitted yards the Sensitivity of air quality as a receptor is considered Low (A). Given the relatively small volume of material to be returned, the Magnitude of Effect is considered Negligible (1) such that the Impact Significance is considered Low. Section 12.8 of OPRED's Guidance Notes (BEIS, 2018) advises that an assessment of wastes or waste management returned to shore for treatment or disposal is not required in the EA as it is not relevant to the impacts in the marine environment. For this reason, the processing of waste returned to shore and any onshore impacts associated with the returned material is not discussed further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
	Airborne noise, including traffic movements at onshore sites	Receptor: Local communities. Disturbance to local communities.	Environmental audit of dismantling yard (including site visit) BPEOC contractor management / selection processes Yard to engage with local communities and have a noise management plan. Review records of engagement with communities and close out of issues Contract award should include recognition of social issues including noise.	A	1	Low	N/A	N/A	Onshore Disposal Yard Location currently unknown. However, it is assumed that an existing, permitted yard will be used. Any material from the Project, will just result in ongoing activities rather than new ones. Yards will already engage with local communities and have noise management plans in place. As such this is seen as having Low (A) receptor Sensitivity and at worst, limited local public awareness and no concerns. Magnitude of Effect is considered Negligible (1) and therefore the Impact Significance Low. Section 12.8 of OPRED's Guidance Notes (BEIS, 2018) advises that an assessment of wastes or waste management returned to shore for treatment or disposal is not required in the EA as it is not relevant to the impacts in the marine environment. For this reason, the processing of waste returned to shore and any onshore impacts associated with the returned material is not discussed further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
	Odour (onshore) (e.g. from marine growth)	Receptor: Local communities. Disturbance to local communities.	Environmental audit of dismantling yard Selection of a yard that has procedures in place to dispose of marine growth in a manner that will avoid odour nuisance Marine growth management plan Efforts will be made to compost returned marine growth and avoid landfill. Yards will already engage with local communities and have marine growth management plans in place.	A	1	Low	N/A	N/A	Onshore Disposal Yard Location currently unknown. However, it is assumed that an existing, permitted yard will be used. Any material from the Project, will just result in ongoing activities rather than new ones. Yards will already engage with local communities and have marine growth management plans in place. As such this is seen as having Low (A) receptor Sensitivity and at worst, limited local public awareness and no concerns. Magnitude of Effect is considered Negligible (1) and therefore the Impact Significance Low. Section 12.8 of OPRED's Guidance Notes (BEIS, 2018) advises that an assessment of wastes or waste management returned to shore for treatment or disposal is not required in the EA as it is not relevant to the impacts in the marine environment. For this reason, the processing of waste returned to shore and any onshore impacts associated with the returned material is not discussed further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
	Dust - onshore	Receptor: Local communities. Disturbance to local communities.	Environmental audit of dismantling yard Yard to engage with local communities. Review records of engagement with communities and close out of issues. Bid evaluation for onshore activities should consider economic, environment and social issues Environmental management plan.	A	1	Low	N/A	N/A	Onshore Disposal Yard location currently unknown. However, it is assumed that an existing, permitted yard will be used. Yards will already engage with local communities and have dust management plans in place. As such this is seen as having Low (A) receptor Sensitivity and at worst, limited local public awareness and no concerns. Magnitude of Effect is considered Negligible (1) and therefore the Impact Significance Low. Section 12.8 of OPRED's Guidance Notes (BEIS, 2018) advises that an assessment of wastes or waste management returned to shore for treatment or disposal is not required in the EA as it is not relevant to the impacts in the marine environment. For this reason, the processing of waste returned to shore and any onshore impacts associated with the returned material is not discussed further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
Legacy Impacts	Legacy socio-economic impacts associated with decommissioning of the drill cuttings pile *in-situ*.	Receptor: Other sea users. Potential for access to seabed area being impeded due to drill cuttings pile being decommissioned *in-situ.*	Seabed clearance surveys. Over trawl trials to be carried out if considered necessary. Post decommissioning survey strategy. The extent of the Andrew drill cuttings pile remaining *in-situ* will be marked on FishSafe	A	1	Low	N/A	N/A	Post-decommissioning of the Andrew Area the 500 m exclusion zone around the Andrew platform will be surrendered enabling this area to be exploited by commercial fisheries. The dominant gear type used in the Andrew Area is trawl gear, which has the potential to interact with the remaining drill cuttings pile and could lead to spoiled nets and/or contaminated catches. As fishing is currently prohibited within the 500 m zone around the Andrew platform, Sensitivity of fishing as a receptor is considered Low (A). Following the application of the mitigation measures identified, the Magnitude of Effect of the cuttings pile being decommissioned in situ is considered Negligible (1) and the Impact Significance is considered Low. Though the impact significance is considered Low, given stakeholder interests with respect to a safe seabed, the decommissioning of the cuttings pile *in-situ* will be considered further in the EA.	Yes

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
	Legacy environmental impacts associated with decommissioning of the lower sections of jacket piles *in-situ*.	Receptor: Marine flora and fauna. Potential for access to seabed area being impeded due infrastructure/stabilisation features decommissioned *in-situ.*	Target cut at *c*. 3 m below seabed Should shallower cuts be required due to technical issues, BPEOC will discuss and agreed with OPRED.	A	1	Low	N/A	N/A	Given the buried nature of the length of piles to be decommissioned in situ (target cut at 3 m below the seabed), receptor Sensitivity is considered Low (A). The Magnitude of Effect of leaving the lower sections of the piles *in situ* is considered Negligible (1) given: the buried nature of remaining pile lengths, the slow rate of metal degradation; and the pile material (steel). Though the Impact Significance is therefore considered Low, given stakeholder interests, the decommissioning of the lower sections of jacket piles *in-situ*. is considered further in the EA.	Yes
Unplanned Events	Discharges from topsides equipment following DFPV activities e.g. entrained or residual oil in water (OiW) chemical/ inhibited seawater in the topsides pipework/ equipment, i.e. dead legs and low points (which has not been removed by DFPV).	Receptor: Water quality. Water quality deterioration.	Predefined cleanliness achieved through hydrocarbon freeing (targeting <30mg/l OiW for topsides processing lines). DFPV activities carried out on the platform Rationalisation/minimisation of chemical/diesel inventory Pre-removal inspections to identify and mitigate potential sources of release.	B	1	Low	Possible	Low	Receptors include water quality, plankton, fish, marine mammals etc. Due to the presence of marine mammals (EPS), receptor Sensitivity is considered to be Medium (B). Given use of chemicals with Low Risk Quotient (RQ) and cleaning of lines (including those within the structures) to target <30mg/l OiW, Magnitude of Effect of any accidental releases is considered Negligible (1). As a result the Impact Significance is Low, which when combined with a likelihood of Possible results in a Low environmental risk and therefore is not considered further in the EA.	No

Aspect		Receptors and Potential Impacts	Mitigation	Sensitivity	Magnitude	Significance	Likelihood (U)	Environmental Risk (U)	Justification for selecting/deselecting the aspect/impact for further assessment in the EA	Assessed further in the EA
	Dropped module	Receptor: Seabed disturbance Could result in drill cuttings becoming suspended in the water column and resettling over wider area.	Lifting procedures in place	B	1	Low	Remote	Low	There are sensitive habitats and species in the area such that the Sensitivity is considered Medium (B). However, due to limited area of impact the Magnitude of Effect is considered Negligible (1), and the Impact Significance is Low. For this reason, any impacts from a dropped module are not considered further in the EA.	No

4. ENVIRONMENTAL & SOCIO-ECONOMIC BASELINE

An understanding of the environmental and socio-economic baseline is required to identify the potential impacts of the proposed Project. This chapter outlines the main environmental and socio-economic sensitivities within the Andrew field that could be impacted by the proposed decommissioning activities.

4.1 Environmental Baseline Surveys

A number of environmental baseline surveys have been carried out across the Andrew Area and where relevant these have been used to inform this chapter. Environmental survey reports used to support this chapter are listed in Table 4-1, whilst associated survey sampling locations are provided in Figure 4-1. Figure 4-2 illustrates those surveys carried out solely over the Andrew field.

Table 4-1: Environmental surveys carried out across the Andrew Area.

Figure 4-1 reference name	Survey Report	Reference
Andrew Area: Andrew, Cyrus, Farragon, Kinnoull and Arundel fields		
Andrew 2019a	Andrew Drill Cuttings and Jacket Skirt Pile Survey. Project BP SCIRM – IS0072 Survey work completed in May 2019.	Subsea 7 (2019)
	BP Andrew Decommissioning Consultancy Desk Study. Report. This report details the analysis of the samples collected by the Subsea 7 survey.	Fugro 2019a *(report dated October 2019)*
Andrew 2019b	Site Survey at Skua and Andrew (UKCS Blocks 22/24 and 16/28. Note, only the data associated with the Andrew field is referenced in this report. Survey work completed in September-October 2019.	Fugro (2020) *(final report dated April 2020)*
Andrew and Farragon 2017	Environmental Monitoring Report Andrew and Farragon, UKCS Blocks 16/23 and 16/28. Fugro Document No.: 175401V2.0 Survey work completed in November 2017.	Fugro (2019b) *(report dated March 2019)*
Arundel Farragon & Kinnoull 2009	Andrew Area Development UKCS 16/23, 24, 28 & 29: Environmental Habitat Assessment Report. Survey work completed in Dec 2008, Jan, May and Aug-Sept 2009	Gardline 2010a *(final report issued in Jan 2010)*
	Andrew Area Project. Environmental Baseline Report Gardline Project Reference 7873.1 Survey work completed on 5th Jan 2009 and in Aug -Sept 2009.	Gardline (2011) *(final report issued on 24th March 2011)*
Cyrus 2009	BP Exploration Ltd UKCS 16/28 Cyrus Seabed Survey August to September 2009 Environmental Baseline Report: Project 8134.1	Gardline (2010b)
Arundel 2007	BP Exploration Operating Company Ltd UKCS 16/23 Arundel Site Survey Environmental Baseline Survey: Project 7345.1 Survey work completed in September and October 2007	Gardline (2007)
Farragon 2004	BP Exploration Operating Company Ltd UKCS 16/28 Farragon Development Survey: Environmental Assessment Survey work completed in July and August 2004	Gardline (2004) *(final report dated Nov. 2004)*
	BP Exploration Operating Company Ltd UKCS 16/28 Farragon Development Survey: Environmental Baseline Report Survey work completed in July and August 2004	Gardline (2005) *(final report dated April 2005)*

Figure 4-1 reference name	Survey Report	Reference
Andrew 2000	BP Andrew (UKCS 16/27a and 16/28) Seabed Environmental Survey. Field work completed in July 2000 Report No ERTSL 00/212	ERTSL (2001)
Cyrus 1986	Baseline Environmental Survey of the Benthic sediments of the Cyrus Oilfield, April 1986; FSC/OPRU/29/86	Oil Pollution Research Unit (OPRU) (1986)
Nearby fields		
South Farragon 2015	Survey Report for BP Exploration for UKCS Block 16/28 South Farragon Site Survey July 2015: Project 10522.2	Gardline (2015)
Maria 2004	Maria Development Volume 4 Environmental Survey, Maria Site Survey: Job No 68-7897.1	Fugro Survey (2004)
South Farragon 1987 & 1988	Environmental Seabed Surveys of the Benthic Sediment around Well Site 16/28-8(H): Report BE/88/25	Aberdeen University Marine Studies (AUMS) (1989)
	Comparison of the Effects of Exploration Drilling on the Benthic Sediments as Well Sites H & I in Block 16/28; AUMS Report 87/01	AUMS (1987)

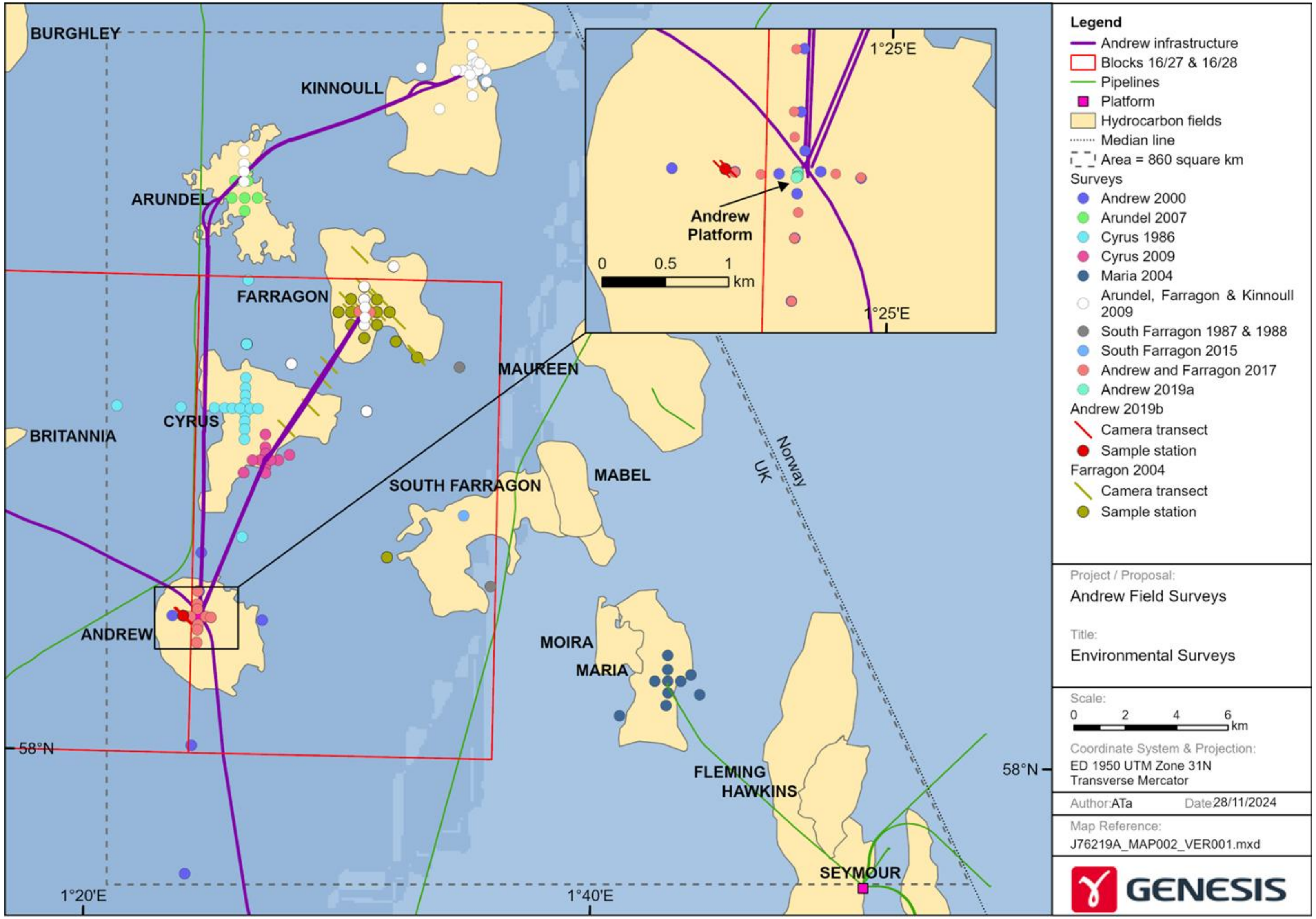

Figure 4-1: Survey sampling locations across the Andrew Area.

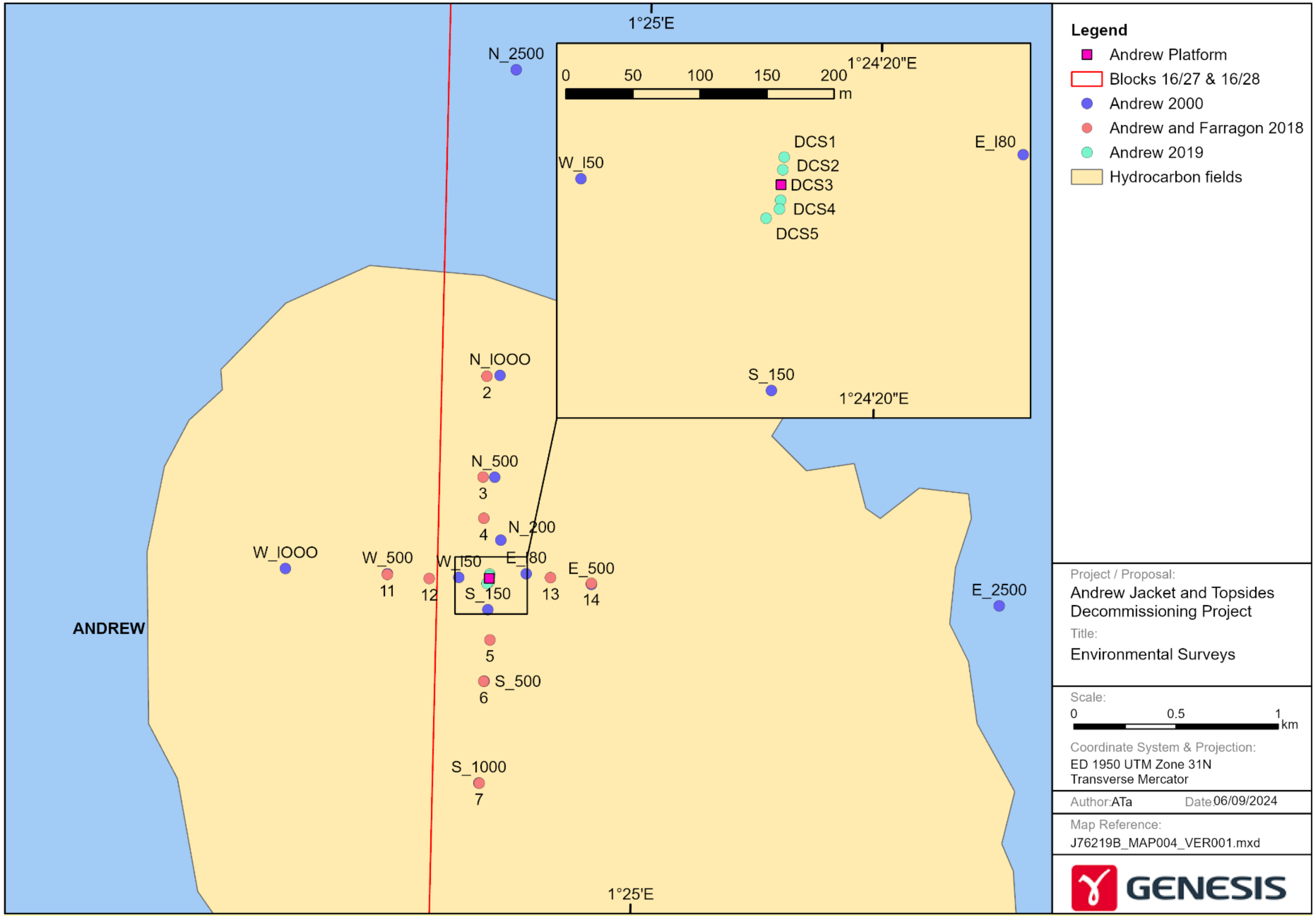

Figure 4-2: Surveys across the Andrew field.

4.2 Physical Environment

The type and distribution of marine life is influenced by the physical conditions of the surrounding environment, biological interactions, and anthropogenic activities. These physical factors, which include currents, tides, waves, temperature, salinity, and wind also influence the fate and behaviour of emissions and offshore discharges (planned and unplanned) from vessels and installations, and the risks associated with them.

4.2.1 Bathymetry

Bathymetry plays a significant role in modifying coastal tidal and residual currents, especially in the North Sea (Department for Energy Security and Net Zero (DESNZ), 2022). Knowledge of the bathymetry of the area helps to provide an understanding of the movement of sediments and possible contaminants associated with the sediment.

The Andrew platform is located in an area of gently undulating seabed at a water depth of *c.* 117 m LAT (Figure 4-3).

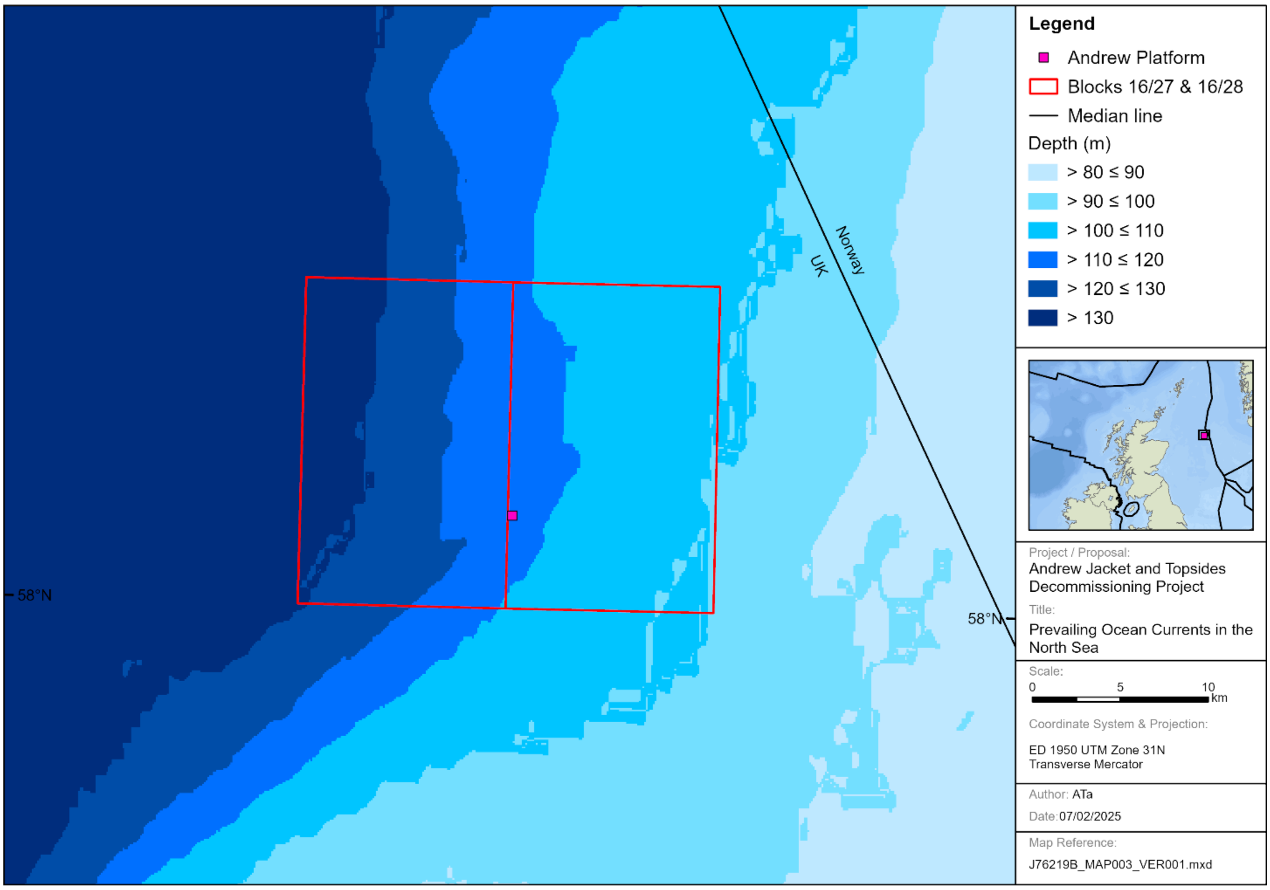

Figure 4-3: Bathymetry in the vicinity of the Andrew platform.

4.2.2 Water Masses, Currents and Tides

Water masses, local current speeds and direction all influence the transport, dispersion, and fate of marine discharges. The major water masses in the North Sea can be classified as Atlantic water, Scottish coastal water, Northern North Sea (NNS) water, Norwegian water, Central North Sea (CNS) water, Southern North Sea (SNS) water, Jutland water and Channel water (Turrell, 1999).

The Andrew field is located in the area influenced by the Atlantic water (West) and the Fair Isle Current. The predominant regional current in the CNS originates from the vertically well-mixed coastal water and Atlantic water inflow of the Fair Isle/ Dooley current, which flows around the north of the Orkney Islands and into the North Sea (Figure 4-4).

Typical current speeds in the CNS are 0.1 m/s and the maximum current speed during mean spring tide is between 0.4 and 0.5 m/s. The mean spring tidal range is between 0.1 - 1.0 m (DESNZ, 2022).

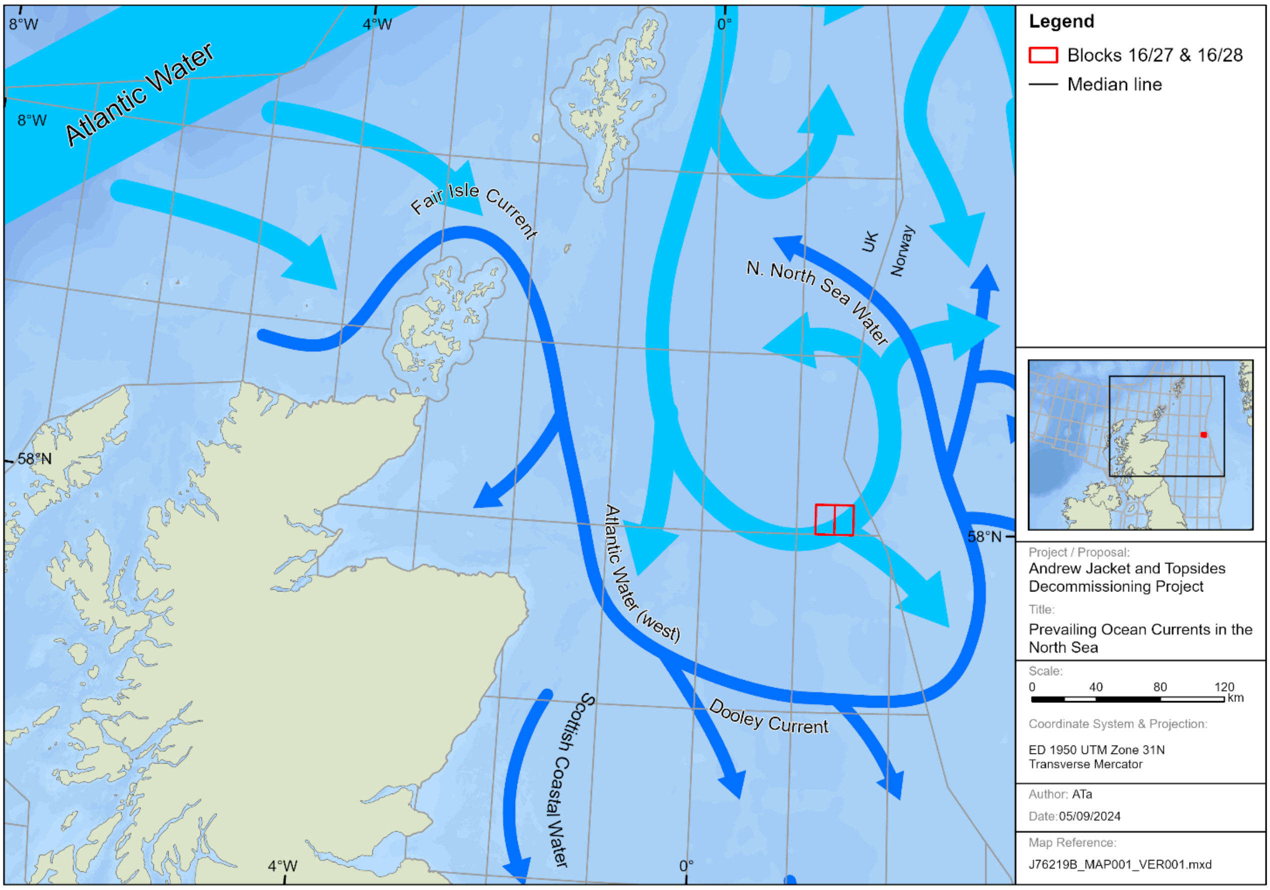

Figure 4-4: Ocean circulation in the North Sea (Turrell, 1999).

4.2.3 Wind and Waves

Wind direction and speed directly influence the transport and dispersion of atmospheric emissions from an installation. These factors are also important for the dispersion of marine discharges, including oil spills, influencing the movement, direction and break up of substances on the sea surface. The UK is subject to strong maritime influences with coastal areas and island locations (Shetland and Orkney) being strongly impacted.

The highest proportion of wind at the Andrew field originates from the west, northwest, southwest and south, each direction accounting for over 15% of the wind experienced. The mean annual wind speed is 8.8 m/s. The majority of waves originate from a northerly direction, accounting for over 35%. The annual mean significant wave height at the project location is 2.3 m (Figure 4-5; Saha *et al*., 2010; ABPmer, 2013).

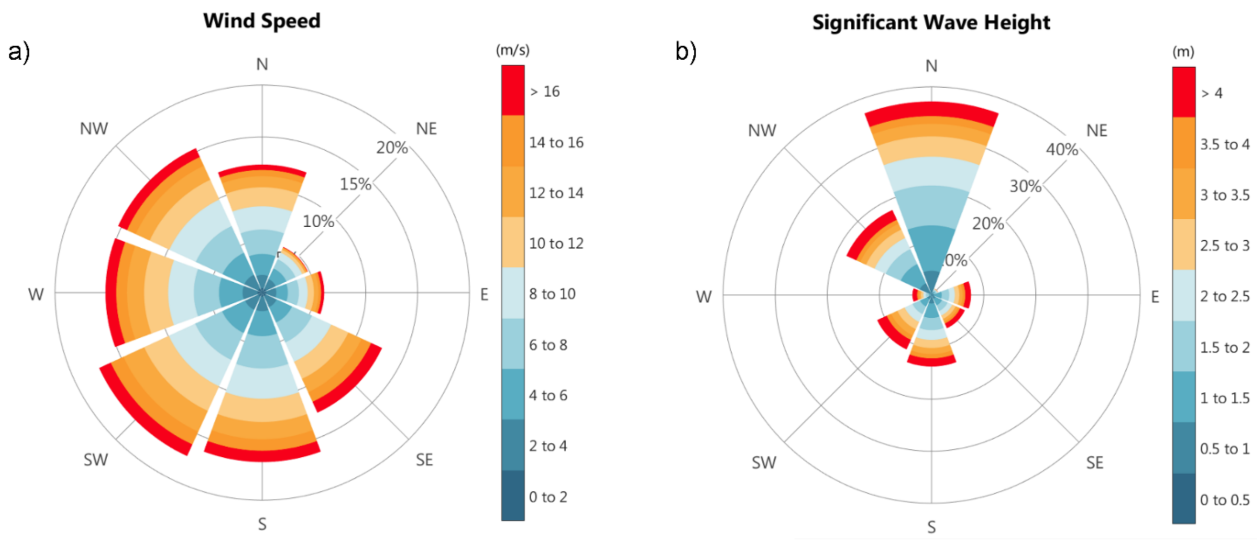

Figure 4-5: Wind rose (a) (Saha *et al.,* 2010) and Wave rose (b) (ABPmer, 2013) at the Andrew field.

4.2.4 Temperature and Salinity

The water column in the CNS is vertically stratified during the summer months with a thermocline in August/ September, typically forming at around 50 m water depth. The strong stratification of the water mass in the CNS effectively isolates the bottom water and seabed fauna from the large-scale temperature changes that occur in the upper water column. Water temperatures remain reasonably constant throughout the winter months, with only a marginal seasonal variation in salinity that is typical of the open and western waters of the North Sea (Berx & Hughes, 2009). The temperature of the sea affects both the properties of the sea water and the fates of discharges and spills to the environment. Seawater temperatures vary with season, depth, and proximity to land.

Annual mean near-seabed water temperatures are *c.* 7.1°C at the Andrew field. The average annual surface water temperature in the Andrew infrastructure area is *c.* 9.6°C (Berx & Hughes, 2009). Salinity in the Andrew area shows little variation through the water column, averaging *c.* 35 ‰ near-bed and *c.* 35.1 ‰ at the sea surface (Berx & Hughes, 2009).

4.2.5 Seabed Sediments

Figure 4-6 shows the general sediment types in the Andrew area of the North Sea as indicated by the data available for download from European Marine Observation and Data Network (EMODnet), whilst Figure 4-7 shows the sediment types identified across the Andrew area as part of the Gardline 2009 survey (Gardline, 2010b). As can be seen the sediment across the Andrew area is relatively uniform and typically comprises silty and or silty sand with scattered cobbles and gravels.

In 2017 Fugro was commissioned to carry out a survey at the Andrew and Farragon fields (Fugro, 2019b). At the Andrew field ten stations across two transects were sampled. The seabed within the Andrew field area was found to comprise muddy sand and shell fragments, that were predominantly classified as circalittoral muddy sand (A5.26; SS.SSa.CMuSa). Small areas of circalittoral mixed sediment (A5.44; SS.SMx.CMx) were also identified where shells formed more dense aggregations were also observed (Figure 4-17).

As part of a wider 2019 CNS survey (which also included the Skua field) one station was sampled at the Andrew field (Fugro, 2020). As seen in Figure 4-1, the sample was taken in relatively close proximity to one of the samples from the 2017 survey. Sediment and habitat types were confirmed to be the same as that identified in the 2017 survey.

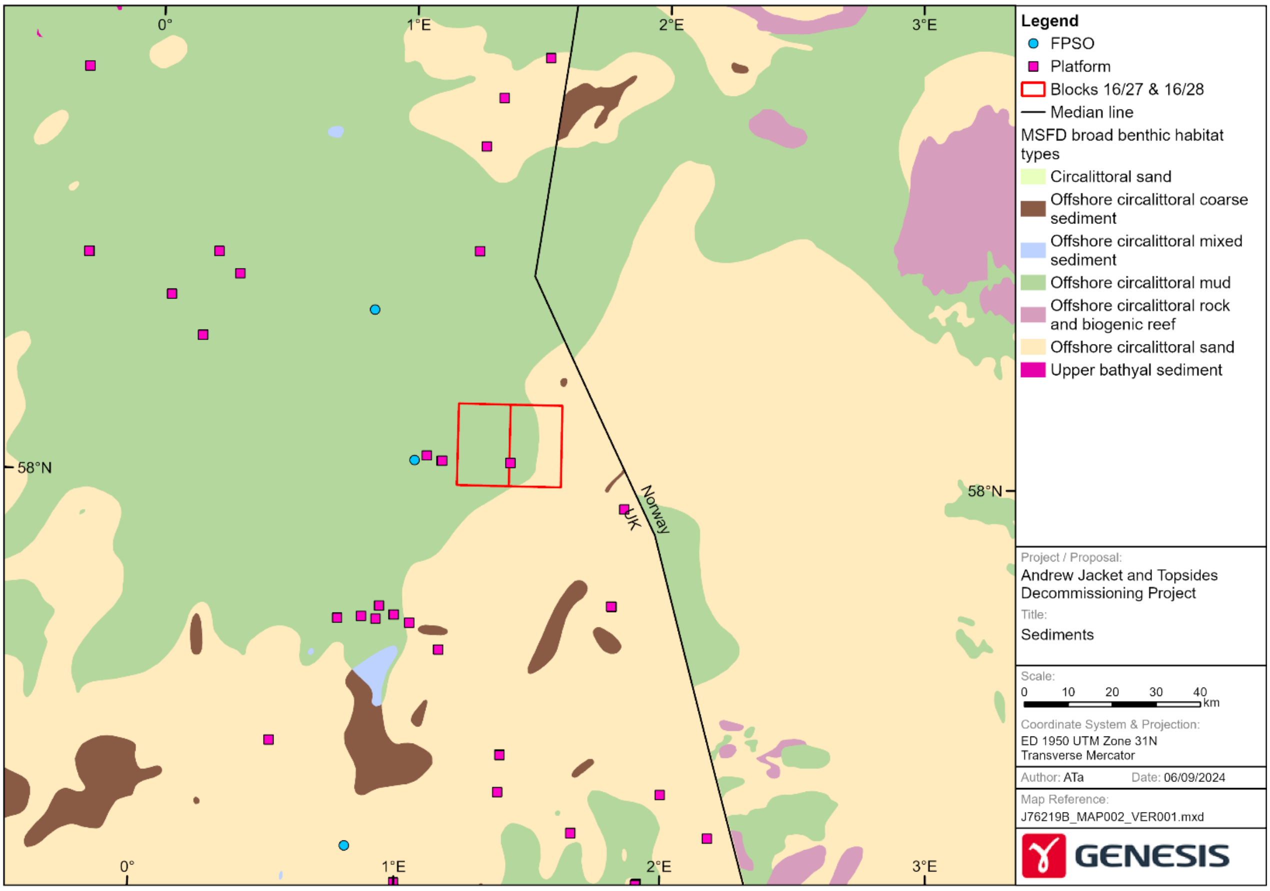

Figure 4-6: Modelled distribution of seabed sediments in the vicinity of the Andrew platform (EMODnet, 2023a).

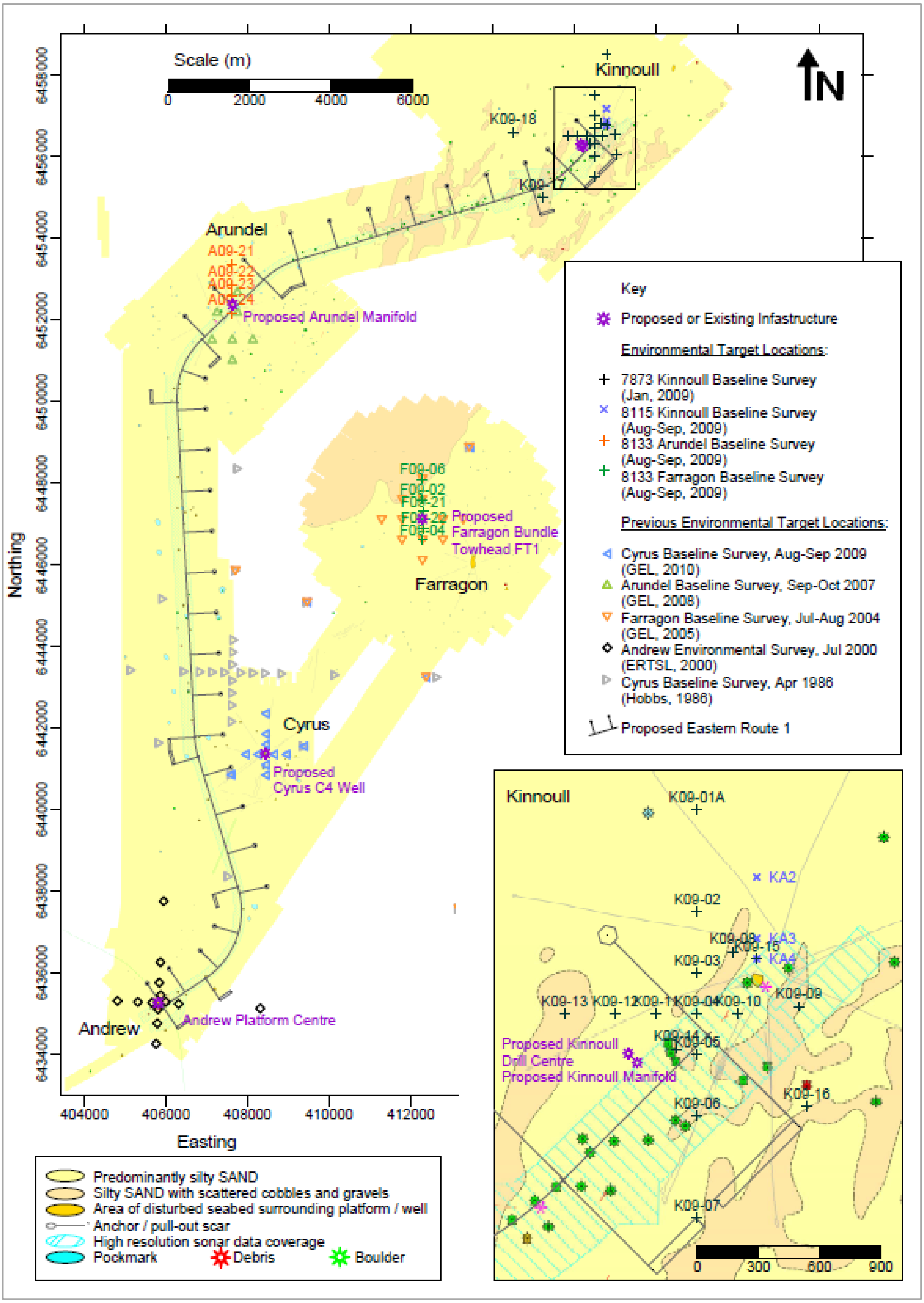

Figure 4-7: Sediment types across the Andrew area (Gardline, 2010).

4.2.5.1 Particle Size Distribution

Sediments across the Fugro (2019a,b) Andrew survey area had a mean particle size ranging from 63 µm at station 11 (500 m west of the platform) to 76 µm at station 4 (300 m, north) with a mean of 70.7 µm and low variation (Relative Standard Deviation (RSD) 5%; Figure 4-2).

Sediment particle size analysis from surveys in the Andrew area are shown in Figure 4-8, whilst Figure 4-9 shows the percentage of fine material (<63 µm). The sediment type across the survey area was described as very fine sand (Wentworth, 1922). Sand was the dominant fraction at all stations and comprised between 72.9 % at station 11 (500 m, west) and 79.1 % at station 4 (300 m, north) with a mean of 77.0%. Fines content ranged from 20.8% at station 4 (300 m, north) to 26.8% at station 11 (500 m, west), mean 22.9% and was above the UK Offshore Operators Association (UKOOA) mean background concentration for the CNS (17.4%; UKOOA, 2001). Gravel content was low and ranged from <0.01% at three stations to 0.44% at station 2 (1,000 m, north), mean 0.11%. Silt was the main component of the fines fraction, with a mean value of 17.4%, whereas the mean value of clay across the survey area was 5.50% (Fugro, 2019a,b).

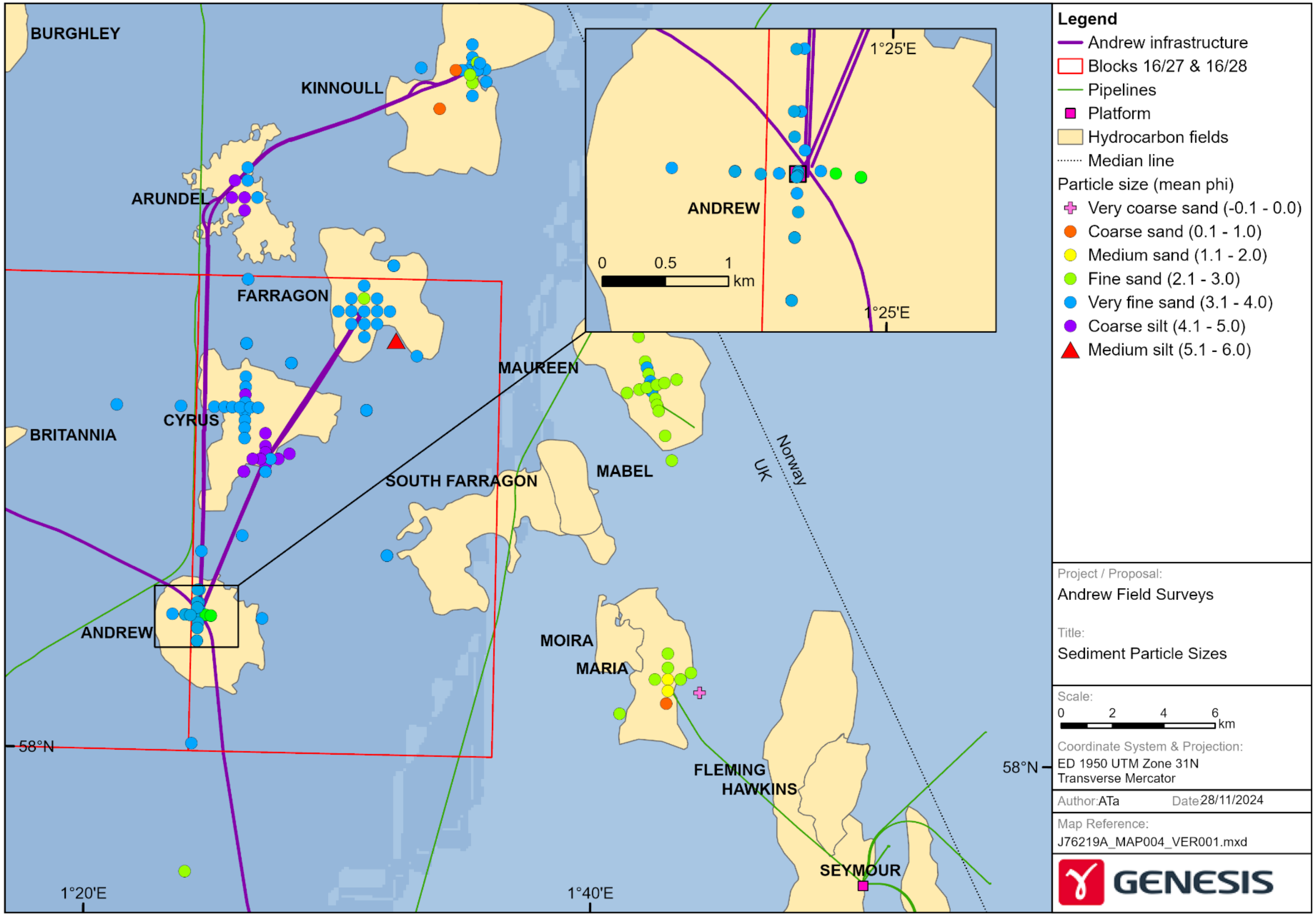

Figure 4-8: Sediment particle size in the vicinity of the Andrew infrastructure (Wentworth, 1922).

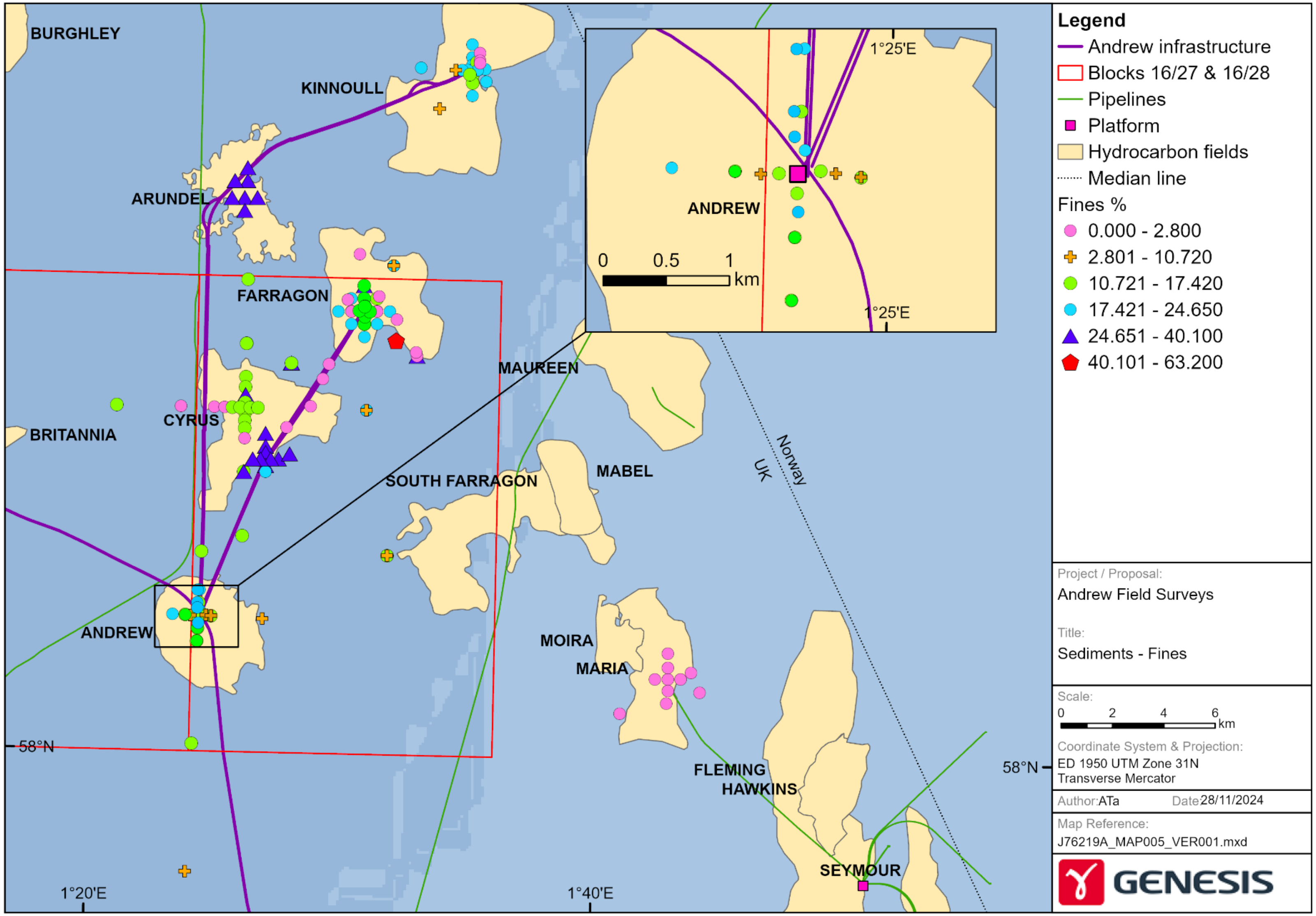

Figure 4-9: Percentage fines in the sediment in the vicinity of the Andrew infrastructure.

4.2.5.2 Sediment Hydrocarbons

Total Hydrocarbons (THCs)

The spatial variation of THC was similar across the Andrew field when compared with historic data but concentrations were notably lower than in 2000 (ERTSL, 2001). THC ranged from 8.4 µg/g at station 2 (1,000 m, north of the Andrew platform), to 20.6 µg/g at station 5 (300 m, south), with a mean of 14.7 µg/g and low variability across the Andrew survey area (RSD 27%). The THC concentrations reported were higher than the CNS mean background concentration (9.51 µg/g; UKOOA, 2001) and the Fladen Ground regional mean concentration (10.0 µg/g; FRS, 2002).

The THC levels recorded across the Andrew survey area in 1986 and 1988 (AUMS, 1987, 1989) significantly exceeded the OSPAR ecological effects threshold value (50 ppm; OSPAR, 2006). In 2000, the highest THC levels were recorded close to the platform (200 m or less) and ranged from 33.2 µg/g to 982 µg/g. At the 500 m stations, THC levels ranged from 3.9 µg/g to 15.8 µg/g with THC levels at stations 1,000 m or more from the Andrew platform ranging from 3.4 µg/g to 5.9 µg/g (ERTSL, 2001). Concentrations exceeding the OSPAR ecological effects threshold (EET) were recorded at stations 4 (200 m, north) and 5 (150 m, south). In contrast, no stations exceeded the OSPAR EET in 2017 (Fugro, 2019a,b), however the closest station to the Andrew platform was 300 m compared to 150 m in 2000. Beyond 300 m from the Andrew platform, THC levels were broadly comparable with regional background levels.

Polycyclic Aromatic Hydrocarbons (PAHs)

The total 2 to 6 ring polycyclic aromatic hydrocarbons (PAHs) concentrations ranged from 0.157 µg/g at station 2 (1,000 m, north) to 0.215 µg/g at station 6 (500 m, south) with a mean of 0.189 µg/g and low variation (RSD 10%). The concentrations of PAHs recorded, by Fugro (2019a,b), across the Andrew survey area were assessed by comparison to regional PAH concentrations (UKOOA, 2001; FRS, 2002; ERTSL, 2003) with the potential environmental effects assessed by comparison to OSPAR Effects Range Low (ERL) threshold values (OSPAR, 2014). For all the PAH compounds assessed (individual and total), the mean concentrations reported within the Andrew survey area were broadly comparable and generally less than the mean background concentrations for the region (UKOOA, 2001; FRS, 2002; ERTSL, 2003) and were well below the ERL threshold concentrations (OSPAR, 2014). Consequently, it is unlikely that the PAHs present in the sediments would have a detrimental effect on the sediment macrofaunal community.

4.2.5.3 Andrew Cuttings Pile

In May 2019, Subsea7 carried out a survey at the Andrew platform which included a visual inspection of the cuttings pile, and collection of data using multibeam echosounder (MBES) and a sub-bottom profiler. In addition, five samples were collected from the cuttings pile for laboratory analysis. Fugro (2019a) presented the results of the survey. The Volume Calculation Utility in NaviModel reported the overall area of 5,280.89 m^2 and the calculated volume of 3,212.93 m^3 (Fugro, 2019). The Andrew cuttings pile is considered to be a “small cuttings pile” (<5,000 m^3) according to the Norwegian Oil and Gas Association Guidance (Norsk Olje & Gass, 2016). Figure 4-10 shows the likely extent of the cuttings pile around the Andrew jacket and template based on the MBES survey (Fugro, 2019).

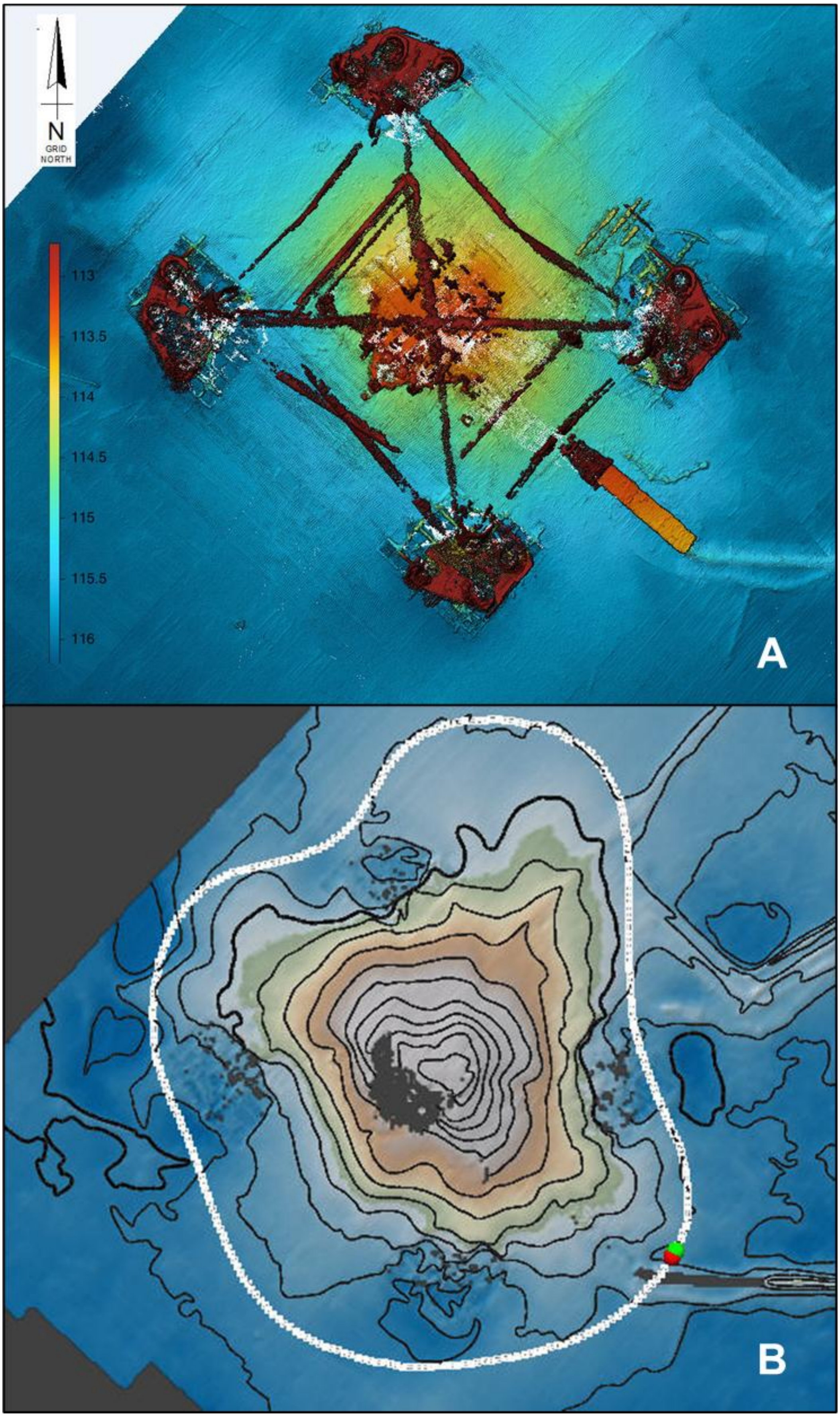

Figure 4-10: A) Drill cuttings mound MBES Image, B) Drill cuttings pile boundary (Fugro, 2019).

Fugro (2019) reported that the sediment type across the five stations showed low to moderate variability and ranged from coarse silt to fine sand. The physico-chemical data obtained from the analysis of the cuttings pile samples indicated that the sediments were heavily modified compared to background sediment in the CNS. The concentrations of THC, PAH, heavy metals and nonylphenol exceeded their respective OSPAR EET, OSPAR ERL value or extensive toxic effects threshold value. However, the sediment leachate analysis indicated that oil loss to the water column fell below the relevant OSPAR threshold. Overall, the findings indicated that impacts on the benthic community would be expected.

4.3 Biological Environment

4.3.1 Plankton

Plankton are drifting organisms that inhabit the pelagic zone of a body of water and include single celled organisms such as bacteria as well as plants (phytoplankton) and animals (zooplankton). Phytoplankton are the primary producers of organic matter in the marine environment and form the basis of marine ecosystem food chains. They are grazed on by zooplankton and fish, which in turn are eaten by larger species such as other fish, birds and cetaceans. Therefore, the distribution of plankton directly influences the movement and distribution of other marine species. Zooplankton include all life stages of planktonic organisms (holoplankton) and includes the eggs, larvae and spores of non-planktonic species such as fish, benthic invertebrates and algae (meroplankton).

The composition and abundance of plankton communities varies throughout the year; influenced by several factors including depth, tidal mixing, temperature stratification, nutrient availability and the location of oceanographic fronts. Species distribution is directly influenced by temperature, salinity, water inflow and the presence of local benthic communities (Colebrook, 1982). The meroplankton population may have a very different seasonal cycle depending on the life cycle strategy of the fish species and benthic organisms which inhabit the area.

The NNS was, until recently, a cold-boreal province. However, after the late 1980s regime shift, the NNS is now considered a temperate province. Plankton in the NNS generally comprise Atlantic and offshore species as these waters are stratified during summer months. The inflowing warm, nutrient rich waters from the north Atlantic are thought to be a factor promoting earlier stratification (Drinkwater *et al.*, 2003), conditions suited for successful competitors such as dinoflagellates (Leterme *et al.*, 2006); dinoflagellates typically comprise a greater proportion of the phytoplankton community than diatoms from June to October, when waters will be most stratified (McQuatters-Gollop *et al.*, 2007).

Zooplankton species richness is higher in the NNS than in the SNS and the community displays greater seasonal variability (Lindley & Batten, 2002). The zooplankton community is dominated by calanoid copepods, although other groups such as *Paracalanus* and *Pseudocalanus* are also abundant. There is also a high biomass of Calanus larval stages present in the region. Euphausiids, *Acartia*, and decapod larvae are all important components of the zooplankton assemblage. Jellyfish are typically less abundant in northern and eastern coasts of the UK, although species commonly sighted include *Aurelia aurita*, *Cyanea capillata* and *Cyanea lamarckii* (Pikesley *et al*., 2014).

4.3.2 Benthos

Bacteria, plants and animals living on or within the seabed sediments are collectively referred to as benthos. Species living on top of the sea floor may be sessile (e.g., seaweeds) or freely moving (e.g., starfish) and collectively are referred to as epibenthic or epifaunal organisms. Animals living within the sediment (e.g., clams, tubeworms and burrowing crabs) are termed infaunal species. Semi-infaunal animals, including sea pens and some bivalves, lie partially buried in the seabed. The majority of marine benthic invertebrates exhibit a life cycle that includes a planktonic larval phase, from which the bottom dwelling juvenile and adult phases recruit.

Benthic animals display a variety of feeding methods. Suspension and filter feeders capture particles which are suspended in the water column (e.g., sea pens) or transported by the current (e.g., mussels). Deposit feeders (e.g., sea cucumbers) ingest sediment and digest the organic material contained within it. Benthic species can be herbivorous (e.g., sea urchins), carnivorous (e.g., crabs) or omnivorous (e.g., nematodes). Benthic communities show a strong correlation with habitat type, with depth mainly influencing epifauna, and sediment characteristics typically influencing the infauna (Basford *et al*., 1990). Benthic communities in deeper soft sediment habitats tend to be spatially distributed over large scales, with distinctive species assemblages associated with particular substrate types. However, depending on the intensity and spatial extent of sampling, localised community types or subtler variations may be distinguished, often associated with topographic features (DESNZ, 2022).

Benthic community data are best summarised using an index to distil the species data from a potentially very large matrix of stations to something that can be compared within and between locations. The Shannon Weiner diversity index is a quantitative measure that can be used to capture how many different species there are in a dataset, and simultaneously takes into account how evenly the individuals are distributed among those species. The value increases both when the number of species increases and when evenness increases. For a given number of species, the value of a diversity index is maximised when all species are equally abundant. Figure 4-11 shows the Shannon Weiner index of diversity from the benthic data presented in Table 4-1.

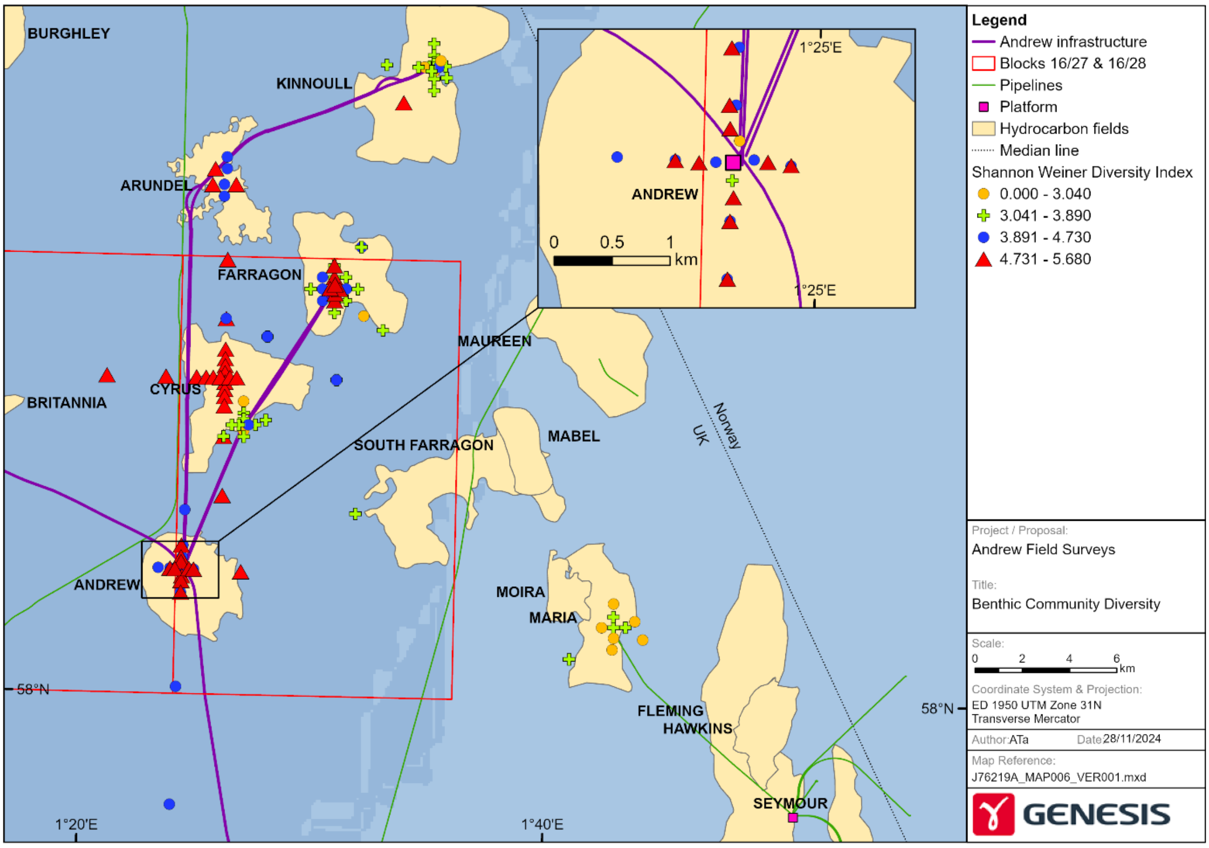

Figure 4-11: Shannon Weiner Diversity Index over the surveyed area.

The relationships within the surveys are slightly less clear for these data, relative to that of the sediments (Section 4.2.5), although there is still a general increase in diversity from east to west. The Andrew and Farragon samples taken in 2017 (Fugro, 2019a) showed elevated Shannon Weiner values and greater numbers of taxa when compared with the previous surveys. A cursory examination of the component data shows that there is a significant commonality in the species that contribute to the diversity but the overall dominant species for the whole area is a polychaete *Paramphinome jeffreysii*. Dominance shifted to another polychaete, *Galathowenia oculata*, at the Andrew field in the 2017 samples. The communities are all polychaete dominated with contributions from the echinoderm *Amphiura filiformis* and other ophiuroids (often as juveniles) suggesting the community is related to Petersen's *Echinocardium-filiformis* community or an offshore boreal community. Juvenile *Arctica islandica* were also present through time around the Andrew field, with their presence recorded by both ERTSL (2001) and Fugro (2019a). *A. islandica* is a Priority Marine Feature (PMF) in Scottish waters, however no adults were present in any of the surveys.

The results from the different surveys showed a significant homogeneity in terms of diversity. If differences in seasonality, sampling methodology and analytical technique are considered, the survey area analysed, on a gross basis, could be considered as a single complex community which exhibits minor changes when moving east to west.

4.3.3 Finfish and Shellfish

More than 330 fish species are thought to inhabit the shelf seas of the UKCS (Pinnegar et al., 2010). Pelagic species (e.g., herring, mackerel, blue whiting, and sprat) are found in mid-water and typically make extensive seasonal movements or migrations. Demersal species (e.g., cod, haddock, sandeel, sole and whiting) live on or near the seabed and similar to pelagic species, many are known to passively move (e.g., drifting eggs and larvae) and/or actively migrate (e.g., juveniles and adults) between areas during their lifecycle.

Fish occupying areas in close proximity to offshore oil and gas installations will be exposed to aqueous discharges and may accumulate hydrocarbons and other contaminating chemicals in their body tissues. The most vulnerable stages of the fish life cycle, to general disturbances such as disruption to sediments and oil pollution, are the egg and larval stages. Hence, recognition of spawning and nursery times and areas within a development area is important when considering potential disturbance caused by decommissioning activities.

Of the fish species identified in the area, a number have been assessed by NatureScot and Joint Nature Conservation Committee (JNCC) as PMFs in Scotland (NatureScot, 2016); see Section 4.5 for a list of all PMFs in the area. In addition, cod is considered vulnerable on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species. Table shows the approximate spawning and nursery times of some of the fish species known to occur in the Andrew Field Area, while Figure 4-12 and Figure 4-13 show the location of these areas (Coull *et al*., 1998; Ellis *et al*., 2012).

Table 4-2: Summary of spawning and nursery activity for some commercial fish species in ICES rectangle 45F1 (Coull *et al.*, 1998; Ellis *et al.*, 2012).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anglerfish*	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Blue whiting*	N	N	N	N	N	N	N	N	N	N	N	N
Cod*	SN	S*N	S*N	SN	N	N	N	N	N	N	N	N
European hake	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Haddock	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Herring*	N	N	N	N	N	N	N	N	N	N	N	N
Lemon sole	N	N	N	S	S	S	S	S	S	N	N	N
Ling*	N	N	N	N	N	N	N	N	N	N	N	N
Mackerel*	N	N	N	N	S*N	S*N	S*N	SN	N	N	N	N
Nephrops	SN	SN	SN	S*N	S*N	S*N	SN	SN	SN	SN	SN	SN
Norway Pout*	SNJ	S*NJ	S*NJ	SNJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Plaice	N	N	N	N	N	N	N	N	N	N	N	N
Sandeel*	N	N	N	N	N	N	N	N	N	N	N	N
Spotted ray	N	N	N	N	S*N	S*N	S*N	N	N	N	N	N
Spurdog*	N	N	N	N	N	N	N	N	N	N	N	N
Whiting*	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ

Key: S = Spawning; S* = Peak Spawning; N = Nursery; J = Juveniles (i.e., 0 group fish)
Orange highlight indicates high intensity spawning grounds.
Source : Coull *et al* (1998); Ellis *et al* (2012); Aires *et al* (2014).
*indicates Scottish PMFs.

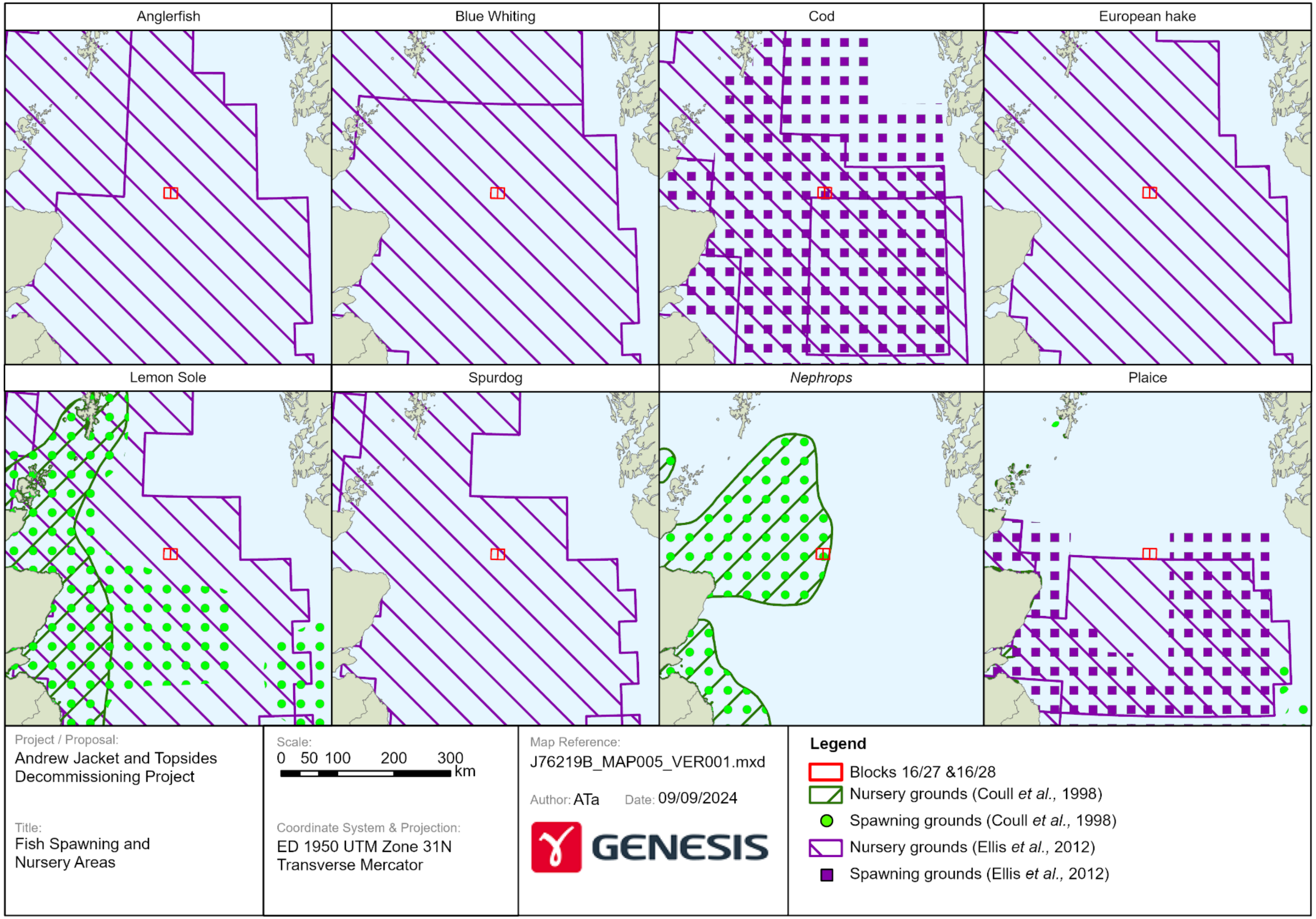

Figure 4-12: Nursery and spawning grounds of fish species in the vicinity of Blocks 16/27 and 16/28 (Coull *et al.*, 1998; Ellis *et al.*, 2012).

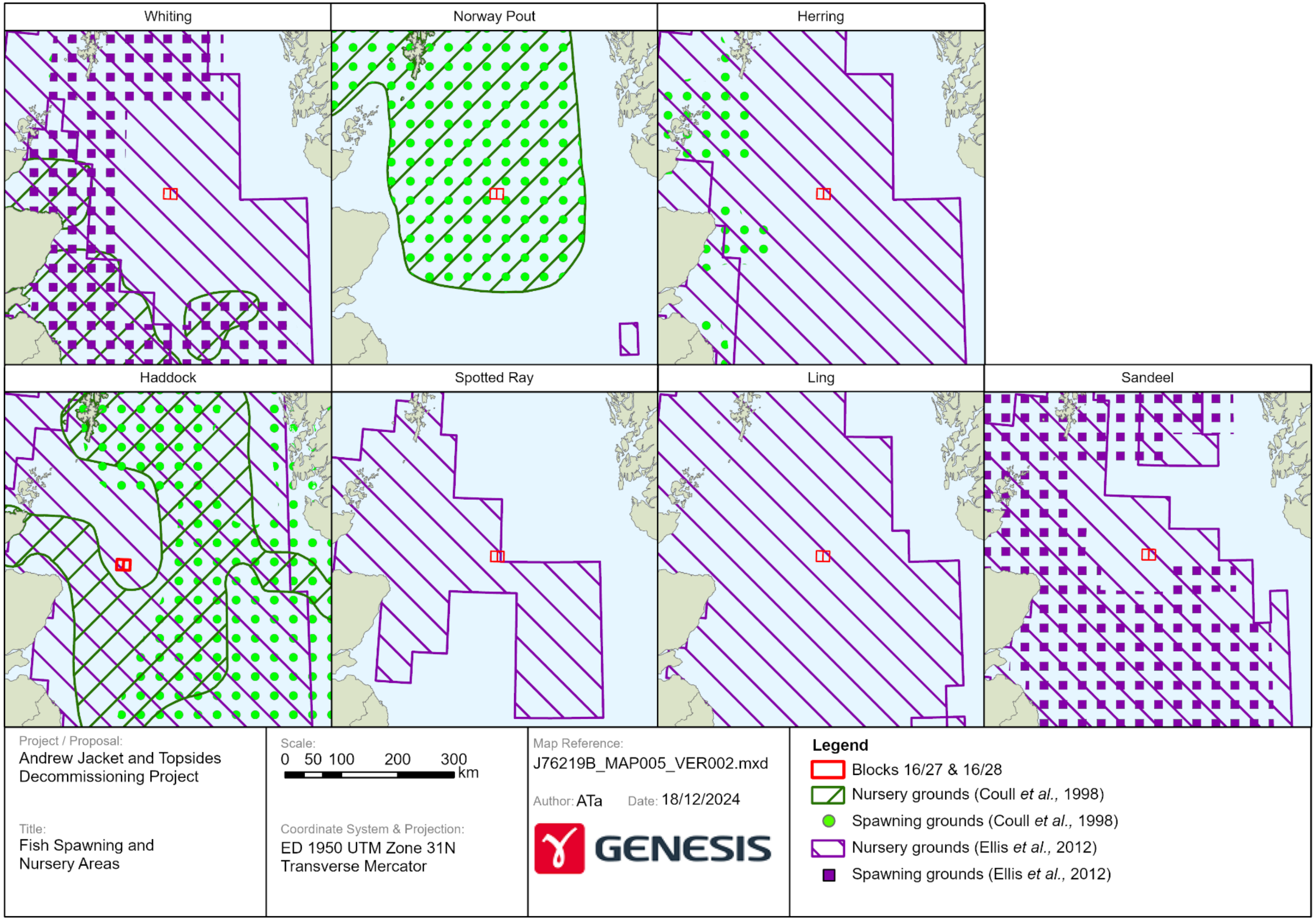

Figure 4-13: Nursery and spawning grounds of fish species in the vicinity of Blocks 16/27 and 16/28 (Coull *et al.*, 1998; Ellis *et al.*, 2012).

4.3.4 Seabirds

The UK and its surrounding seas are very important for seabirds. The extensive network of cliffs, sheltered bays, coastal wetlands, and estuarine areas provide breeding and wintering grounds for nationally and internationally important bird species and assemblages. Approximately 26 species of seabird regularly breed in the UK and Ireland, as do a number of other water bird and wader species (DESNZ, 2022).

Predicted maximum monthly abundance of seabirds in the Andrew Area has been based on an analysis of the European Seabirds at Sea (ESAS) data collected over 30 years (Kober *et al*., 2010). Kober *et al* (2010) generated continuous seabird density surface maps using the spatial interpolation technique ‘Poisson kriging’ and fifty-seven seabird density surface maps were created to show particular species distribution in specific areas. Data from the relevant maps have been summarised for the Andrew area in Table 4-3.

The data indicate that a number of seabird species are likely to occur in the area over the summer breeding season and winter months. Many species overwinter out with the area whilst other seabirds e.g., little auks (*Alle alle*), move to the area from more northerly breeding grounds to overwinter. For all species combined, a maximum of nine seabirds are predicted to occur per km^2 during the breeding season (March to September), maximum of six seabirds predicted to occur per km^2 during summer months (July to August), whilst during the winter months (November to March) a maximum of 12 seabirds are predicted to occur per km^2 (Table 4-6).

Of the species expected to occur in the area; European storm petrel (*Hydrobates pelagicus*) is afforded protection by the European Commission (EC) Birds Directive (Annex I).

Table 4-3: Predicted monthly seabird surface density at the proposed Project area (maximum number of individuals/km²; Kober *et al*., 2010).

Species	Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Northern Fulmar	Breeding			1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0					
	Winter	5.0 – 10.0	5.0 – 10.0						5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0
Manx Shearwater	Breeding					≤1.0	≤1.0	≤1.0	≤1.0	≤1.0			
European Storm-petrel	Breeding						≤1.0	≤1.0	≤1.0	≤1.0	≤1.0		
Northern Gannet	Breeding					≤1.0	≤1.0	≤1.0	≤1.0	≤1.0			
	Winter	≤1.0	≤1.0	≤1.0	≤1.0						≤1.0	≤1.0	≤1.0
Pomarine Skua	Additional Season (Mar-Jun)			≤1.0	≤1.0	≤1.0	≤1.0						
	Additional Season (Aug-Nov)								≤1.0	≤1.0	≤1.0	≤1.0	
Arctic Skua	Breeding					≤1.0	≤1.0	≤1.0	≤1.0				
Great Skua	Breeding					≤1.0	≤1.0	≤1.0	≤1.0				
	Winter	≤1.0	≤1.0	≤1.0	≤1.0					≤1.0	≤1.0	≤1.0	≤1.0
Black-legged Kittiwake	Breeding					5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0			
	Winter	≤1.0	≤1.0	≤1.0	≤1.0						≤1.0	≤1.0	≤1.0
Great Black-beaked Gull	Winter	≤1.0	≤1.0	≤1.0						≤1.0	≤1.0	≤1.0	≤1.0
Lesser Black-backed Gull	Breeding					≤1.0	≤1.0	≤1.0	≤1.0				
Herring Gull	Winter	≤1.0	≤1.0	≤1.0						≤1.0	≤1.0	≤1.0	≤1.0
Common Guillemot	Breeding					1.0 – 5.0	1.0 – 5.0						
	Additional							1.0 – 5.0	1.0 – 5.0				
	Winter	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0					1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0
Razorbill	Breeding					≤1.0	≤1.0						
	Winter	≤1.0	≤1.0	≤1.0	≤1.0						≤1.0	≤1.0	≤1.0
Little Auk	Winter	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0								5.0 – 10.0	5.0 – 10.0
Atlantic Puffin	Breeding				1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0					
	Winter	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0					1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0
ALL species combined	**Breeding**			5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0			
	Summer							5.0 – 10.0	5.0 – 10.0				
	Winter	10.0 - 20.0	10.0 - 20.0	10.0 - 20.0								10.0 - 20.0	10.0 - 20.0

Key	≤1.0	1.0 – 5.0	5.0 – 10.0	10.0 - 20.0	20.0 ->30.0

Prior to removal of the DES, BPEOC carried out drone surveys and installation visual inspections to determine if any birds nested on the Andrew platform. The drone surveys and visual inspections revealed no evidence of any bird nests, however there was evidence of bird guano (Figure 4-14). Additional surveys were carried out in April and May 2025 and further revealed no evidence of nesting birds (BPEOC, 2025d).

Figure 4-14: Drone photos of the articulate arm (A), DES (B), the decks (C) and the substructure (D) prior to the removal of the articulated arm and DES.

BPEOC plan to carry out annual surveys (between mid-April and late May), until jacket removal, to assess for the presence of nesting seabirds. The surveys may be undertaken by ERRV or by platform-based drones and if nesting seabirds are observed then a nesting seabird plan will be implemented and communicated to OPRED. In the year prior to topside removal, a more detailed survey will be undertaken. Seabirds are generally not at risk from routine offshore oil and gas production operations. However, they may be vulnerable to pollution from less regular offshore activities such as accidental hydrocarbon discharges. Oily surface pollution can cause direct toxicity to birds through ingestion and/or hypothermia as a result of the birds' inability to waterproof their feathers.

Seabirds will generally be most vulnerable to the impacts of an oil spill during the post-breeding season (July to September) when breeding birds disperse away from their breeding colonies into the North Sea. Some species, (e.g., guillemots and razorbills), rapidly moult their wing feathers and become flightless for approximately six weeks and consequently spend large amounts of time on the water surface. This significantly increases their vulnerability to the impacts of oil between July and September.

Fulmars (*Fulmarus glacialis*) and auks (*Alcidae* spp.) may be particularly vulnerable to surface pollutants as they spend the majority of their time on the surface of the water. Gulls and terns are less vulnerable as they spend a larger proportion of their time flying and therefore less time on the sea surface.

Using survey data from 1995 – 2015, a Seabird Oil Sensitivity Index (SOSI) has been published (JNCC, 2017). The purpose of the index is to identify areas where seabirds are likely to be most sensitive to oil pollution by considering factors that make a species more or less sensitive to oil-related impacts. Data were collected from a wide survey area extending beyond the UK Continental Shelf using boat-based, visual aerial, and digital video aerial survey techniques.

This seabird data were combined with individual seabird species sensitivity index values. These index values are based on a number of factors which are considered to contribute towards the sensitivity of seabirds to oil pollution. Factors such as:

- Habitat flexibility (a species ability to locate to alternative feeding sites);
- Adult survival rate;
- Potential annual productivity; and
- The proportion of the biogeographical population in the UK (classified following the methods developed by Certain *et al* (2015).

The combined seabird data and species sensitivity index values are subsequently summed at each location to create a single measure of seabird sensitivity to oil pollution. This is presented as a series of fine scale density maps for each month that show the median, minimum, and maximum seabird sensitivity to oil pollution, and an indication of data confidence. The index is independent of where oil pollution is most likely to occur; rather, it indicates where the highest seabird sensitivities might lie if there were to be a pollution incident.

The mean sensitivity SOSI data for the Andrew Area is shown in Table 4-4. For blocks with 'No Data', an indirect assessment has been made based upon guidance from JNCC (JNCC, 2017) where possible. In January, November and December it was not possible to fill the data gap in some Blocks.

As can be seen from the data available and the indirect assessment, the sensitivity of seabirds to surface pollution within the Andrew Area varies throughout the year. For the majority of Blocks, sensitivity is low to medium throughout the year. Sensitivity is high in April and May for Block 16/28.

Table 4-4: SOSI Indirect Assessment for the Andrew area Blocks (JNCC, 2017).

Block	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
16/22	5*	5	5	5*	5	5	5	5	5	5*	N	N
16/23	N	5*	5	4*	4	5	5	5	5	5*	N	N
16/24	N	5*	5	3*	3	5	5	5	5	5*	N	N
16/27	5*	5	5	4*	4	5	5	5	5	5*	N	N
16/28	N	5*	5	3*	3	5	5	5	5	5*	N	N
16/29	N	5*	5	5*	5	5	5	5	5	5*	N	N
22/02	5*	5	5*	4*	4	5	5	5	5	5*	N	N
22/03	5*	5	5	3*	3	5	5	5	5	5*	N	N
22/04	5*	5	5	5*	5	5	5	5	5	5*	N	N

Key:	1 Extremely High	2 Very High	3 High	4 Medium	5 Low	N No Data

Yellow shading – Indirect Assessment
* Data gap filled using data from the same block in adjacent months.

4.3.5 Marine Mammals

Marine mammals include mustelids (otters), pinnipeds (seals) and cetaceans (whales, dolphins, and porpoises). Marine mammals are vulnerable to the direct effects of oil and gas activities such as noise, contaminants, and oil spills. They may also be affected indirectly by activities that affect prey availability.

4.3.5.1 Pinnipeds

Two seal species are resident in British waters; the grey seal (*Halichoerus grypus*) and the harbour seal (*Phoca vitulina*). Under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, grey and harbour seals are considered species whose conservation requires the designation of SACs[1]. These seal species are not considered European Protected Species (EPS) under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[2]. However, in UK waters they are protected under the Conservation of Seals Act 1970 such that it is illegal to intentionally or recklessly kill, injure, or take seals. In Scottish waters, both species are considered Scottish PMFs.

Both grey seals and harbour (also called common) seals tend to frequent inshore waters but have been seen offshore from a number of platforms in the North Sea (Cosgrove, 1996).

During a study by Carter *et al* (2022) grey (n = 114: 45 male, 69 female) and harbour seals (n = 239: 107 male, 132 female) were tagged at 26 sites in the UK and Ireland between (2005 – 2019). Haul out counts were scaled to total population size for UK and Ireland using the mean estimated proportion of the population hauled-out during the survey window (and thus available to count). Total population size was then scaled to at-sea population size using the mean estimated proportion of time seals spend at-sea based off the telemetry data gathered during the study period.

Telemetry data were analysed at a 5 km^2 cell resolution, enabling the percentage of the at-sea population for the UK and Ireland (i.e. excluding hauled-out animals) present in each cell at any one time to be estimated. The resulting distribution maps indicate harbour seals are not likely to be present in the Andrew Area whilst grey seals possibly occur in low numbers with > 0 to 0.001% of the UK and Ireland at-sea grey seal population potentially present in the area (Carter *et al*., 2022; Figure 4-15).

[1] In UK waters, species previously referred to as Annex II under the EU Habitats Directive are now referred to as species of community interest requiring Special Areas of Conservation (SACs).
[2] In UK waters species previously referred to as Annex IV under the EU Habitats Directive are now referred to as European Protected Species (EPS). EPS are under strict protection regardless of where they occur within the EU member states. This means it is prohibited to kill, disturb, capture, or trade these species.

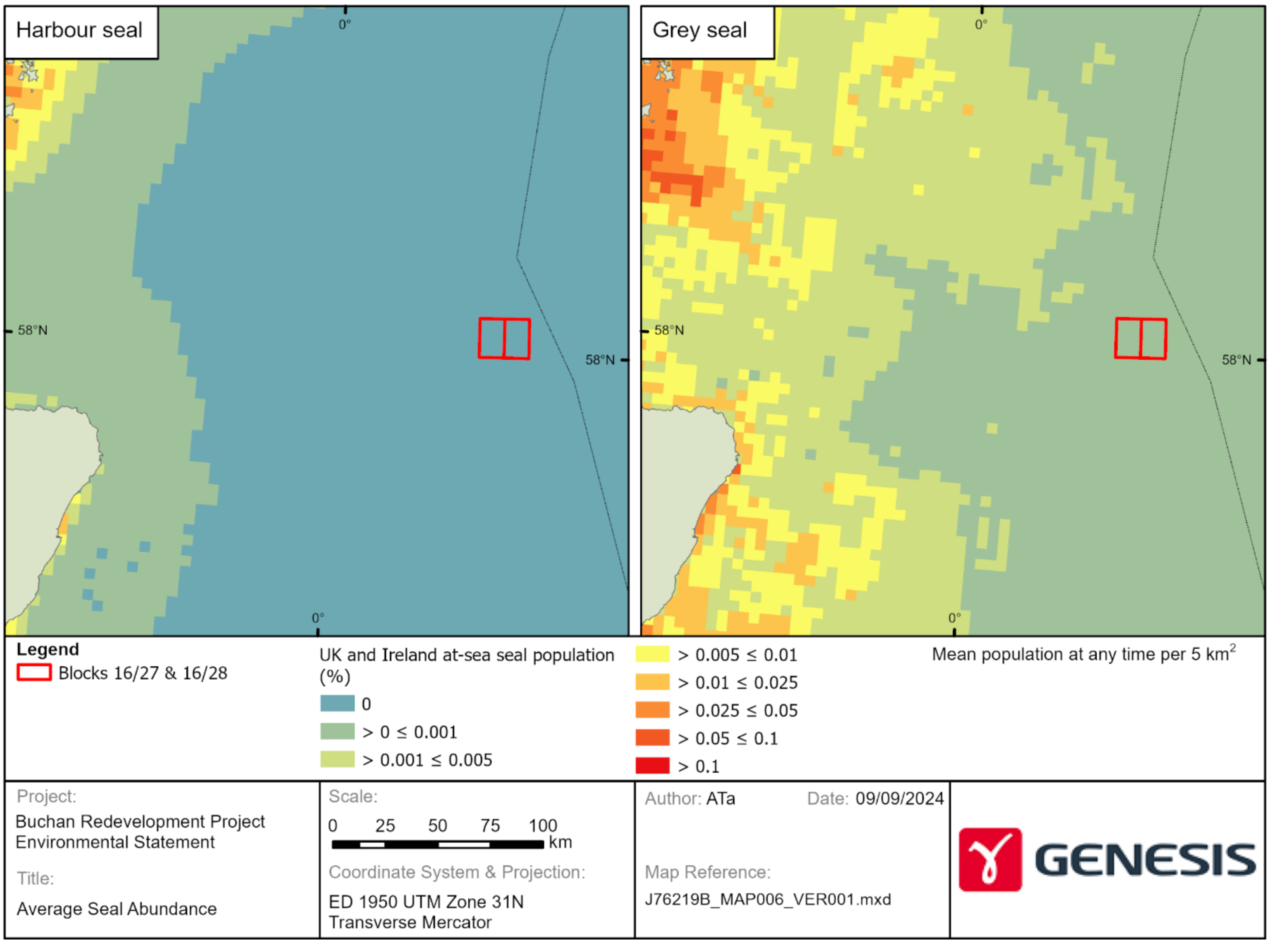

Figure 4-15: Mean UK and Ireland at-sea seal population distribution in the vicinity of the Andrew area (Carter *et al.*, 2022).

4.3.5.2 Cetaceans

Cetacean species likely to occur within the area include Atlantic white-sided dolphin (*Lagenorhynchus acutus*), white-beaked dolphin (*Lagenorhynchus albirostris*), minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), harbour porpoise (*Phocoena phocoena*) and beaked whale (*Mesoplodon* spp.) (Reid *et al*., 2003). When present, monthly densities range from high to low as shown in Table 4-5.

Under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, harbour porpoise are considered to be a species whose conservation requires the designation of SACs. In addition, under these regulations, all cetaceans are considered European Protected Species (EPS) such that it is considered an offence to deliberately disturb, capture, injure or kill any of these species. In addition, these cetacean species are also considered Scottish PMFs.

Table 4-5: Seasonal cetacean abundance in the vicinity of the Andrew field (Reid *et al.,* 2003).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Harbour Porpoise	3	3					2	2	3			
White-beaked Dolphin						3	2	1	1	1	2	
Atlantic White-sided Dolphin						3	3					
Minke Whale							3	3				
Killer Whale	3	3	3								3	3

Key: 1: High Density, 2; Moderate Density, 3: Low Density, ND: No Data
*Note: Beaked whale presence was identified in the area, Reid *et al* (2003), however monthly density data is not available for this species.

A series of Small Cetacean Abundance in the North Sea (SCANS) surveys were conducted to obtain an estimate of cetacean abundance in North Sea and adjacent waters, the most recent of which is SCANS-IV (Gilles *et al*., 2023).

The Andrew field is located within SCANS-IV Block 'NS-G'. Aerial survey estimates of animal abundance and densities (animals per km^2) within this area are provided in Table 4-6. These data show that minke whale and harbour porpoise may occur at fairly low densities while white-beaked dolphins may occur more frequently at higher densities.

The JNCC has also published the 'regional' population estimates for the seven most common species of cetacean occurring in UK waters (IAMMWG), 2022). Divided into Management Units (MU), these provide an indication of the spatial scale and the relevant populations at which potential impacts should be assessed. The relevant MU population estimates are also presented in Table 4-6. Note that the SCANS-IV survey excluded killer whales. Although Atlantic white-sided dolphin were identified by Reid *et al* (2003), these species were not observed from the modelled surface densities, across Block 'NS-G', during the SCANS-IV survey.

Table 4-6: Cetacean abundance in SCANS-IV survey Block 'NS-G'.

Species	Animal Abundance[1]	Density (animals/km^2)[1]	MU Population[2]	Block 'NS-G' as% of MU
Harbour Porpoise	51,646	1.0398	346,601	14.9
White-beaked dolphin	5,218	0.1051	43,951	11.9
Minke Whale	510	0.0103	20,118	2.5

Sources: [1] Gilles *et al* (2023) [2] IAMMWG (2022).

4.4 Marine Protected Areas

A network of Marine Protected Area (MPAs) are in place to aid the protection of vulnerable and endangered species and habitats through structured legislation and policies. These sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), which were designated in the UK under the European Union (EU) Nature Directives (prior to January 2021) and are now maintained and designated under the Habitats Regulations for England and Wales, Scotland and Northern Ireland.

Amendments to the Habitats Regulations mean that the requirements of the EU Nature Directives continue to apply to how European sites (SACs and SPAs) are designated and protected. The Habitats Regulations also provide a legal framework for species requiring strict protection, e.g. EPS. MPAs are designated under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009.

The protected sites in closest proximity to the Andrew platform are shown in Figure 4-16. Table 4-7 describes the closest protected areas and their qualifying features.

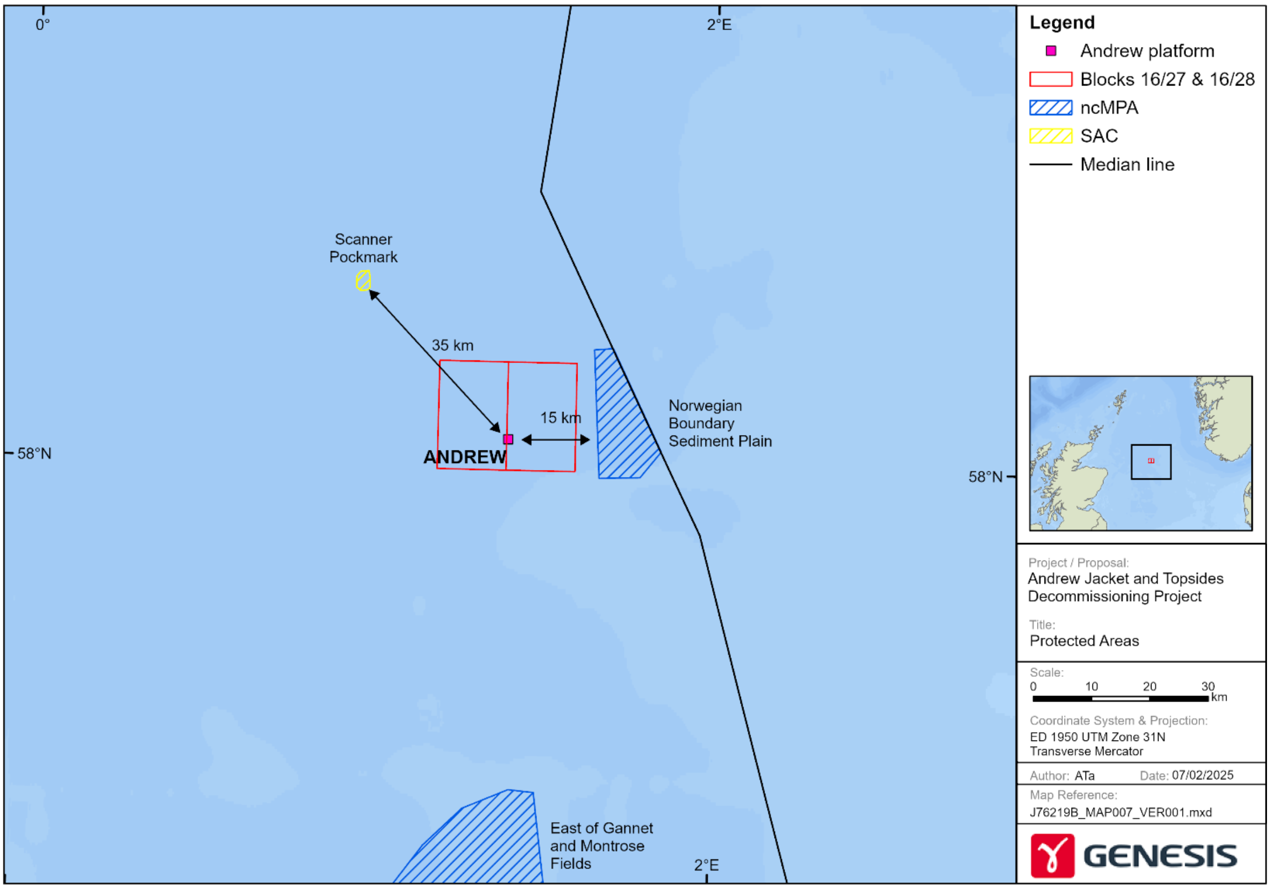

Figure 4-16: Location of the Andrew platform in relation to protected areas.

Table 4-7: Protected areas in closest proximity to the Andrew platform (JNCC, 2017).

Area	Qualifying Features	Approximate distance from Andrew platform (km)
Norwegian Boundary Sediment Plain NCMPA	**Species of community interest requiring SACs:** Ocean quahog (*A. islandica*) **Habitats of community interest that require designation as SACs:** Offshore subtidal sands and gravels representing sediment types suitable for Ocean quahog colonisation.	15
Scanner Pockmark SAC	**Habitats of community interest that require designation as SACs:** Submarine structures made by leaking gases.	35

4.5 Sensitive Habitats and Species

A number of Priority habitats are known to occur in the vicinity of the Andrew Field. Evidence of juvenile *A. islandica* were present within the macrofaunal analysis conducted by Fugro (2019a,b).

Elements of the OSPAR (2008) listed threatened and/or declining habitat 'sea pens and burrowing megafauna communities' habitat were present throughout the Andrew survey area, with sea pens (*Pennatula phosphorea* and *Virgularia mirabilis*), the Norway lobster (*Nephrops norvegicus*) and burrows observed. JNCC (2014) guidelines state that whilst sea pens do not need to be present, burrows must reach at least frequent on the Superabundant, Abundant, Common, Frequent, Occasional, Rare (SACFOR) scale (the industry standard semi quantitative scale from super-abundant through abundant, common, frequent and occasional to rare; Hiscock, 1996) for the area to be classified as a ‘sea pens and burrowing megafauna community’. Table 4-8 highlights that burrows within the size class 3 cm to 15 cm were observed at all stations within the Fugro (2019a) survey area, where abundance ranged from Frequent at Station 4 to Common at all other stations (Figure 4-17). As a result, there was the potential for the presence of the OSPAR listed threatened and/or declining habitat ‘sea pens and burrowing megafauna communities’ to occur within the survey area.

Table 4-8: SACFOR densities of sea pens and burrows at the Andrew field (Fugro, 2019a).

Station	Distance [m]	Bearing [º]	*P. phosphorea* [3 cm to 15 cm size class]	*V. mirabilis* [3 cm to 15 cm size class]	*F. quadrangularis* [> 15 cm size class]	Burrows [3 cm to 15 cm size class]
2	1000	N	F	F	Absent	C
3	500	N	Absent	O	Absent	C
4	300	N	Absent	Absent	Absent	F
5	300	S	O	O	Absent	C
6	500	S	F	O	Absent	C
7	1000	S	O	O	Absent	C
11	500	W	O	O	Absent	C
12	300	W	Absent	O	Absent	C
13	300	E	Absent	O	Absent	C
14	500	E	O	O	Absent	C

Notes:

SACFOR Classifications: (3 cm to 15 cm)	SACFOR Classifications: (> 15 cm)
S = 1 - 9/0.01 m^2	S = 1 - 9/0.1 m^2
A = 1 - 9/0.1 m^2	A = 1 - 9/1 m^2
C = 1 - 9/1 m^2	C = 1 - 9/10 m^2
F = 1 - 9/10 m^2	F = 1 - 9/100 m^2
O = 1 - 9/100 m^2	O = 1 - 9/1000 m^2
R = 1 - 9/1000 m^2	R = 1 - 9/< 1000 m^2

Station designation refers to direction (north, south, east, west) and distance (m) from the platform

Key:	S Super-abundant	A Abundant	C Common	F Frequent	O Occasional	R Rare	Absent

The slender sea pen *V. mirabilis* was recorded at all stations within the Andrew survey area, except station 4. The phosphorescent sea pen *P. phosphorea* was also observed at most stations. Where sea pens were observed, abundance was generally occasional, with *P. phosphorea* reported at frequent abundance at Station 6 and both *P. phosphorea* and *V. mirabilis* reported as frequent at Station 2 (Figure 4-17).

Species observed that appear on the IUCN Red List of Threatened Species include the Norway pout (*Trisopterus esmarkii)* and the Norway lobster (*N. norvegicus)* as species of least concern. *T. esmarkii*, is also listed as PMF in Scottish offshore waters (Figure 4-17; NatureScot, 2017).

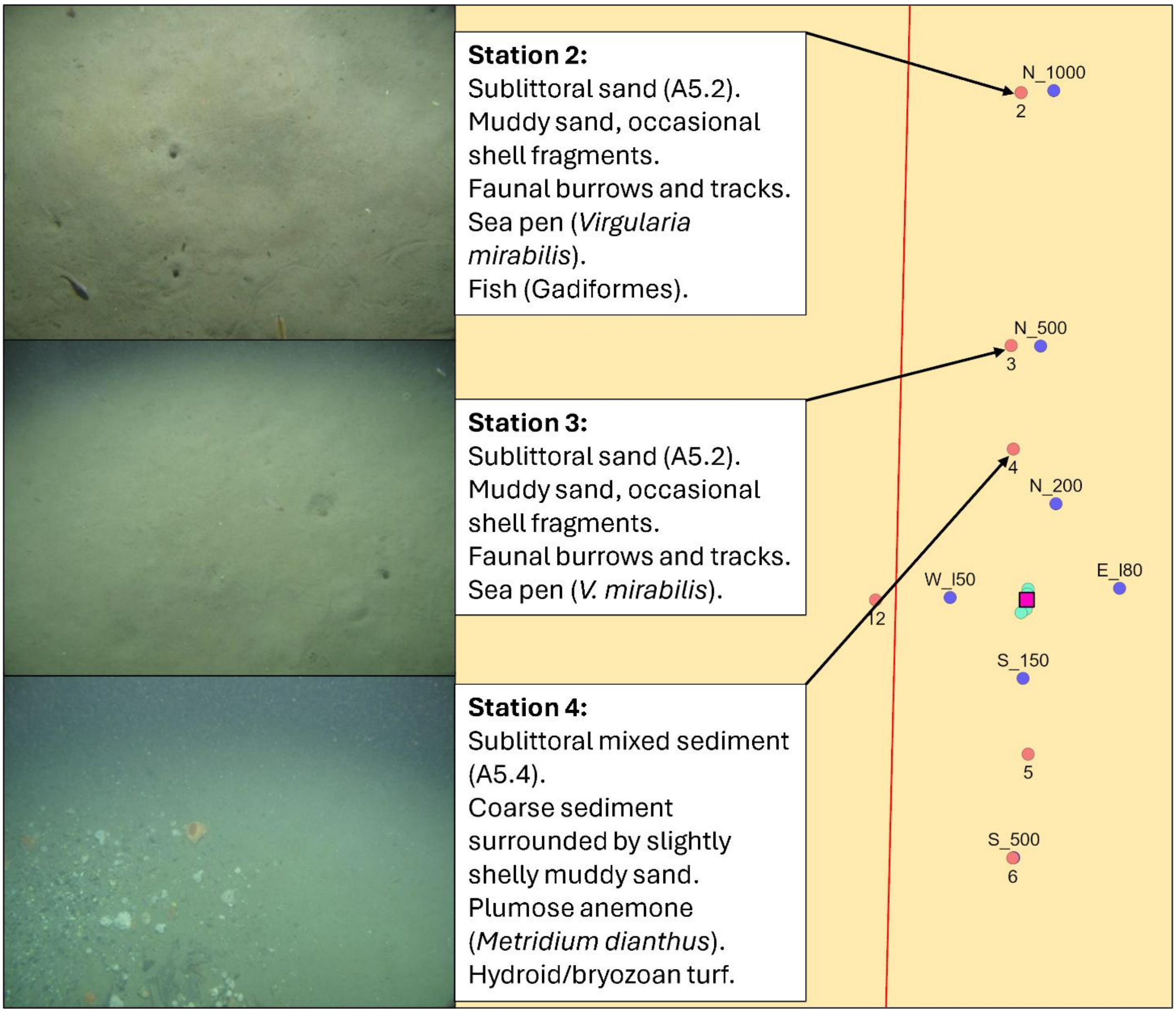

Figure 4-17: Example seabed photographs of sublittoral sand (A5.2) and sublittoral mixed sediment (A5.4) at Andrew (Fugro, 2019a).

As described in Section 4.3.5, a number of cetacean species occur in the area. All cetaceans in UK waters are EPS under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and it is an offence to deliberately disturb, capture, injure or kill an EPS at any time. Harbour porpoise, bottlenose dolphin and grey seals are further recognised as species of community interest requiring Special Areas of Conservation (SACs) under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

In addition to the designation of marine protected areas, PMFs which are considered to be of particular importance in Scotland's seas have been identified.

The following PMF species occur in the area of the Andrew field (Tyler-Walters *et al*., 2016):

- Mackerel (*Scomber scombrus*)
- Ling (*Molva molva*)
- Whiting (*Merlangius merlangus*)
- Cod (*Gadus morhua*)
- Norway pout (*T. esmarkii*)
- Atlantic herring (*Clupea harengus*)
- Sandeel (*Ammodytes marinus*)
- Blue whiting (*Micromesistius poutassou*)
- Spurdog (*Squalus acanthias*)
- Anglerfish (*Lophius piscatorius*)
- Atlantic white-sided dolphin (*L. acutus*)
- Harbour porpoise (*P. phocoena*)
- Minke whale (*B. acutorostrata)*
- White-beaked dolphin (*L. albirostris*)
- Killer whale (*O. orca*)
- Grey seal (*H. grypus*)
- Harbour seal (*P. vitulina*)
- Offshore subtidal sands and gravels
- Sea pens and burrowing megafauna communities (component feature of the PMF 'Burrowed mud')

No other evidence of Annex I habitats or PMFs was found in the Andrew area.

4.6 Socio-Economic Environment

This section describes the socio-economic activities in the vicinity of the Andrew platform, which primarily include fishing, shipping and oil and gas operations.

4.6.1 Commercial Fisheries

The International Council for the Exploration of the Sea (ICES) collates fisheries information for area units termed ICES rectangles measuring 30 nm by 30 nm. The importance of an area to the fishing industry is assessed by measuring the fishing effort (within each ICES rectangle) which is defined as the number of days (time) multiplied by the fleet capacity (tonnage and engine power). Due to the requirement by UK fishermen to report catch information such as total landings (includes species type and tonnage of each), and location of hauls and catch method (type of gear / duration of fishing), it is possible to get an indication of the value of an area (ICES rectangle) to the UK fishing industry. It should be noted, however, that fishing activity may not be uniformly distributed over the whole area of the ICES rectangle.

4.6.1.1 Fishing Effort

Fishing effort statistical data, of UK vessels over 10 m in length, between 2019 and 2023 for ICES rectangle 45F1 are provided in Table 4-9. When compared against effort across all ICES rectangles in the UKCS fishing effort within 45F1 accounted for an average of 0.8% between 2019 and 2023. Fishing effort within these rectangles is therefore considered Moderate.

Table 4-9: Monthly fishing effort for ICES rectangle 45F1 from 2019-2023 (Scottish Government, 2024).

Year	Month												45F1 total (days)	UK total (days)	45F1 as % of UK Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
2019	D	275	35	209	0	45	264	50	47	112	D	0	1,036	126,386	0.8%
2020	D	D	208	50	D	10	17	19	9	111	9	D	433	104,027	0.4%
2021	4	126	110	111	D	0	221	43	D	121	230	D	968	105,793	0.9%
2022	D	D	20	81	D	290	166	135	198	141	D	D	1,031	95,211	1.1%
2023	D	4	237	6	D	0	12	222	75	D	3	0	560	95,358	0.6%
Mean	4	135	122	92	0	69	136	94	82	121	81	0	805	105,355	0.8%

Notes:
[1] Monthly effort data are shown where five or more UK vessels over 10 m undertook fishing activity in a given year. Where less than five such vessels undertook fishing activity in a given month, the data are "disclosive" (D) and not shown.
[2] Includes disclosive days.
[3] A measure of the fishing activity of vessels including the time spent travelling to fishing grounds as well as the time spent fishing.

4.6.1.2 Fishing Landings

The annual weight (te) and value (£) of landings from UK vessels into the UK and abroad, and foreign vessels into the UK for demersal, pelagic and shellfish species across 2019-2023 from ICES rectangle 45F1 are shown in Table 4-10.

The data show that shellfish contributed the highest landings, in 45F1, in terms of value and weight between 2019 and 2022. In 2023 demersal catches were higher weight, however shellfish catches remained the highest in terms of value. The difference between landing value and weight between shellfish and demersal catches in these ICES rectangles is likely due to the difference in the price per kg of each catch species.

Table 4-10: Annual landings in weight and value for ICES Rectangle 45F1 between 2019-2023 (Scottish Government, 2024)

Year	Species	Variable	45F1 total	UK total	% of UK total
2019	**Demersal**	Value (GBP)	1,072,600	255,774,578	0.4%
		Weight (te)	662	137,487	0.5%
	Pelagic	Value (GBP)	796	239,821,095	0.0003%
		Weight (te)	1	272,401	0.0005%
	Shellfish	Value (GBP)	3,166,226	271,958,485	1.2%
		Weight (te)	1,030	91,099	1.1%
2020	**Demersal**	Value (GBP)	511,059	177,700,652	0.3%
		Weight (te)	364	116,124	0.3%
	Pelagic	Value (GBP)	674	290,633,320	0.0002%
		Weight (te)	1	337,505	0.0003%
	Shellfish	Value (GBP)	904,715	177,619,631	0.5%
		Weight (te)	367	72,905	0.5%
2021	**Demersal**	Value (GBP)	1,142,617	173,441,241	0.7%
		Weight (te)	671	99,064	0.7%
	Pelagic	Value (GBP)	3	284,285,747	0.0%
		Weight (te)	0	367,181	0.0%
	Shellfish	Value (GBP)	3,069,327	213,778,359	1.4%
		Weight (te)	948	74,683	1.3%
2022	**Demersal**	Value (GBP)	1,099,118	166,218,810	0.7%
		Weight (te)	717	95,352	0.8%
	Pelagic	Value (GBP)	135	291,902,043	0.0%
		Weight (te)	0	321,096	0.0%
	Shellfish	Value (GBP)	4,014,139	228,491,376	1.8%
		Weight (te)	845	68,391	1.2%
2023	**Demersal**	Value (GBP)	755,250	180,203,811	0.4%
		Weight (te)	521	101,509	0.5%
	Pelagic	Value (GBP)	6	364,850,092	0.0%
		Weight (te)	0	372,452	0.0%
	Shellfish	Value (GBP)	1,505,649	255,496,350	0.6%
		Weight (te)	333	71,687	0.5%

Scottish Government (2024) data also revealed that between 2019-2023 trawls were the most dominant gear type used in ICES rectangle 45F1 amounting to a collective total of 4,058 days of fishing effort compared to seine nets where data were disclosive for each year through this time period.

4.6.2 Vessel Density

Figure 4-18 shows vessel activity in 2023 in the area of the proposed project (EMODnet, 2023b). The data is presented as hours per km^2 per month. The data accounts for all vessel types, including fishing vessels, service vessels, vessels associated with dredging or underwater operations, tugs and towing vessels, passenger, cargo, tanker, military and law enforcement, sailing, pleasure craft, high speed craft, and all other vessel types.

The vessel density in Blocks 16/27 and 16/28 ranges from *c.* 0 to 15 hours per km^2 per month (Figure 4-18). The smaller areas of higher vessel activity in the near vicinity of the proposed Project are associated with oil and gas activities, either drilling or provision of support to existing installations.

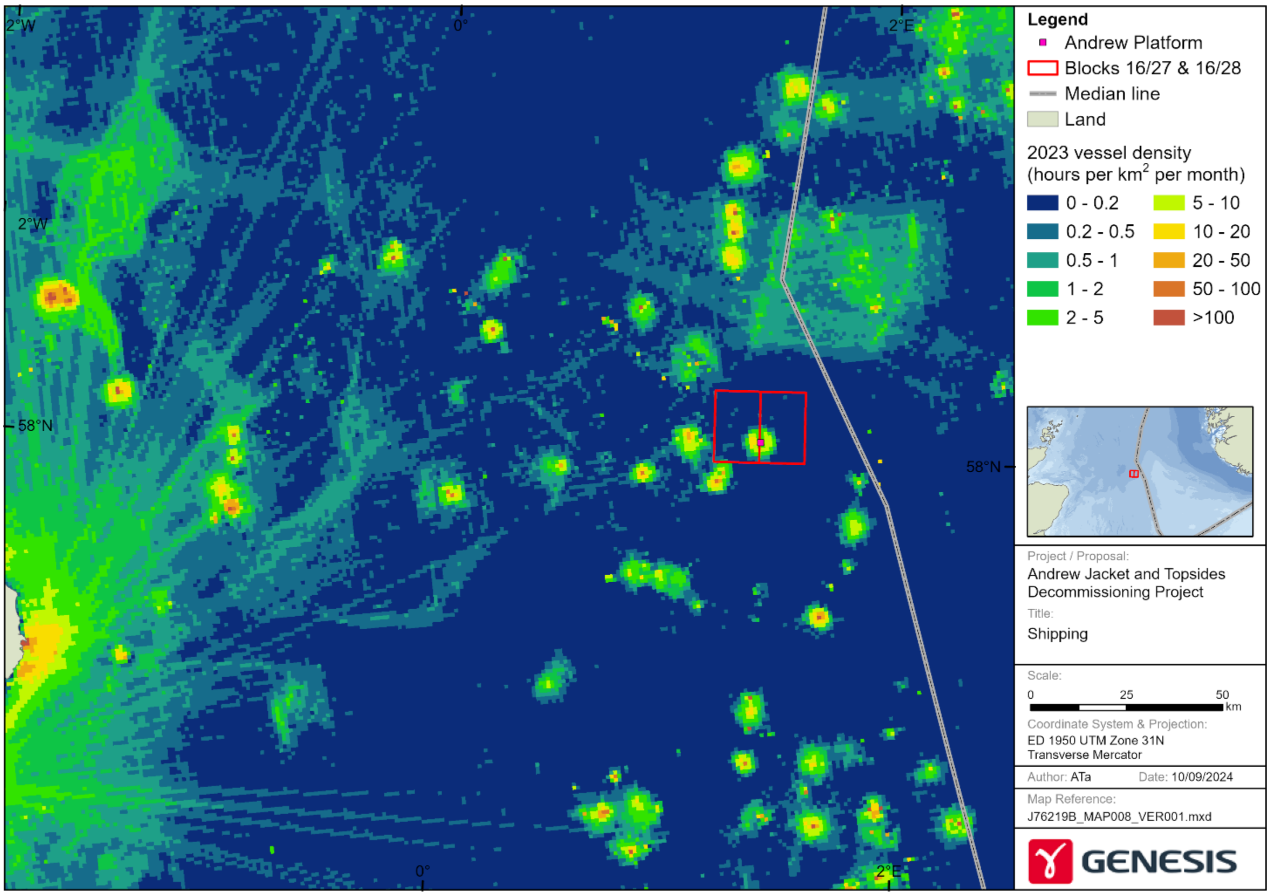

Figure 4-18: Vessel density in the vicinity of Blocks 16/27 and 16/28 (EMODnet, 2023b).

4.6.3 Oil and Gas Exploration

The Andrew platform is situated within a well-developed area of the North Sea, featuring a lot of oil and gas infrastructure and activity. There are several oil and gas installations within 40 km of the Andrew platform, the closest of which is the Britannia platform and bridge-linked platform (BLP) located *c.* 15.5 km to the west.

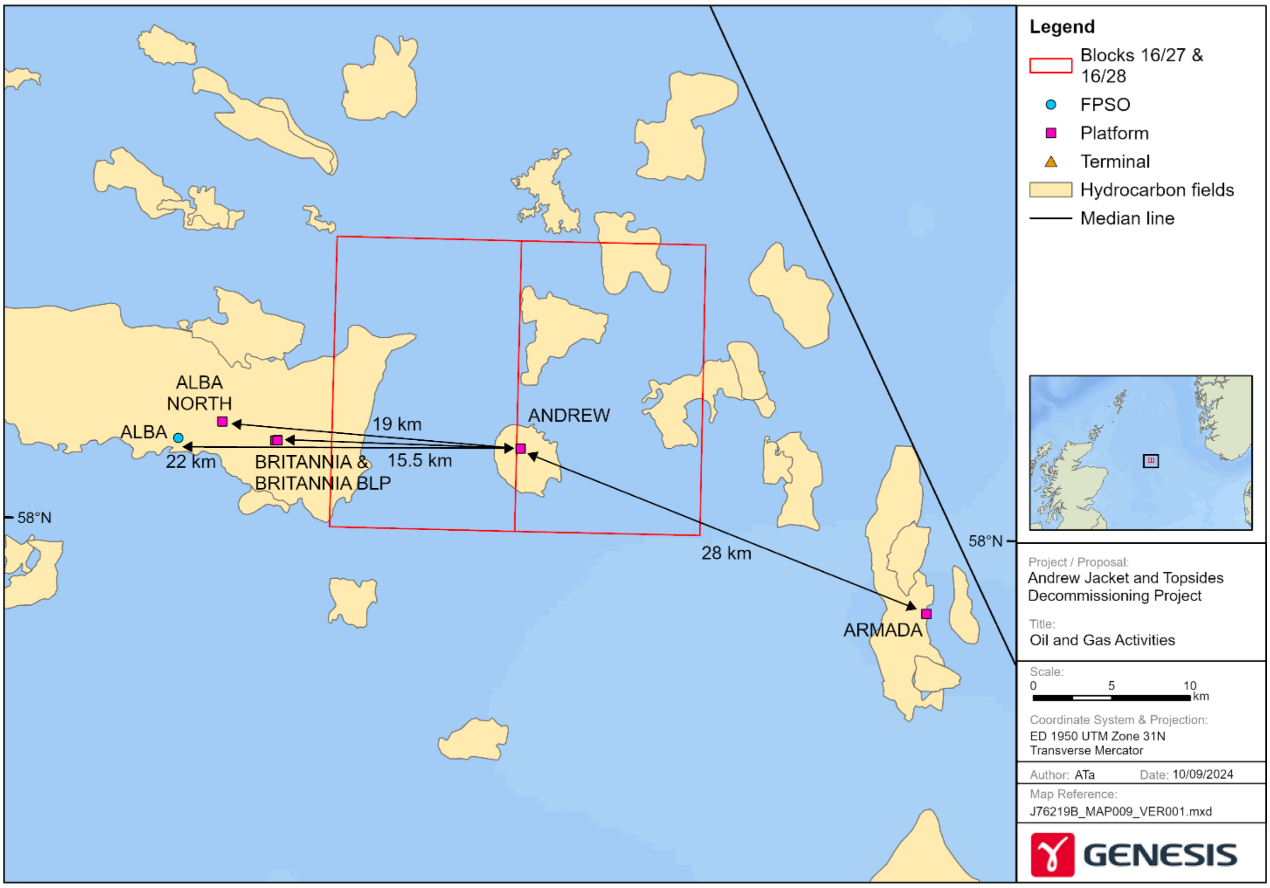

Figure 4-19: Existing oil and gas installations within the vicinity of the Andrew platform.

4.6.4 Cultural Heritage

A large number of ship and aircraft wrecks are known in UK waters, including more than 5,200 records in Scottish waters. There is also potential for substantial unidentified aircraft remains (primarily World War II) to be found on the seabed, since there are extensive documentary sources relating to aviation loss at sea, but these do not provide accurate positions (DESNZ, 2022).

There are no protected wrecks or sites in the vicinity of the Andrew platform. The closest is the non-dangerous wreck of the Persimon located *c.* 5.5 km to the northwest (Figure 4-20; Admiralty, 2023).

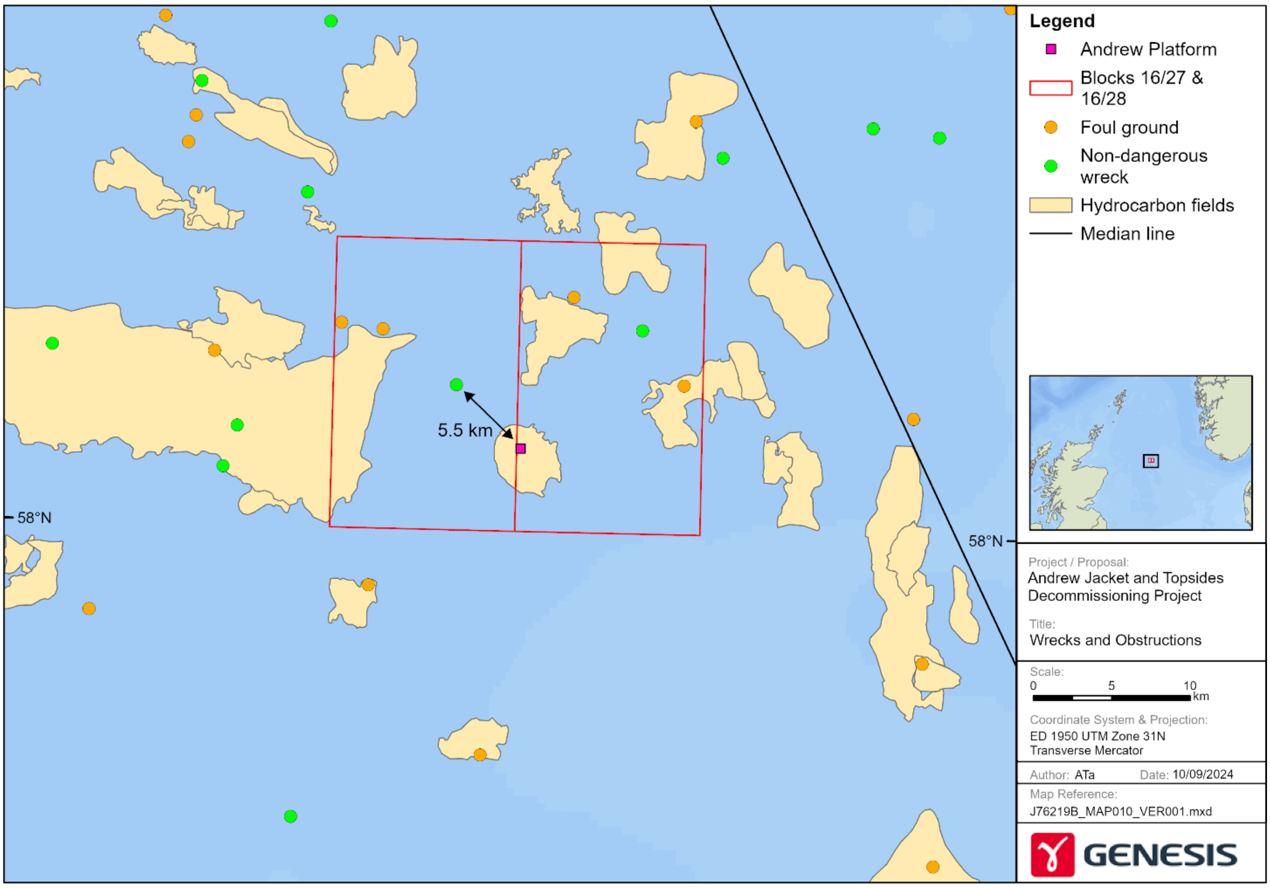

Figure 4-20: Wrecks and obstructions in the vicinity of the Andrew platform (Admiralty, 2023).

4.6.5 Offshore Renewable Energy

The Hywind Scotland wind farm is the closest operational windfarm to the Andrew platform. It is located off the coast of Peterhead, over 150 km southwest of the Andrew area. The closest successful Innovation and Targeted Oil & Gas (INTOG) site is located *c.* 12 km to the east and the closest carbon dioxide (CO_2) appraisal and storage licence is *c.* 14 km to the north (Figure 4-21).

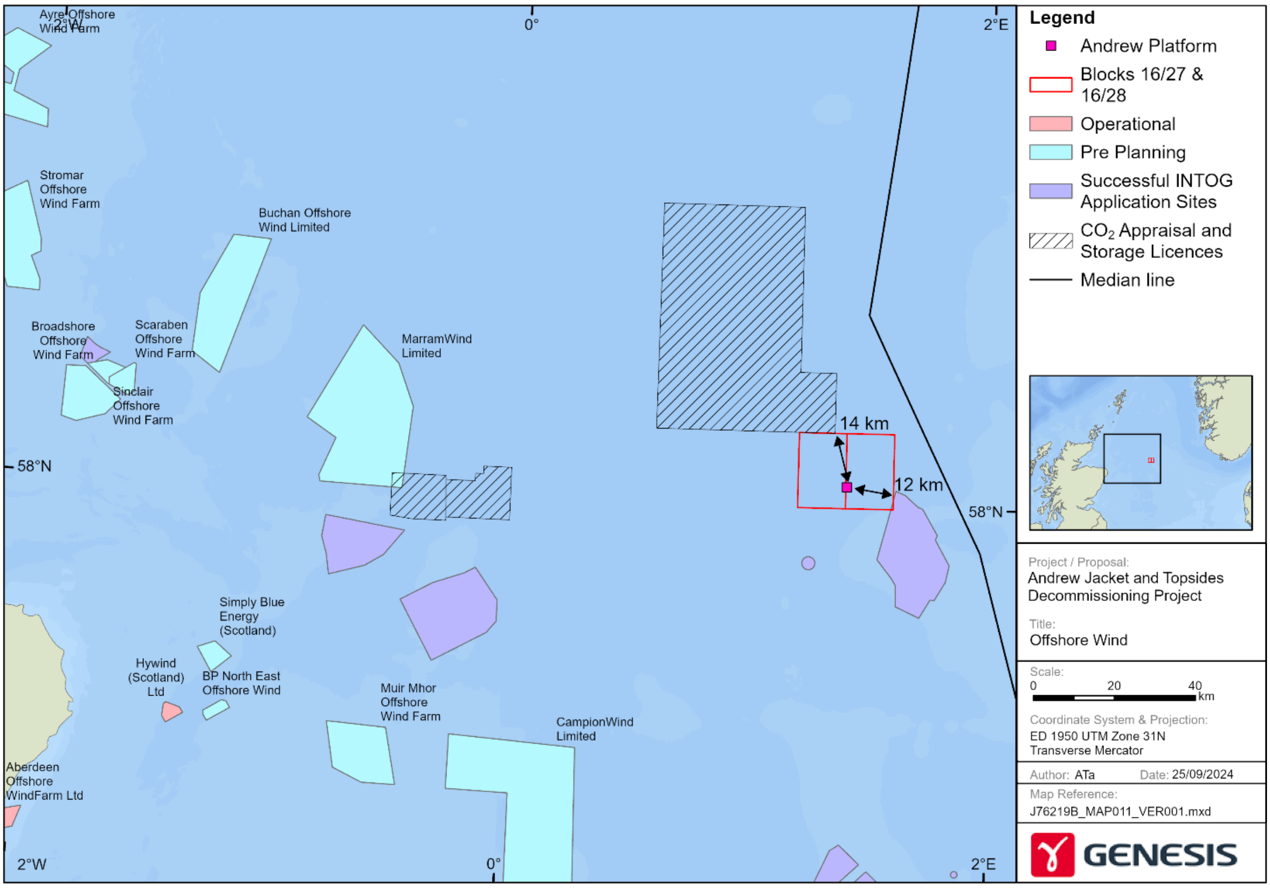

Figure 4-21: Offshore wind energy sites, successful INTOG sites and CO_2 appraisal and storage licences in the vicinity of the Andrew platform.

4.6.6 Other

There are no known military activities, power cables, offshore aggregate extraction sites or aquaculture sites in the vicinity of the Andrew platform. The Tampnet CNS Fibre Optic Telecommunication Cable (CNSFTC) is the closest telecommunication cable located *c.* 29 km to the south.

6. SEABED DISTURBANCE

As shown in Table 5-1, the impacts to the seabed of recovering the Andrew jacket are considered Moderate and therefore were scoped in for further assessment.

6.1 Activities (Cause of Impact)

Activities that could result in an impact to the seabed include:

- Internal jetting of the jacket piles to allow access for cutting; and
- Lifting of the jacket with mud mats and *c*. 3 m lengths of each pile attached (note should the piles be cut at a shallower depth, the area of disturbance will be less than that presented here).

As described in Section 3.2.4.2, to allow the jacket piles to be cut internally 35.03 m^3 of sediment will require to be excavated from within each pile. This sediment is expected to be deposited within 10 m of the respective jacket legs. Therefore, the EA assumes that within 10 m of each jacket leg, 105.1 m^3 of soil will be deposited.

There will not be a requirement to dredge around the jacket legs and associated mud mats (Section 3.2.4.2), though it is expected that any sediments/drill cuttings on the mud mats will drop off the mud mats and jacket members as the lower jacket is lifted through the water column.

Recovery of the drilling template located below the Andrew platform will also result in disturbance to the drill cuttings pile, as will the activities associated with recovering the pipeline/umbilical lengths at the base of the platform. Recovery of the drilling template and these lines is captured in the Andrew Area subsea DP submission (BPEOC, 2025c) and therefore the associated activities are not detailed here. However, in order to consider the cumulative impact of the disturbance to the drill cuttings pile, modelling was carried out to assess the disturbance from all activities i.e. recovery of the lower jacket, the drilling template and the pipeline and umbilical ends close to the platform. Across these activities it was assumed that a maximum of 40% of the cuttings pile would be disturbed. Details of the modelling carried out are presented in Section 6.2.

At the end of the decommissioning activities across the Andrew Area, a safe seabed survey will be carried out. The Andrew Project will explore the use of a side-scan sonar (SSS) or MBES survey as an alternative to the over trawl trials/sweeps across the Andrew Area (including in proximity to the Andrew platform location) to demonstrate a safe seabed and therefore minimise the area of temporary seabed disturbance. The Andrew subsea infrastructure DP submission (BPEOC, 2025c) and supporting EA takes account of the impact associated with the majority of the over trawl trial. This EA captures the footprint of the over trawl trial within the platforms 500 m zone. As a worst case it is assumed that the whole 500 m zone is over trawled.

6.1.1 Quantification of Disturbance

Table 6-1 presents the anticipated area of disturbance associated with the proposed activities. Further details are provided in the following sections.

Table 6-1: Anticipated area of temporary seabed disturbance associated with the proposed activities.

Activity	Assumptions made	Area of Disturbance (km^2)	
		Temporary	Permanent
Excavation and deposition of sediments from within the jacket piles	• 35.03 m^3 from each pile such that across the 12 piles 420.36 m^3 of sediment is deposited. • As the jacket and piles were installed prior to commencement of drilling the excavated sediments from within the piles is not considered to be contaminated. • As a worst case it is assumed that for each m^3 of sediment deposited a seabed area of 1 m^2 is covered at a depth of > 6.5 mm i.e. .depth recognised to cause an impact to 5% of sensitive species in the area. • As sediment is not contaminated and ecosystem is expected to begin to recover once deposits have been completed, this impact is considered to be temporary with no permanent disturbance.	0.0004	-
Disturbance of drill cuttings pile during jacket removal	• To determine the area of impact, modelling of the disturbance to the cuttings pile was carried out. This captured disturbance to the cuttings pile associated with recovery of the jacket, the drilling template and the pipeline line and umbilical ends close to the platform. • The threshold for permanent disturbance was considered to be areas where sediment thickness is > 6.5 mm following recovery activities.		0.011
Over trawl trial within Andrew 500 m zone	• As a worst case it is assumed that the entire Andrew platform 500 m zone is covered by over trawl trial.	0.7854	-

6.2 Drill Cuttings Disturbance Modelling

To support the EA, disturbance of the cuttings on the seabed was modelled using Dose-related Risk and Effects Assessment Model (DREAM) published by Sintef, as part of the Marine Environmental Modelling Workbench (MEMW) suite of models, version 15.0.0. This incorporates the ParTrack sub-model for modelling dispersion and settlement of solids. The model predicts the fate of materials discharged to the marine environment, specifically their dispersion and changes to their physicochemical composition.

The modelled scenario considered relocation of 40% of the cuttings pile (1,285.17 m^3) to recover the jacket, drilling template and pipeline ends. Note the decommissioning of the drilling template and pipeline ends will be addressed in a subsequent DP submission, however, to determine the cumulative effect of recovering each element, the portion of the cuttings pile that would be disturbed was estimated. The disturbance to 40% of the pile arises from the cuttings falling off each mud mat during the jacket lifting operation followed by suction dredging the cuttings at the two pipeline tie in points and the drilling template to facilitate the removal of the drilling template.

The modelling calculated the risk to the seabed sediments based on a combination of stressors including burial thickness, change to grain size, toxicity of chemicals/ base oil, and pore water oxygen depletion. In the absence of any other stressors a risk to more than 5% of the species most sensitive to change in one or more environmental parameter would occur when:

- Burial thickness exceeds 6.5 mm;
- A median grain size change greater than 52.7µm;
- Oxygen content depletion greater than 20 %; and
- Toxicity where chemical concentration (in this case of the base oil) exceeds Predicted No Effect Concentration (PNEC).

The model calculates the risk to sensitive species for each of the seabed stressors individually and for all stressors combined. The main contributor to the risk to sediments was chemical concentration (toxicity) at 78.7% followed by oxygen depletion (10.1%), grain size (8.8%) and burial thickness (2.4%).

The modelling predicted a maximum thickness of cuttings of 0.334 m around the wells, with significant thicknesses (over 6.5 mm) predicted to occur up to *c.* 250 m from the discharge locations. The area where thickness is greater than 6.5 mm is predicted to be c. 0.011 km^2 at the end of drilling but reduces over time. To put this into context, a typical exclusion zone around a platform of 500 m radius is equivalent to an area of 0.785 km^2.

The maximum area where there is a combined risk to more than 5% of the most sensitive species in the sediment is predicted to be *c.* 14.488 km^2 1.5 days post dredging operations. The area reduces to 0.062 km^2 after two years following the discharge due to re-colonisation by opportunistic species. Seabed recovery then slows down, and after 5 years and 10 years respectively the potentially impacted area is estimated to be 0.033 km^2 and 0.028 km^2 respectively. The predicted combined risk at 1.5 days post drilling, at two years, five years and 10 years is shown in Figure 6-1.

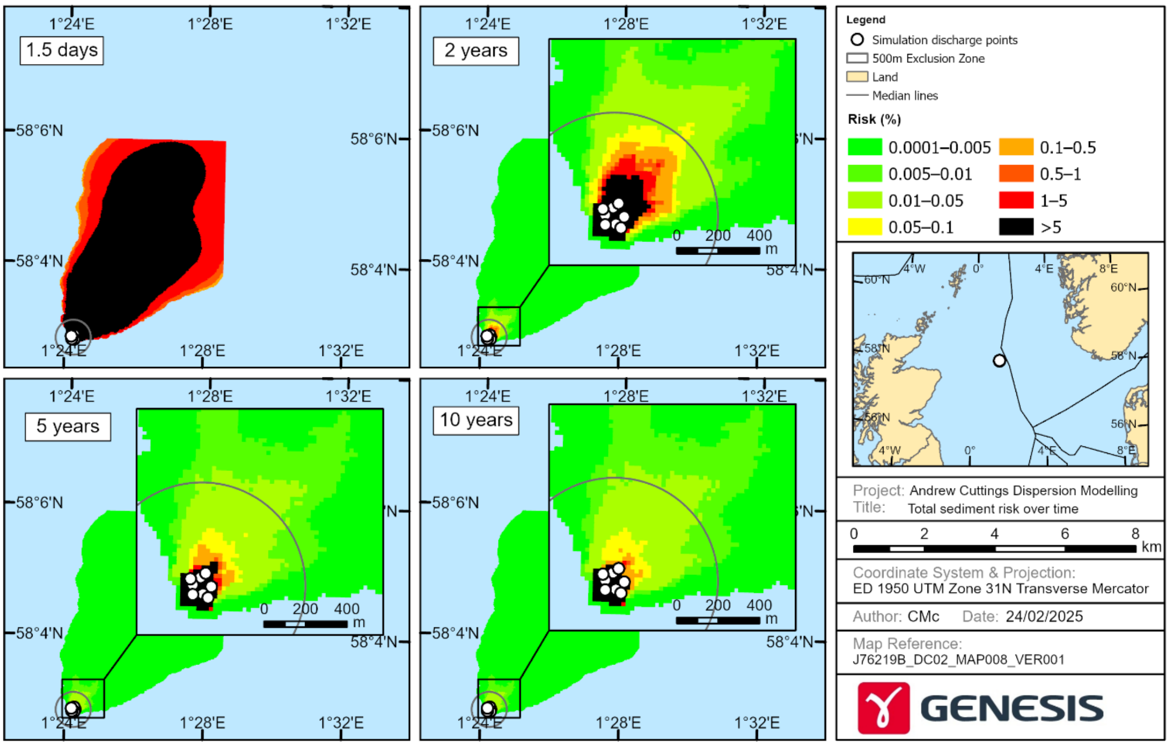

Figure 6-1: Predicted combined risk to sediments over time.

6.3 Impact on Receptors

This section details the impacts of the proposed decommissioning activities on habitats and associated benthic communities in the vicinity of the Andrew platform.

The total volume of cuttings at the Andrew platform was estimated to be 3,212.93 m^3 covering an area of 5,280.89 m^2, with a maximum height of *c*. 2.34 m (Subsea 7, 2019).

The seabed area considered to be impacted permanently is limited to the area where there is a combined risk to more than 5% of the most sensitive species in the sediment 10 years post dredging operations. As a result, the maximum area of permanent impact is 0.028 km^2. If considering sediment thickness separately this maximum area of permanent impact is 0.011 km^2.

Sessile epifaunal species may be particularly affected by increases in suspended sediment concentrations as a result of potential clogging or abrasion of sensitive feeding and respiratory apparatus (Nicholls *et al*., 2003). Increased suspended sediment concentration could have a negative impact on filter feeders, such as sea pens and juvenile *A. islandica*, both of which have been identified as present in the Andrew area. Larger, more mobile animals, such as crabs and fish, are expected to be able to avoid areas of deposition and elevated suspended solid concentrations.

A. islandica have a thick, solid and heavy shell, they are considered to be highly sensitive to sub-surface abrasion/penetration. Damage is related to body size with larger specimens being more affected than smaller ones (Klein and Witbaard, 1993). As they burrow into the sediment, *A. islandica* are thought to be less sensitive to surface abrasion, however, they use a short inhalant siphon which sits above the sediment surface for feeding and respiration. If this is damaged then there may be an adverse effect on the organism, but the potential for this to happen is uncertain (Marine Scotland, 2020). It remains possible that individuals of this species may be directly impacted by seabed disturbance as a result of the proposed decommissioning activities, potentially resulting in individual mortality. Laboratory tests exposing *A. islandica* to sediment depths of up to 40 cm have found that the organism was able to burrow to the surface (Powilleit *et al*., 2009). Based on this evidence, Tyler-Walters and Sabatini (2017) conclude that deposits of up to 30 cm of fine material is unlikely to have a negative impact on *A. islandica*. The area of seabed over which the disturbed cuttings would settle at depths > 30 cm was estimated to be 0.0001 km^2 such that the area of impact on *A. islandica* is far less than the area impacted by 6.5 mm depths.

As described in Section 4.5, Fugro (2019a) noted the potential for the presence of the OSPAR listed threatened and/or declining habitat 'sea pens and burrowing megafauna communities' to occur within the Andrew field area. The proposed activities will impact on areas captured under this habitat type, however given the widespread distribution of the habitat across the survey area and the wider CNS area, the impact is not considered significant. MarLIN (The Marine Life Information Network) indicates that *Nephrops* are not at risk to burial depths up to 5 cm and are also tolerant of increases in suspended sediments but are highly intolerant of habitat loss. Therefore, it is expected that some individual *Nephrops* may be impacted by the proposed activities, however it will be within a limited area and not necessarily over the wider area impacted by sediments settling out at depths < 5 cm.

Recolonisation of the impacted areas can take place in a number of ways, including mobile species moving in from the edges of the area (immigration), juvenile recruitment from the plankton and burrowing species digging back to the surface. Recovery times for faunal communities following disturbance from installation activities are difficult to predict, although some studies have attempted to quantify timescales. Collie *et al* (2000) examined impacts on benthic communities from bottom towed fishing gear and concluded that, in general, sandy sediment communities were able to recover rapidly, although this was dependent upon the spatial scale of the impact. It was estimated that recovery from a small-scale impact, such as a fishing trawl, could occur within about 100 days. It was assumed that recolonisation was through immigration into the disturbed area rather than from settlement or reproduction within the area. Recovery through immigration would be expected to take longer for the more extensive trawled areas, and larval recruitment or local reproduction by surviving individuals may be more important determining factors.

Where avoidance by fish is not possible the sensitivity to suspended sediments varies greatly between species and their life history stages, dependent upon sediment composition (particle size and angularity), concentration and the duration of exposure (Newcombe and Jensen, 1996). Being the major organ for respiration and osmoregulation, gills are directly exposed to and affected by suspended solids in the water. If sediment particles are caught in or on the gills, gas exchange with the water may be reduced leading to oxygen deprivation (Essink 1999; Clarke and Wilber 2000). This effect is greatest for juvenile fish as they have small easily clogged gills and higher oxygen demand (FeBEC 2010). An International Association of Oil and Gas Producers (IOGP) report 543 (IOGP, 2016) examines evidence relating to the effect of cuttings discharges on early-stage fish life and concludes that they generally have a low toxicity to pelagic invertebrates and early life stages of fish. Studies on early life stages of sea scallops, lobsters and haddock (Cranford *et al*., 1998) showed a slight reduction in survival of haddock and fed (but not unfed) lobster after 96 hours exposure at 100 mg/l of drilling fluid suspension and no effect on fertilisation, survival or growth of sea scallops. As described in Section 4.3.3, a number of fish species recognised as PMFs occur in the area, and it is possible that suspended sediments in the water column, resulting from the recovery activities, could impact on individual fish including PMFs.

The ability for organisms including fish species to detect predators may be reduced as a result of low visibility associated with suspended sediments. In instances of persistent and widespread suspended sediments there is the possibility of reduced feeding success among juvenile fish which may influence survival, year-class strength, recruitment and overall condition (Clarke and Wilber, 2000). However, as the proposed activities are relatively short term any impacts from low visibility are expected to be temporary and are not considered significant.

Given the presence of the OSPAR threatened and/or declining species, *A. islandica,* and habitats, 'sea pens and burrowing megafaunal communities', as well as a number of PMFs (see Section 4.5), receptor sensitivity in the area is considered Medium (B). In the short-term it is recognised that contaminated cuttings may settle on seabed over a wider area than that which currently presents elevated hydrocarbons. Therefore, the short-term impact of recovering the jacket on the seabed is considered Serious (3) such that the Impact Significance is considered Moderate. However, most receptors are expected to be impacted at an individual level rather than a population level. As a result, once drilling and installation activities are completed, recovery of the ecosystem is expected to commence such that the long-term Magnitude of Effect of disturbance to the seabed from all activities is considered Minor (2). Combining a Medium (B) sensitivity with a Minor (2) Magnitude of Effect, the Impact Significance is considered Low such that any environmental impacts are considered to be Negligible.

6.4 Transboundary and Cumulative Impacts

Given the distance from the nearest transboundary line (*c*. 23 km), there are no transboundary impacts anticipated as a result of the activities captured in this Section. Additionally, the seabed disturbance caused by the proposed project is not expected to have any significant cumulative effects, given the relatively small footprint of permanent disturbance.

6.5 Mitigation Measures

The following mitigation measures are proposed to minimise the environmental impacts related to the planned seabed disturbance associated with the Andrew jacket and topsides decommissioning project.

Proposed Mitigation Measures

- Cutting/jetting/dredging and lifting procedures will be in place which will minimise disturbance to the seabed and cuttings pile.
- Jacket piles will be cut internally such that excavation of seabed around the piles will not be required.
- Location of the cuttings piles will be marked on FishSafe.
- Preference will be given to the use of side scan sonar surveys (or similar e.g. multibeam sonar) to determine a clear seabed.

The proposed decommissioning activities associated with the Andrew platform will result in localised disturbance to the seabed. Disturbance of the drill cuttings pile during jacket removal will result in the largest area of impact to the seabed.

Applying the risk assessment methodology described in Section 5 and taking account of the mitigation measures listed above, the environmental significance of impact of the seabed disturbance resulting from the proposed activities is considered moderate. The environmental impacts are therefore considered acceptable when managed within the additional controls and mitigation measures described.

The proposed project will be conducted in compliance with all NMP policies; an assessment against the relevant NMP objectives is given in Appendix B.

7. LEGACY IMPACTS

When assessing the impact of the proposed activities during the ENVID none of the legacy impacts were considered to result in a significant environmental impact (Section 5). However, given that the legacy impacts could change over time, and are of particular interest to stakeholders, they are considered further here.

7.1 Activities (Cause of Impact)

Proposed activities that could result in legacy impacts are:

- Decommissioning of the lower sections of jacket piles *in-situ*; and
- Decommissioning of the cuttings pile *in-situ*.

As noted in Section 3.2.4, the jacket piles will be cut to a target depth of *c*. 3 m below the seabed[1]. Following internal cutting of the 12 jacket piles, a *c*. 119 m length of each pile will to be decommissioned *in-situ*.

7.2 Legacy Environmental Impacts

7.2.1 Jacket Piles

As noted in Section 3.2.4, the steel jacket piles will be cut to a target depth below the seabed. Following internal cutting of the 12 jacket piles, a *c*. 119 m length of each pile will to be decommissioned *in-situ*. This is equivalent to *c*. 402.5 te per pile remaining *in situ* and *c*. 4,830 te across all 12 piles.

OEUK suggest that steel structures, below the seabed will corrode at rates in the region of 0.01 to 0.02 mm/year (OGUK, 2013). The lower sections of the steel jacket piles will over time become exposed to the surrounding sediment as they degrade. A dataset compiled by Solan *et al* (2019), based on a literature review of papers published since 1864, found that the mixed sediment depth (bioturbation depth) in the North Sea is up to 25 cm. This means that any material remaining in the seabed sediments at a depth greater than this is unlikely to have any interaction with benthic organisms, if it remains buried to this depth. Given that the Andrew jacket piles are to be cut internally below seabed level the remaining piles are not expected to have any interaction with benthic organisms.

The long-term environmental impact significance of leaving the remainder of the Andrew jacket legs *in-situ* is considered Low, given:

- The cutting of the jacket piles below seabed;
- The slow anticipated rate of metal degradation; and
- The remaining metal is not anticipated to significantly accumulate in marine organisms.

7.2.2 Andrew Drill Cuttings Pile

The environmental impact of decommissioning the cuttings pile *in situ* is discussed in Chapter 6 with a focus on the reduced footprint of risk over time.

7.3 Legacy Socio-Economic Impacts

7.3.1 Jacket Piles

At the end of offshore activities associated with decommissioning the Andrew Area the 500 m zone will be surrendered enabling this area to be exploited by commercial fisheries. The dominant gear type used in the Andrew Area is trawl gear. Based on a range of penetration depths of main fishing gear components

[1] Should shallower cuts be required due to technical issues, BPEOC will discuss and agreed with OPRED.

(demersal trawls, seines and dredges) across different sediment types as estimated from a literature review by Eigaard *et al* (2016), the depths of penetration from different fishing gear for a seabed dominated by mud and sand ranges from 0 cm to 35 cm. Any material remaining in the seabed sediments at a depth greater than 35 cm is therefore unlikely to have any interaction with fishing gear, providing that it remains buried to this depth. Given the jacket piles are to be internally cut below the seabed the remaining jacket piles will not interact with fishing gear.

7.3.2 Andrew Drill Cuttings Pile

As described in Section 3.2.4.3 a BAT assessment was carried out to determine the optimal approach to decommissioning the Andrew drill cuttings pile. The BAT identified the decommissioning of the cuttings pile *in situ* (following recovery of the jacket, drilling template and pipeline ends) as BAT. Following completion of the decommissioning activities (including the survey to demonstrate a safe seabed) BPEOC will surrender the 500 m exclusion zone such that fishers will gain access to the area. The presence of the cuttings pile will be marked on the relevant charts thereby advising fishers of the potential for spoiling their nets and / or catch should they tow over it. Given that the depths of penetration from different fishing gear in a seabed (up to 35 cm – see Section 7.3.1) the drill cuttings pile has the potential to interact with trawl gear, which could lead to spoiled nets and/or contaminated catches, resulting in economic losses for commercial fisheries. However, given the relatively small footprint of the cuttings pile, and the commitment to mark the pile on FishSafe the socio-economic legacy impact of decommissioning it *in situ* is not considered significant.

7.4 Transboundary and Cumulative Impacts

Given the distance from the nearest transboundary line (*c.* 23 km), there are no legacy transboundary impacts anticipated because of the proposed decommissioning activities. In addition, there is not expected to be any cumulative legacy impacts given that the activities include recovery of the Andrew platform.

7.5 Mitigation Measures

The following mitigation measures are proposed to minimise the legacy impacts of the proposed activities.

Proposed Mitigation Measures
• Locations of remaining cuttings pile will be marked on FishSafe. • Ongoing consultation with SFF. • A safe seabed survey will be completed following decommissioning activities. • A post decommissioning environmental survey will be carried out.

The Project's commitment to adhering to the mitigation measures identified means that the environmental and socio-economic impact significance of the remaining drill cuttings pile and jacket piles *in-situ* is considered Low.

The activities assessed in this chapter do not contradict the NMP objectives (see Appendix B) and as the project progresses BPEOC will aim to comply with the NMP policies. In addition, the Project will aim to comply with the oil and gas marine planning policies.

8. ATMOSPHERIC EMISSIONS

As shown in Table 5-1, due to the cumulative impacts of emissions on climate change, the impact of atmospheric emissions from the vessels on climate change is considered further in the EA.

8.1 Activities (Cause of Impact)

In 2020, the UK's independent Committee on Climate Change (CCC) released their publication 'Net Zero: The UK's contribution to stopping global warming' (CCC, 2020). In the report, the CCC concluded that it is achievable for the UK to implement a new target of net-zero greenhouse gas (GHG) emissions by 2050 in England and Wales, and by 2045 in Scotland. The report acknowledges that a diverse energy mix is needed in the transition to a net-zero future to maintain security of supply, which includes the continued extraction and use of oil and gas.

To achieve the net zero goal, the CCC report calls for concerted effort and action by all to reduce emissions and for any remaining emissions in 2050 to be offset. As part of this, the offshore oil and gas industry is focussed on the continued management and reduction of its operational emissions (Offshore Energies UK (OEUK), 2021) and the recently announced North Sea Transition Deal (NSTD) (DESNZ, 2021) further commits the sector to early targets for the reduction of greenhouse gas emissions from production, against a 2018 baseline.

Greenhouse gases differ in their abilities to trap heat. Global Warming Potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere; usually expressed as CO_2 equivalent (CO_2e). For example, methane (CH_4) is estimated to have a GWP up to 34 times greater than CO_2 over 100 years (Intergovernmental Panel on Climate Change (IPCC), 2014), although it has a shorter life span in the atmosphere. Overall, CO_2e emissions from UK upstream oil and gas operations in 2018 contributed three percent (14.63 million te) of total domestic CO_2e emissions (OEUK, 2021).

The predominant source of emissions associated with the offshore activities is emissions from the vessels using during the operations.

The main combustion products associated with power generation on the vessels is CO_2 with small quantities of CH_4, volatile organic compounds (VOCs), oxides of nitrogen (NOx), carbon monoxide (CO) and very small quantities of nitrous oxide (N_2O) and sulphur dioxide (SO_2).

8.2 Impact on Receptors

Table 8-1 shows the expected vessel emissions based on predicted vessel requirements identified in Table 3-3. Emissions factors used were taken from the Environmental Emissions Monitoring System (EEMS) Atmospheric Emission Calculations guidance (EEMS, 2008).

Table 8-1: Predicted atmospheric emissions associated with the proposed vessel use.

Source		Atmospheric emissions (te)							
		CO_2	NOx	N_2O	SO_2	CO	CH_4	VOC	CO_2e
EEMS Emissions Factor[1]		3.2	0.0594	0.00022	0.002	0.0157	0.00018	0.002	-
GWP[2]		1	-	265	-	-	28	-	-
Total fuel use (see Table 3-3) and emissions	1,217	3,894	72	0.27	2.43	19	0.22	2.43	3,971
Total upstream UKCS emissions 2018[3].									18,900,000
Emissions from proposed operations as a % of upstream UKCS emissions (2018).									0.021
Total upstream UKCS emissions 2022[3].									14,300,000
Emissions from proposed operations as a % of upstream UKCS emissions (2022).									0.028

Notes:
[1] Emissions calculated using EEMS emission factors (EEMS, 2008).
[2] CO_2e figure is calculated by multiplying CO_2, N_2O and CH_4 by their relevant GWP value. GWP values are as defined on a 100-year horizon according to the IPCC Fifth Assessment Report (IPCC, 2014), as required by the United Nations Framework Convention on Climate Change (UNFCCC) and in line with the UK's National Inventory Report (DESNZ, 2022).
[3] OEUK (2023).

The emissions from the anticipated vessel use will amount to approximately 0.021% of the total upstream UKCS emissions in 2018 and approximately 0.028% of the total upstream UKCS emissions in 2022 (Table 8-1) and therefore represents a relatively small contribution to total UKCS emissions.

The emissions associated with these operations may result in short-term deterioration of local air quality within the vicinity of the well location, however, in the exposed conditions that prevail offshore, these emissions are expected to disperse rapidly such that they are not expected to have a significant impact on air quality. These emissions will also have a cumulative effect on climate change as described in Section 8.3.

8.3 Transboundary and Cumulative Impacts

The potential cumulative effects associated with the atmospheric emissions produced by vessel use during decommissioning operations include global warming (greenhouse gases), acidification (acid rain) and local air pollution as well as, elevated levels of atmospheric emissions in the immediate area. Given the worst case estimates of emissions presented, the cumulative effects on climate change is not considered to be significant.

8.4 Mitigation Measures

The following mitigation measures are proposed to minimise the impacts of vessel emissions.

Proposed Mitigation Measures

- As part of the tendering process, proposed vessels will go through a detailed assurance process which will include a review of generator and engine maintenance which leads to better efficiency in line with manufacturer's specifications.
- Decommissioning vessel schedules and survey vessel schedules will be planned to minimise vessel use.
- Prior to the contract award, BPEOC or the appointed duty holder (if different), will audit the decommissioning yards to ensure suitable permits are in place and that atmospheric emissions are being managed.
- Activities will be carried out in line with BPEOC's environmental policy (or the appointed Duty Holders (if different) environmental policy) which includes minimising emissions.

BPEOC's commitment to adhering to the mitigation measures identified means that the significance of the environmental impacts associated with the proposed activities is considered Low.

The activities assessed in this chapter do not contradict the NMP objectives (see Appendix B) and as the project progresses BPEOC will aim to comply with the NMP policies. In addition, the Project will aim to comply with the oil and gas marine planning policies.

Impacts from GHG emissions are difficult to assess in isolation because they are derived from cumulative emissions generated across a range of fossil fuel and industry activities, rather than from any single activity. As such the sensitivity of climate change as a receptor is considered Very High (D). Nevertheless, GHG emissions from the proposed decommissioning activities are relatively low (3,883 te CO_2e) when compared to current UKCS emissions and in the context of projected targets for future emissions.

Emissions generated during the proposed activities are expected to disperse quickly and with the mitigation measures in place the Magnitude of Effect is considered Negligible (1) such that the Impact Significance is considered Low.

The activities assessed in this chapter will not contradict the NMP objectives (Appendix B) and as the project progresses, BPEOC will aim to comply with the NMP policies. In addition, the Project will aim to comply with the Oil and Gas Marine Planning Policies (Appendix B).

9. ENVIRONMENTAL MANAGEMENT

BPEOC are committed to conducting activities in compliance with all applicable legislation and in a manner that will minimise impacts on the environment. Environmental and social impacts identified through the impact identification process will be input to the projects risk register. A summary of key environmental and social impacts and risks shall be included within the project's decision documentation throughout all phases of the project.

BPEOC has established a clear framework for the effective management of Health, Safety, Security and Environmental (HSSE) issues involving their activities in the UK. The Company regards environmental management as being an integral part of its overall management responsibility, the fundamental aims being to support environmental protection, prevent pollution and comply with legislation and regulations. The Andrew platform, as part of the North Sea Region, is ISO 14001 accredited such that the principles of the International Standard for Environmental Management Systems (EMS) (ISO14001:2004) are incorporated within the Company's EMS, which is an integral part of the company's overall management system (note the EMS was independently verified on the 27th September 2024). If the proposed decommissioning activities are to be completed by BPEOC, the work will be delivered in compliance with BPEOC's EMS. Should a third party Duty Holder be responsible for the proposed decommissioning activities, the work will be completed under a third party endorsed EMS.

BPEOC's HSSE Policy is a public declaration of the Company's commitment to create a safe working environment such that no harm is caused to people and where environmental impact is minimised. The Company's HSSE policy is provided in Figure 9-1.

bp North Sea UK HSE Policy

bp's commitment to **health, safety** and **environmental** (HSE) performance

Our HSE goals are simply stated:

no accidents, no harm to people and **no damage to the environment.**

We strive to be a safety leader in our industry, a world-class operator, a good corporate citizen and a great employer. Nothing is more important to us than the health, safety and security of our workforce and the communities in which we operate, and behaving responsibly towards our shared environment. We must be vigilant, disciplined and always looking out for one another.

We are committed to:

- complying with applicable laws and company policies and procedures
- systematically managing our operating activities and risks
- reporting our HSE performance
- learning from internal and external HSE events

In the North Sea our mission is to achieve zero life changing injuries, zero serious process safety events and have the lowest possible environmental impact, emissions, and methane intensity. We therefore expect all staff and contractors to stop work when there is an unsafe act or condition, non-compliance with legislation or when unable to meet bp requirements.

Everyone who works for bp has a part to play in meeting our HSE commitment. Our Safety Leadership Principles are an important guide on how we can achieve this. Together we:

1. Genuinely care about each other
2. Will not compromise our focus on safety
3. Encourage and recognize speak up
4. Understand how work actually happens
5. Learn why mistakes occur and respond supportively

Doris Reiter
SVP North Sea

19 October 2022 (updated 3 yearly)

Figure 9-1 BPEOC's Health, Safety, Security and Environment (HSSE) Policy.

10. CONCLUSIONS

BPEOC are preparing to decommission the Andrew Area. The Andrew Area comprises five fields including Andrew, Cyrus, Farragon, Kinnoull and Arundel, which produce through the Andrew platform. The proposed decommissioning activities will be captured over two DP submissions: one capturing the Andrew platform and one capturing the subsea infrastructure for the five fields. This EA supports the decommissioning of the Andrew platform (topsides, jacket) and the rigid risers and umbilical risers associated with the platform.

The Andrew topsides and jacket, rigid risers and umbilical risers will all be recovered at the time of decommissioning. The jacket piles will be cut internally at a target depth below the seabed. Should this depth be shallower than 3 m below seabed BPEOC will discuss with OPRED. There is a cuttings pile at the base of the Andrew platform which includes cuttings from well sections drilling with oil-based muds. Some disturbance to this cuttings pile will occur during the recovery of the jacket (and drilling template and pipeline/umbilicals ends captured in the subsea DP submission).

Following a detailed review of the project activities, the environmental sensitivities of the project area, industry experience and stakeholder concerns, it was determined that further assessment of the following issues was required to properly define the potential impact of the proposed decommissioning activities for the Andrew jacket and topsides:

- Seabed disturbance impacts – during recovery of infrastructure.
- Legacy impacts on the environment and on other sea users.
- Atmospheric emissions associated with vessel use.

A review of each of these potentially significant environmental interactions has been completed. Considering the mitigation measures that will be built into the decommissioning project activities, the impact of the majority of activities was considered to be Low. The only aspect which was assessed as having potential for a Moderate impact was ‘disturbance to the seabed/drill cuttings during jacket removal (short term impact)’ whilst the significance of the legacy impacts and the vessel emission impacts are considered Low. Disturbance to the cuttings pile during decommissioning activities is expected to have a discernible environmental impact in the short term, however modelling indicated that the area impacted by elevated hydrocarbon concentrations, as a result of disturbed cuttings resettling, decreases over time.

As part of this review, cumulative and transboundary impacts were assessed and determined to be not significant.

The potential impact on protected sites in the wider vicinity was also considered. The protected sites in closest proximity to the fields are the Norwegian Boundary Sediment Plain NCMPA located *c*. 15 km to the east and the Scanner Pockmark SAC located *c*. 35 km to the northwest. Having assessed the impact of the decommissioning activities, there is not expected to be a significant impact on any protected sites.

The EA has considered the objectives and marine planning policies of the Scottish NMP across the range of policy topics including biodiversity, natural heritage, cumulative impacts and oil and gas. BPEOC considers that the proposed decommissioning activities are in broad alignment with such objectives and policies. Similarly, BPEOC considers that the proposed activities are aligned with the oil and gas specific marine planning policies.

Based on the findings of this EA and the identification and subsequent application of the mitigation measures identified for each potentially significant environmental and societal impact, it is concluded that the proposed Andrew jacket (including rigid risers and umbilical risers) and topsides decommissioning activities will result in no significant environmental or societal impacts.

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APPENDIX A – IMPACT ASSESSMENT METHODOLOGY

This appendix presents the Environmental and Socio-Economic Impact Assessment (ESIA) and the Environmental and Socio-Economic Risk Assessment (ESRA) matrices used to determine the impact of the planned and accidental activities (respectively) associated with the project.

A.1 Receptors and Aspects

Prior to carrying out the ESIA / ESRA the potential receptors likely to be impacted were identified (Section 5), and the ways in which the activities may interact with the environment, i.e. the "aspects" were ascertained.

A.1.1 Environmental and Socio-Economic Receptors

Receptors to be considered in the ESIA and ESRA include:

Environmental receptors

- Air quality;
- Climate;
- Water quality;
- Plankton;
- Sediment quality;
- Benthic communities;
- Fish;
- Marine mammals;
- Birds;

Social receptor

- Designated areas;
- Cultural heritage (e.g. wrecks);
- Shipping;
- Fisheries;
- Resource availability (e.g. landfill and fuel); and
- Local communities (e.g. yard activities).

A.1.2 Identification of Aspects

Aspects to be considered include:

- Energy use and emissions to air;
- Physical presence of infrastructure decommissioned *in situ*;
- Disturbance to the seabed (including disturbance to the cuttings piles);
- Waste generation;
- Unplanned events;
- Physical presence of vessels;
- Discharges to sea;
- Underwater noise;
- Resource use;
- Yard activities e.g. noise, odour etc.

The aspects associated with each activity were assessed in terms of their impact on the receptors in the area. For example, the use of vessels will result in emissions to air, discharges to sea, underwater noise, physical use of space and, if anchored, disturbance to the seabed. Receptors potentially impacted by these aspects include air quality, climate, marine mammals, seabirds, other users of the sea, seascape and benthic communities (if anchored).

A.2 ESIA for Planned Activities

The significance of the environmental/social impact of planned activities on each of the susceptible receptors is derived by considering the ‘Receptor Sensitivity’ in relation to the ‘Magnitude of Effect’ of the aspect.

A.2.1 Receptor Sensitivity

Four categories of Receptor Sensitivity are applied ranging from ‘Low’ to ‘Very High’ as shown in Table A-1.

Table A-1: Receptor Sensitivity.

Category	Environmental Definition
(a) Low	**Flora/Fauna/Habitats - within the impacted area** • Population sizes are considered to be of little to no geographical importance. • Species do not have designated conservation status and are of IUCN 'Least Concern'. • No designated habitat/sites. • Impacted species are widespread in the North East Atlantic region. **Air quality:** Emissions may impact on other nearby installations. **Water quality**: Open offshore water body. **Cultural heritage sites**: Site integrity is already compromised. **Resource availability:** (e.g. landfill sites, diesel use) Renewable and/or abundant. **Third party users:** have capacity to absorb change without impact.
(b) Medium	**Flora/Fauna/Habitats – within the impacted area** • Significant numbers of at least one receptor of national importance (e.g. PMFs). • Significant numbers of a species which is listed as IUCN 'Near Threatened'. • Nationally designated habitat/sites (e.g. PMFs). • Species may be of regional value. **Air quality**: Populated areas nearby. **Water quality**: Semi-enclosed water body with good flushing. **Cultural heritage sites:** Site is of local heritage importance. **Resource availability**: (e.g. landfill sites, diesel use) Renewable and/or available. **Third party users:** have capacity to absorb change without significant impact.
(c) High	**Flora/Fauna/Habitats – within the impacted area** • Significant numbers of at least one receptor of regional (European) importance (e.g. Annex II / IV species and OSPAR designations). • Significant numbers of a species which are listed as IUCN 'Vulnerable'. • Regionally designated habitats/sites (e.g. OSPAR designations and Annex I habitats: SACs and SPAs). • Locally distinct sub-populations of some species may occur. **Air quality:** Densely populated areas nearby. **Water quality:** Semi-enclosed water body with limited flushing. **Cultural heritage sites:** Site is of regional heritage importance. **Resource availability:** (e.g. landfill sites, diesel use) Not renewable and/or limited availability. **Third party users:** have low capacity to absorb change and significant impact is likely to occur.

Category	Environmental Definition
(d) Very High	**Flora/Fauna/Habitat – within the impacted area** • Significant numbers of at least one receptor of international importance. • Significant numbers of a species which are listed as IUCN 'Endangered' or 'Critically Endangered'. • Internationally designated habitats/sites (e.g. Ramsar sites). • At least one receptor is endemic (unique) to the area. **Air quality:** Very densely populated area with sensitive receptors such as schools and hospitals. **Water quality:** Enclosed water body with no flushing. **Cultural heritage sites:** Site is of international heritage importance. **Resource availability:** (e.g. landfill sites, diesel use) Not renewable and/or scarce availability. **Third party users:** have no capacity to absorb change e.g. unemployment due to long term closure of fisheries.

A.2.1.1 Climate Change

With respect to the emission of greenhouse gases, climate is considered a global receptor rather than a local receptor. The categories identified in Table A-1 do not capture definitions for climate change. This is because the sensitivity status of climate is considered to be 'Very High' in line with the 2014 Climate Change Report produced by the Intergovernmental Panel on Climate Change (IPCC, 2021).

A.2.2 Magnitude of Effect

Definitions for the Magnitude of Effect on the receptors are presented in Table A-2. Prior to determining the Magnitude of Effect, industry recognised 'base case' mitigation measures were assumed to be applied e.g. on mobilisation of vessels to carry out the work BPEOC will notify other sea users such as SFF. Additional BPEOC or Project specific measures would include having a fisheries liaison officer on board any reel lay vessels that may be mobilised. These additional mitigations are considered prior to identifying the residual impact.

Table A-2: Magnitude of Effect.

Magnitude Level		Description	
		Environmental Impact	Social Impact
0	**Positive/No effect** *Regulatory compliance or Company goals are not a concern.*	**No environmental concerns** • Positive environmental impact e.g. retaining a 500 m zone resulting in a 'protected area'. • No significantly negative environmental effects.	**No public concerns** • Possible enhancement in the availability of a resource benefitting the persons utilising the area e.g. removal of 500 m zones results in return of access to fishing grounds. • No impacts on sites or features of cultural heritage. • No impact on resource or landfill availability.
1	**Negligible** *Regulatory compliance or*	**Negligible environmental effects** • Any effects are unlikely to be discernible or measurable and will reverse naturally.	**Limited local public awareness and no concerns** • An intermittent short-term decrease in the availability of a resource which is

Magnitude Level		Description	
		Environmental Impact	**Social Impact**
	Company goals are not breached.	• No beaching or transboundary impacts.	unlikely to be noticed e.g. vessels working out-with existing 500 m exclusion zones could temporarily impact on a shipping route or fishing area. • Undiscernible changes to a site or feature of cultural heritage that do not affect key characteristics and are not above background changes. • Undiscernible use of a resource (e.g. diesel, rockcover or landfill).
2	**Minor** *Regulatory compliance is not breached.*	**Minor, localised, short term, reversible effect** • Any change to the receptor is considered low, would be barely detectable and at same scale as existing variability. • Recover naturally with no Company intervention required. • No beaching or transboundary impacts	**Some local public awareness and concern** • A temporary (<1 year) decrease in the availability or quality of a resource e.g. access to fishing grounds may temporarily be inhibited due to presence of vessels. • Minor changes to a site or feature of cultural heritage that do not affect key characteristics. • Minor use of a resource (e.g. diesel, rockcover or landfill).
3	**Serious** *Possible minor breach of regulatory compliance.*	**Detectable environmental effect within the project area** • Medium localised changes to the receptor are possible. • Localised Company response may be required. • No beaching or transboundary impacts.	**Regional / local concerns at the community or stakeholder level which could lead to complaints** • Medium decrease in the short-term (1-2 years) availability or quality of a resource affecting usage e.g. bring a rig on site for 1-2 years. • Nuisance impacts e.g. marine growth odour coming from yards. • Partial loss of a site or feature of cultural heritage. • Moderate use of a resource (e.g. diesel, rockcover or landfill).
4	**Major effect** *Possible major breach of regulatory compliance.*	**Severe environmental damage extending beyond the project area** • High, widespread mid-term (2-5 years) degradation of the receptor. • Company response (with Corporate support) required to restore the environment. • Possible beaching and / or transboundary impacts.	**National stakeholder concerns leading to campaigns affecting the Company's reputation** • High mid-term (2-5 year) decrease in the availability or quality of a resource affecting usage e.g. closure of fishing grounds. • Substantial loss or damage to a site or feature of cultural heritage. • High use of a resource (e.g. diesel, rockcover or landfill).
	Critical effect *Major breach of*	**Persistent severe environmental damage**	**International public concern and media interest affecting the Company's**

Magnitude Level		Description	
		Environmental Impact	Social Impact
5	*regulatory compliance resulting in project delays and prosecution.*	• Very high, widespread long-term (>5 years) degradation to the receptor that cannot be readily rectified. • Major impact on the conservation objectives of internationally/nationally protected sites. • Full Corporate response required. • Major beaching and/or transboundary impacts.	**reputation** • Very high decrease in availability of a resource and potentially livelihood of users for > 5 years e.g. *hydrocarbons on beaches affecting tourism or tainting of fish resulting in the long-term closure of fishing grounds.* • Total loss of a site or feature of cultural heritage. • Significant use of a resource (e.g. diesel, rock cover or landfill).

A.2.3 Cumulative Impacts

The EA sets the activities and potential impacts in the context of all other activities taking place in the Andrew area to determine the additional cumulative effects of the new activities. The potential cumulative effects are discussed in the impact assessment chapters e.g. cumulative impacts on climate change.

A.2.4 Environmental/Socio-Economic Impact Significance

The 'Receptor Sensitivity' and the 'Magnitude of Effect' were combined using the matrix presented in Table A-3 to determine the level of impact for planned activities.

Table A-3: ESIA matrix for planned activities.

		Receptor Sensitivity			
		(a) Low	(b) Medium	(c) High	(d) Very high
Magnitude of Effect	(0) Positive/No effect				
	(1) Negligible				
	(2) Minor				
	(3) Serious				
	(4) Major				
	(5) Critical				

(i) Positive / No effect significance	• Positive or no environmental or social impact. • No public interest or positive public support.
(ii) Low significance	• No/negligible environmental and social impact. • No concerns from consultees.
(iii)Moderate significance	• Discernible environmental and social impacts. • Requirement to identify project specific mitigation measures. • Concerns by consultees which can be adequately addressed by the Company.
(iv)High significance	• Substantial environmental and social impacts. • Serious concerns by consultees requiring Corporate support. • Alternative approaches should be identified.

A.2.5 Transboundary Impacts

Where relevant, transboundary impacts of each aspect on the receptors is discussed in the impact assessment chapters e.g. the impact of emissions on climate change.

A.3 ESRA for Unplanned Events

To determine the environmental and social risk of an unplanned event, the following approach considers firstly the significance of the environmental impact of an event should it occur and secondly the likelihood of the event occurring.

A.3.1 Environmental and Social Significance of an Unplanned Event

The ESIA approach described in Section A.2 for determining the environmental and social impacts of planned activities was also used to determine the significance of impacts that may result from unplanned events.

A.3.2 Likelihood of an Unplanned Event

Combining the significance of the environmental/social impact with the 'likelihood of the unplanned event occurring' allows the level of environmental risk to be determined using the matrix presented in Table A-4. Note the potential for a beneficial impact significance has been removed as it is not expected that an unplanned event would lead to a beneficial environmental or social impact.

Table A-4: ESRA matrix for unplanned activities.

		Environmental significance of unplanned event*		
		(ii) Low	(iii) Moderate	(iv) High
Likelihood of event	Extremely remote	Low	Low	Low
	Remote	Low	Low	Medium
	Unlikely	Low	Medium	Medium
	Possible	Low	Medium	High
	Likely	Low	High	High
*Note the numbers associated with each significance level range from (ii) to (iv) in keeping with assignment in Table A-3.				

Low risk	• Negligible environmental and social risks. • Mitigation measures are industry standard and no project specific mitigation required. • No consultee concerns.
Medium risk	• Discernible environmental and social risks. • Consultee concerns can be adequately resolved. • Local public interest.
High risk	• Significant environmental and social risks. • Serious consultee concerns. • Media interest and reputational impacts.

APPENDIX B – SCOTLAND'S NATIONAL MARINE PLAN

B.1 Scotland's National Marine Plan (NMP)

Scotland's NMP (Marine Scotland, 2015) covers the management of both Scottish inshore waters (out to 12 nm) and offshore waters (12 to 200 nm). The aim of the NMP is to help ensure the sustainable development of the marine area through informing and guiding regulation, management, use and protection of the NMP areas. The activities associated with the proposed Andrew jacket and topsides Decommissioning Project have been assessed against each of the NMP objectives, details of which can found in Table B-1.

Table B-1: Scottish NMP Planning Principles.

Scotland's National Marine Plan Principle Number	Assessment Against Principle
GEN 1 General planning principle	
There is a presumption in favour of sustainable development and use of the marine environment when consistent with the policies and objectives of this Plan.	The proposed project is the decommissioning of existing platform. The EA assesses the impacts to the environment and to other sea users.
GEN 3 Social benefit	
Sustainable development and use which provides social benefits is encouraged when consistent with the objectives and policies of this Plan.	The EA considers impacts to other sea users in decision making e.g. fisheries and pipelines. Lifecycle of the project is assessed for environmental and economic implications.
GEN 4 Co-existence	
Proposals which enable coexistence with other development sectors and activities within the Scottish marine area are encouraged in planning and decision-making processes, when consistent with policies and objectives of this Plan.	BPEOC will ensure that any potential impacts on other sea users associated with the decommissioning operations will be kept to a minimum, and that liaison with other marine users will be undertaken prior to and during the decommissioning phase.
GEN 5 Climate change	
Marine planners and decision makers must act in the way best calculated to mitigate, and adapt to, climate change.	Vessel movements and therefore associated fuel use will be minimised.
GEN 9 Natural heritage	
Development and use of the marine environment must: a) Comply with legal requirements for protected areas and protected species. b) Not result in significant impact on the national status of Priority Marine Features. c) Protect and, where appropriate, enhance the health of the marine area.	Decommissioning activities will take account of existing environmental surveys in the area to minimise the impact to any PMFs.
GEN 10 Invasive non-native species	
Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made.	All vessels will follow IMO regulations. All vessels will be regulatory compliant, e.g. the International Convention for the Control and Management of Ships' Ballast Water and Sediments, and subject to audit prior to contract award.
GEN 11 Marine litter	
Developers, users and those accessing the marine environment must take measures to address marine litter where appropriate. Reduction of litter must be taken into account by decision makers.	Contractor management plans will be in place. All vessels will follow IMO requirements.
GEN 12 Water quality and resource	
Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive, MSFD or other related Directives apply.	Discharges to sea resulting from the proposed decommissioning activities were considered in the ENVID and not considered significant.

Scotland's National Marine Plan Principle Number	Assessment Against Principle
GEN 13 Noise	
Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.	There will be no piling or explosive use associated with the proposed activities. Vessel noise is not expected to significantly impact on the receptors in the area.
GEN 14 Air quality	
Development and use of the marine environment should not result in the deterioration of air quality and should not breach any statutory air quality limits.	Given the offshore location, impacts of vessel emissions are not considered significant and will be minimised through project planning.
GEN 21 Cumulative impacts	
Cumulative impacts affecting the ecosystem of the marine plan area should be addressed in decision making and plan implementation.	Cumulative impacts are considered in the EA and are considered proportionate to the size of the project. Cumulative impacts will be limited to impacts on climate change. Project planning will minimise the use of vessels.

B.2 Marine Strategy Framework Directive (MSFD)

The aim of the European Union's MSFD is to protect more effectively the marine environment across Europe. The MSFD outlines a transparent, legislative framework for an ecosystem-based approach to the management of human activities which supports the sustainable use of marine goods and services. The overarching goal of the Directive is to achieve 'Good Environmental Status' (GES) by 2020 across Europe's marine environment. Note following Brexit, the UK has made amendments to the Marine Strategy Regulations 2010, which transpose the requirements of the EU's Marine Strategy Framework Directive into domestic law, so that they continue to be effective now that the UK is no longer part of the EU.

The MSFD does not state a specific programme of measures that Member States should adopt to achieve GES, except for the establishment of MPAs. The MSFD does, however, outline 11 high level descriptors of GES in Annex I of the Directive. The activities associated with the proposed Andrew jacket and topsides Decommissioning Project have been assessed against each of the GES descriptors details of which can be found in Table B-2.

Table B-2: The proposed Andrew jacket and topsides Decommissioning Project assessed against the MSFD GES descriptors.

Marine Strategy Framework Directive: Good Environmental Status Objectives	Assessment Against Objective
GES 1	
Biological diversity is maintained and recovered where appropriate. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.	Linked to GEN 9. Environmental surveys undertaken in the project area.
GES 2	
Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.	Linked to GEN 10. All vessels will follow IMO regulations. All vessels will be regulatory compliant, e.g. the International Convention for the Control and Management of Ships' Ballast Water and Sediments, and subject to audit prior to contract award.
GES 3	
Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.	Linked to GEN 9. Environmental surveys undertaken in the project area.

Marine Strategy Framework Directive: Good Environmental Status Objectives	Assessment Against Objective
GES 4	
All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.	Linked to GEN 9. Environmental surveys undertaken in the project area.
GES 5	
Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters.	Linked to GEN 9. Environmental surveys undertaken in the project area.
GES 6	
Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.	Linked to GEN 9. Environmental surveys undertaken in the project area.
GES 7	
Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.	Linked to GEN 12. Seabed disturbance and potential impact on marine ecosystems assessed in EA.
GES 8	
Concentrations of contaminants are at levels not giving rise to pollution effects.	Linked to GEN 12. The proposed activities will not result in the noticeable deterioration of water quality in the project vicinity.
GES 9	
Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.	Linked to GEN 12. The proposed activities will not result in the noticeable deterioration of water quality in the project vicinity.
GES 10	
Properties and quantities of marine litter do not cause harm to the coastal and marine environment.	Linked to GEN 11. Contractor management plans will be in place. All vessels will follow IMO requirements.
GES 11	
Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.	Linked to GEN 13. The proposed activities will not result in a noticeable prolonged period of increased underwater noise in the project vicinity.

B.3 Oil and Gas Marine Planning Policies

Objectives and policies for the Oil and Gas sector should be read subject to those set out in the NMP and the MSFD. It is recognised that not all of the objectives can necessarily be achieved directly through the marine planning system, but they are considered important context for planning and decision making. The proposed project activities have been assessed against the oil and gas marine planning policies, details of which can be found in Table B-3.

Table B-3: Oil and Gas Marine Planning Policies.

Oil and Gas Marine Planning Policies	Assessment Against Policy
Oil & Gas 1	
The Scottish Government will work with BEIS, the new Oil and Gas Authority and the industry to maximise and prolong oil and gas exploration and production whilst ensuring that the level of environmental risks associated with these activities are regulated. Activity should be carried out using the principles of BAT and Best Environmental Practice (BEP). Consideration will be given to key environmental risks including the impacts of noise, oil and chemical contamination and habitat change.	BPEOC have used and will continue to use BAT as a key tool for the proposed Project. Environmental risks addressed/assessed where necessary in the EA.
Oil & Gas 2	
Where re-use of oil and gas infrastructure is not practicable, either as part of oil and gas activity or by other sectors such as carbon capture and storage, decommissioning must take place in line with standard practice, and as allowed by international obligations. Re-use or removal of decommissioned assets from the seabed will be fully supported where practicable and adhering to relevant regulatory process.	Infrastructure will be decommissioned in line with legislation in force at the time. The DP will be developed in consultation with the relevant statutory authorities and will ensure that potential effects on the environment resulting from the decommissioning of the jacket and topsides are considered and minimised.
Oil & Gas 3	
Supporting marine and coastal infrastructure for oil and gas developments, including for storage, should utilise the minimum space needed for activity and should take into account environmental and socio-economic constraints.	The proposed decommissioning Project is located over 150 km from the nearest coastline such that this principle is not relevant.
Oil & Gas 5	
Consenting and licensing authorities should have regard to the potential risks, both now and under future climates, to oil and gas operations in Scottish waters, and be satisfied that installations are appropriately sited and designed to take account of current and future conditions.	The Andrew jacket and topsides will be decommissioned in a way that there will not be a significant impact on the physical, biological and socio-economic environment. The DP will be developed in consultation with the relevant statutory authorities and will ensure that potential effects on the environment resulting from the decommissioning of the jacket and topsides are considered and minimised.
Oil & Gas 6	
Consenting and licensing authorities should be satisfied that adequate risk reduction measures are in place, and that operators should have sufficient emergency response and contingency strategies in place that are compatible with the National Contingency Plan (NCP) and the Offshore Safety Directive.	The proposed decommissioning Project has been subject to this EA process and potential environmental impacts have been assessed and appropriate mitigation measures developed. The BPEOC response strategy to an emergency will be developed with due reference to the NCP.