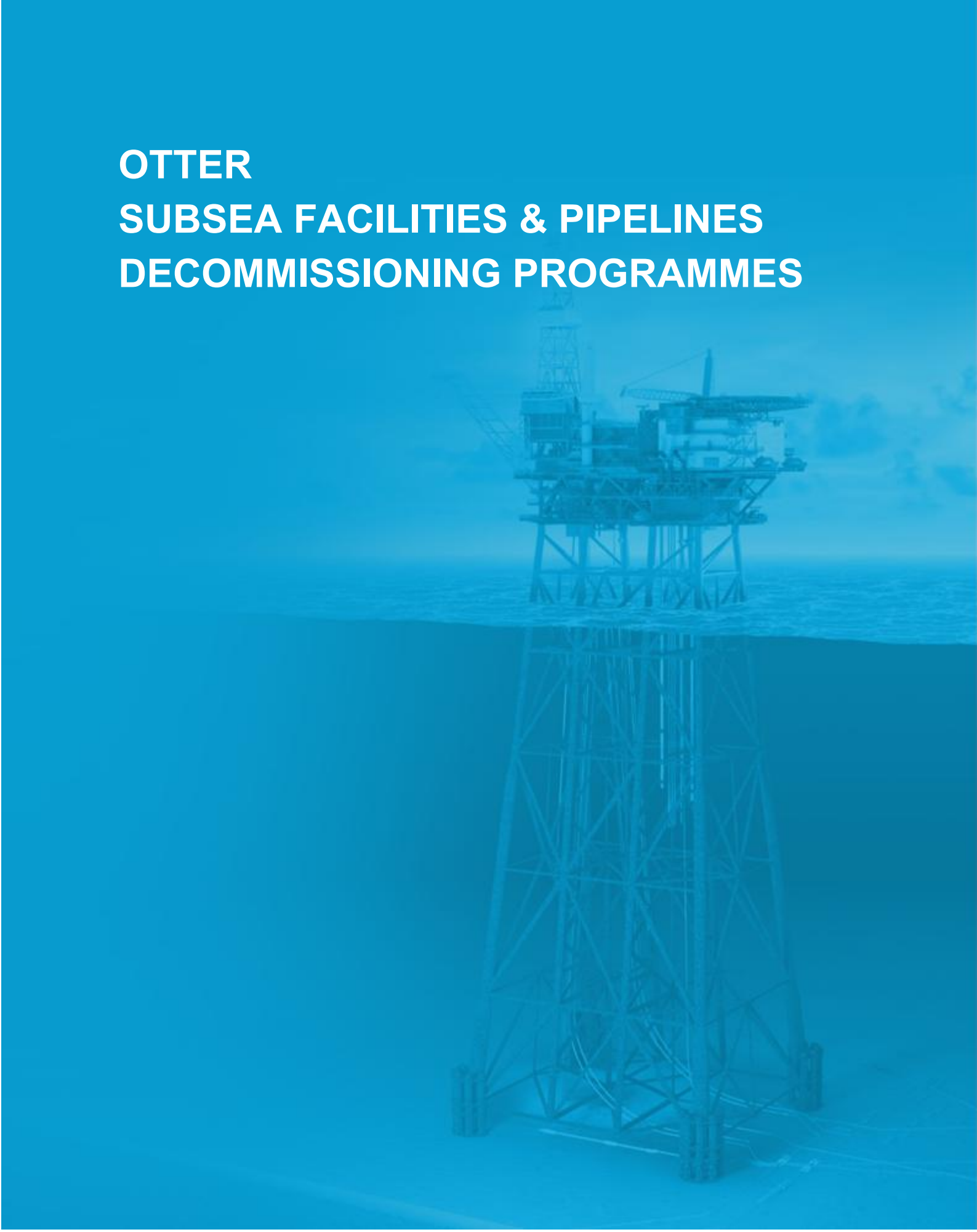
OTTER
SUBSEA FACILITIES & PIPELINES
DECOMMISSIONING PROGRAMMES



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Approvals

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Distribution List

Name	Company
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ABBREVIATIONS

Abbreviation	Explanation
AWMP	Active Waste Management Plan
BEIS	Department for Business, Energy, and Industrial Strategy
CA	Comparative Assessment
CO_2	Carbon dioxide
CGBS	Concrete Gravity Base Structure
CoP	Cessation of Production
CSV	Construction Support Vessel
DP	Decommissioning Programme
EA	Environmental Appraisal
ERL	Effect Range Low
EUNIS	European Nature Information System
HSE	Health and Safety Executive
INTOG	Innovation and Targeted Oil and Gas
LAT	Lowest Astronomical Tide
MEG	Monoethylene Glycol
MPP	Multiphase Pump
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Ireland Fish Producers' Organisation
NNS	Northern North Sea
NORM	Naturally Occurring Radioactive Material
NSTA	North Sea Transition Authority
ODU	Offshore Decommissioning Unit
OEUK (OGUK)	Offshore Energies UK
OPEX	Operational Expenditure
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
OWF	Offshore Wind Farm
P&A	Plug and Abandon
PL	Pipeline (as in pipeline number)
PLU	Umbilical (as in umbilical number)
PMF	Priority Marine Feature
ROVSV	Remotely Operated Vehicle Support Vessel
SAC	Special Area of Conservation
SSVS	Subsea Valve Skid
TAQA	TAQA Bratani Limited
Te	Tonnes
THC	Total Hydrocarbon Content
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
UTA	Umbilical Termination Assembly
WBS	Work Breakdown Structure
WHPS	Wellhead Protection Structure

1 Executive Summary

1.1 Combined Decommissioning Programme

This document contains three Decommissioning Programmes (DP) for the subsea pipelines and installations related to the Otter field.

There is a separate DP for each set of associated notices served under Section 29 of the Petroleum act 1998. The DPs are for:

1. The Otter field pipelines and umbilical (PL1868, PL1869 and PLU1870, PL1868A),
2. The Otter field pipelines and umbilicals (PL3132, PL4310, PL4438, PL4439, PL4440, PL4441, PL4442 and PL4443) and;
3. The Otter field subsea installations (Otter template, Otter manifold, Otter manifold protection structure, water injection wellhead protection structure, multi-phase pump station, multi-phase pump module, excluding template protection structure roof hatches, and water injection wellhead protection structure roof hatches).

The removal of the roof hatches from the Otter template protection structure and water injection wellhead protection structure in Q3 2024 is covered under a separate DP [1].

1.2 Requirement for Decommissioning Programmes

1.2.1 Installations

In accordance with the Petroleum Act 1998, as amended, TAQA, as operator of the Otter field, and on behalf of the Section 29 Notice Holders (see Table 1-2), is applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the Otter installations as detailed in Section 2.1 of this document. (See also Section 8 – Section 29 Holders' Letters of Support).

1.2.2 Pipelines

In accordance with the Petroleum Act 1998, as amended, TAQA, as operator of the Otter pipelines (see Table 1-3), and on behalf of the Section 29 Notice Holders (see Table 1-4), is applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the Otter pipelines as detailed in Section 2.2 of this document. (See also Section 8 – Section 29 Holders' Letters of Support).

In conjunction with public, stakeholder and regulatory consultation, the Decommissioning Programmes are submitted in compliance with national and international regulations and conventions, and OPRED guidance [2].

The estimated schedule for the decommissioning project spans a ten-year period. Cessation of production (CoP) of the Otter field occurred in Q2 2024 followed by the flushing campaign.

1.3 Introduction

The Otter field is a subsea tie-back to the Eider platform. The Otter field, Otter manifold, multiphase pump (MPP) and wells are located in the Northern North Sea (NNS) in Block 210/15a of the United Kingdom Continental Shelf (UKCS). The Otter pipelines cross block 211/16b and to a lesser extent blocks 211/16a, 211/16d and 210/20a. The Eider platform, which is located in block 211/16a provided subsea controls / utilities for the Otter field. The Otter manifold which supported production from the field is located approximately 119 km north-east of Shetland, in a water depth of around 182 m. The field was produced via the North Cormorant Platform, which is located in UKCS Block 211/21a approximately 32.5 km to the south southeast of the Otter manifold, and onwards through the Brent Pipeline System to the Sullom Voe Terminal in Shetland.

The Otter subsea facilities comprise:

- The Otter template.
- Three production wells: 210/15a-T1 (P2), 210/15a-T2 (P1) and 210/15a-T3 (P3) and a water injection well: 210/15a-T4 (I1). These four wells are drilled through the template structure.
- The Otter manifold, which is mounted on the template
- The Otter template protection structure, which protects the template, the four template wells, P1, P2, P3 and I1, and the manifold. The protection structure hatches were removed in 2024 and are covered under a separate DP [1].
- Water injection well 210/15a-T5 (I2) and the associated water injection wellhead protection structure. The protection structure hatches were removed in 2024 and are covered under a separate DP [1].
- The MPP station and the MPP module,
- A multiphase production pipeline connecting the Otter manifold to the hot tap tee adjacent to the Eider platform. The pipeline is trenched and buried.
- A water injection pipeline connecting the Otter manifold to a point adjacent to the Eider platform. The pipeline is trenched and buried.;
- The three Otter power cables and the control and chemical injection umbilical connecting the Eider platform to the MPP. The power cables and umbilical are trenched and buried.
- Jumpers connecting water injection well I2 and the MPP to the Otter manifold. These jumpers are surface laid.

The Otter field was discovered in 1977 and commenced production in 2002. Otter production was originally routed to the Eider platform located 21 km south-east of Otter. However, in 2018 a subsea production bypass was implemented to allow production to the North Cormorant platform, 32 km south-south-east of Otter, while the Eider platform was switched to ‘utility’ mode. Otter production was supported by water injection. This was originally supplied from the Eider platform. In 2017 a bypass around Eider was installed and Otter injection water was subsequently provided from the Tern platform. Export from Otter to the North Cormorant platform was supported by the MPP located adjacent to the Otter manifold.

The North Cormorant and Tern platforms and all the associated subsea installations, including Otter, ceased production in 2024, therefore all of the Otter facilities are out of use.

If derogation to leave the Eider platform footings in place is granted, the surface laid portions of the Otter pipelines, umbilicals and power cables will be removed to a point in close proximity to the platform footings. In this context, close proximity is within approximately 75 m of the platform footings. This 75 m distance represents a reasonable balance between the level of risk associated with removing

facilities, the degree of disturbance of the seabed, and the loss of amenity for other sea users. If derogation to leave footings in place is not granted, the surface laid sections of the pipelines and associated concrete mattresses will be removed, unless they are rock covered and any resulting snag risks will be remediated. Notwithstanding, final decommissioning solutions for the Otter pipelines and umbilical at Eider will be discussed and agreed with OPRED to align with decommissioning arrangements for the platforms and associated infrastructure.

Otter decommissioning activities may be integrated with the wider NNS decommissioning projects to maximise synergies, optimise use of resources, and minimise disturbance of the environment.

Following public, stakeholder and regulatory consultation, the Decommissioning Programmes are submitted in full compliance with OPRED guidance [2]. The Decommissioning Programmes explain the principles of the decommissioning activities and are supported by a Comparative Assessment (CA) [4] of decommissioning options, and an Environmental Appraisal (EA) [5].

1.4 Overview of Facilities Being Decommissioned

1.4.1 Installations

Table 1-1: Installations Being Decommissioned

Field(s)	Otter	**Production Type**	Oil
Water Depth	182 m	**UKCS Block**	210/15a, 210/20a, 210/16a, 211/16b, 211/16d
Distance to Median	38 km	**Distance to UK Coastline**	119 km
Subsea Installations			
Number		**Type**	
1		Otter Template	
1		Otter Manifold	
1		Otter Template Protection Structure Note 1	
1		Water Injection Wellhead Protection Structure Note 1	
1		MPP Station (including piles)	
1		Multiphase Pump Module	
Subsea Wells			
Number		**Type**	
3		Oil production	
2		Water injection	
Drill Cuttings Pile (s)			
Number of Piles	N/A	**Total Estimated Volume (m^3)**	N/A

Note:
1. Excludes protection structures roof hatches (recovered under a separate DP [1]).

Table 1-2: Installation Section 29 Notice Holders		
Company	**Registration Number**	**Equity Interest (%)**
S29 Notice: 12.04.06.06/252C for Otter Installations		
TAQA Bratani Limited	05975475	80.996%
TAQA Bratani LNS Limited	06230540	19.004%
Dana Petroleum (BVUK) Limited	03337437	0
Fina Exploration Limited	00808167	0
Fina Petroleum Development Limited	00740632	0

1.4.2 Pipelines

Table 1-3: Pipelines Being Decommissioned	
Number of Pipeline(s) Details given in Table 2-2.	12

Table 1-4: Pipeline Section 29 Notice Holders		
Company	**Reg Number**	**Equity Interest (%)**
S29 Notice: 12.04.06.05/181C for PL1868, PL1868A, PL1869 and PLU1870		
TAQA Bratani Limited	05975475	100
TAQA Bratani LNS Limited	06230540	0
Dana Petroleum (BVUK) Limited	03337437	0
Fina Exploration Limited	00808167	0
Fina Petroleum Development Limited	00740632	0
S29 Notice: DECCMII-39-21100 for PL3132, PL4310, PL4438, PL4439, PL4440, PL4441, PL4442 and PL4443		
TAQA Bratani Limited	05975475	100
TAQA Bratani LNS Limited	06230540	0

Note:

1. PL1868B is the disused Eider riser that was previously connected to PL1868. It is not included in Table 1-4 above as the upper part is included in the Eider Jacket DP and the lower part will be included in the Eider Footings DP.
2. PL4310 includes the disused Eider riser previously connected to PL1869. This riser was then reused as part of PL3132, before being taken out of use and renumbered PL4310. The riser section of PL4310 does not form part of the scope of the Decommissioning Programmes described in this document, as the upper part of the riser is included in the Eider Jacket DP and the lower part will be included in the Eider Footings DP.

1.5 Summary of Proposed Decommissioning Programmes

The selected decommissioning options for the Otter facilities are listed in Table 1-5 below.

Table 1-5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason For Selection**
1. Subsea Installations	
Full Removal: All materials, structures and equipment that constitute Subsea Installations will be removed at end of field life. All recovered materials will be transported to shore for re-use, recycling, or disposal.	To leave a safe, clear seabed and in compliance with regulatory requirements.
2. Pipelines, Flowlines and Umbilicals	
All pipelines and umbilicals will be flushed to an appropriate standard. TAQA has assessed the likelihood of wax being present in the Otter production pipelines. The presence of wax is considered unlikely taking into account the fluid composition, operational history, process conditions and pipeline design. Environmental assessment considering the chemical composition and properties of the wax concluded that there is no significant risk to the marine environment in the unlikely event that wax is present. Further information on this assessment can be found in section 3.1.3 of the Otter EA [5].	
Flexible Flowlines and Umbilicals Trenched and Buried. *Leave in situ (minimal intervention):* Remove line ends and remediate snag risk. Surface laid sections of pipelines and umbilicals outside existing trench (including transitions) and not in close proximity[1] to the Eider jacket/substructure footings, will be removed together with protection features. Rock will be placed at the pipeline cut ends to remediate snag risks. Recovered pipeline ends will be returned to shore for reuse, recycling or appropriate treatment and disposal.	Comparatively assessed as preferred option. The flowlines and umbilicals are considered to be sufficiently trenched and buried. If following pre- decommissioning surveys, fishing critical spans are identified, the full length of the span will be remediated. Minimal seabed disturbance, lower energy use, reduced risk to personnel engaged in the activity.

[1] "Close proximity" is considered within approximately 75 m of the platform footings. Logical break points between portions left *in situ* and portions removed will be selected, e.g., pipeline crossings, etc. This option represents a reasonable balance between the level of risk associated with removing the facilities, the degree of disturbance of the seabed, the use of resources during decommissioning, and, following decommissioning, the loss of amenity for other sea users. If derogation to leave the jacket/sub-structure footings in place is not granted, all surface laid pipelines and umbilicals will be recovered and taken to shore for appropriate re-use, recycling, or disposal unless they are rock covered. The precise limit of "close proximity will be agreed with OPRED on a case by case basis for each pipeline and umbilical.

Table 1-5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason For Selection**
Uncertain Integrity and Concrete Coated Rigid Pipelines, Trenched and Buried. *Remove Ends & Remediate Snag Risk:* Surface laid sections of pipelines outside existing trench (including transitions) and not in close proximity[1] to the Eider platform footings, will be removed together with protection features. Rock will be placed at the pipeline cut ends to remediate snag risks. Recovered pipeline ends will be returned to shore for reuse, recycling or appropriate treatment and disposal. Limited sections of surface laid pipelines in close proximity[1] to the Eider sub-structure/jacket footings may be left in place, subject to derogation to leave the footings in place, and agreement with OPRED. If derogation to leave the jacket / sub-structure footings in place is not granted, the surface laid sections of pipelines will be recovered and taken to shore for appropriate re-use, recycling, or disposal.	Comparatively assessed as preferred option. These pipelines are considered to be sufficiently trenched and buried. If following pre- decommissioning surveys, fishing critical spans are identified, the full length of the span would be remediated. Minimal seabed disturbance, lower energy use, reduced risk to personnel engaged in the activity. Degradation will occur over a long period within seabed sediment, with no anticipated hazard to other users of the sea.

[1] "Close proximity" is considered within approximately 75 m of the platform footings. Logical break points between portions left in situ and portions removed will be selected, e.g., pipeline crossings, etc. This option represents a reasonable balance between the level of risk associated with removing the facilities, the degree of disturbance of the seabed, the use of resources during decommissioning, and, following decommissioning, the loss of amenity for other sea users. If derogation to leave the jacket/sub-structure footings in place is not granted, all surface laid pipelines and umbilicals will be recovered and taken to shore for appropriate re-use, recycling, or disposal unless they are rock covered. The precise limit of "close proximity will be agreed with OPRED on a case by case basis for each pipeline and umbilical.

Table 1-5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason For Selection**
Flexible Risers and Umbilical Risers, Rigid Risers, Spools and Jumpers, Protection and Stabilisation *Full Removal:* The upper sections of the Otter risers between the Eider platform topsides and the upper jacket cut at 127 m below LAT are included in the Eider Upper Jacket DP. The lower sections of the Otter risers between the upper jacket cut depth at -127 m LAT and respective riser bases will be included in the future Eider Jacket Footings DP. Most spools and jumpers are protected and/or stabilised by concrete mattresses, which will be removed prior to recovering spools and jumpers. The recovered items will be transported to shore for re-use, recycling, or disposal. Limited sections of spools in close proximity[1] to the Eider platform may be left in place, subject to derogation to leave the footings in place, and agreement with OPRED.	To leave a safe, clear seabed and in compliance with regulatory requirements.
Rock Cover *Leave in situ:* Rock will be placed at the cut ends of pipelines to mitigate snagging risk. Deposited rock covering any part of the pipeline will remain *in situ*.	This is the lowest risk, least seabed disturbance option. Rock placement to remediate snag risk from pipeline cut ends is estimated to be 1,600 Te. Rock placement to remediate future formation of mid-line spans and exposures is estimated to be 33,000 Te. An estimated 77,155 Te of deposited rocks will remain in place.

[1] "Close proximity" is considered within approximately 75 m of the platform footings. Logical break points between portions left *in situ* and portions removed will be selected, e.g., pipeline crossings, etc. This option represents a reasonable balance between the level of risk associated with removing the facilities, the degree of disturbance of the seabed, the use of resources during decommissioning, and, following decommissioning, the loss of amenity for other sea users. If derogation to leave the jacket/sub-structure footings in place is not granted, all surface laid pipelines and umbilicals will be recovered and taken to shore for appropriate re-use, recycling, or disposal unless they are rock covered. The precise limit of "close proximity will be agreed with OPRED on a case by case basis for each pipeline and umbilical.

Table 1-5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason For Selection**
Pipeline Crossings The Otter pipelines (PL1868, PL1869, PL3132), power cables (PL4438, PL4439, PL4440) and control and chemical injection umbilical (PLU1870) cross over the 3rd party owned Magnus to Sullom Voe Terminal pipeline (PL1762) c. 7 km from the Otter manifold at 7 locations. These crossings shall be left *in situ.*	The pipeline crossings are sufficiently buried with rock placement at each crossing location and align with their respective pipeline decommissioning option.
3. Wells	
Otter wells will be Plugged and Abandoned (P&A) using a Mobile Offshore Drilling Unit (MODU) or well servicing vessel in alignment with the TAQA 'Well Barrier Standard TUK-11-B-009', and with reference to Offshore Energies UK (OEUK) Well Decommissioning Guidelines [3] and other governing standards at the time of abandonment. If compliance with standards cannot be achieved, TAQA will adopt a risk-based approach in consultation with the relevant authorities. Xmas trees, flowbases, wellheads and the top section of the well conductors to a depth of at least 3m below seabed will be removed to shore for appropriate reuse, recycling, or disposal. Following removal of the wellhead and other infrastructure, the seabed will be surveyed for debris and depressions, etc., and any necessary remediation will be performed. It should be noted well decommissioning activities are outside the scope of this DP and any supporting documents. Well abandonment will be controlled by the Well Operations Notifications System (WONS). Any environmental impact of well abandonment will be addressed though permitting.	Meets TAQA standards and North Sea Transition Authority (NSTA) and Health and Safety Executive (HSE) regulatory requirements.
4. Drill Cuttings	
There are no drill cuttings piles in the scope of this DP as defined by the Oslo Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) 2006 [7][8].	

Table 1-5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason For Selection**
5. Interdependencies	
A number of pipelines, risers, and umbilicals associated with Otter production terminate at the Eider, North Cormorant and Tern platforms. Decommissioning of PL475, PL476 and PL1317 will be addressed in the future NNS Interconnecting Pipelines and Residual Subsea Infrastructure DP. PL475 terminates at the North Cormorant platform and PL476 and PL1317 both terminate at the Tern platform. Riser sections of PL475, PL476 and PL1317 will be addressed in the respective platform DPs. Decommissioning of the Otter risers and J tubes attached to the Eider jacket, and the pipelines and umbilicals on the seabed near the Eider platform will be managed in conjunction with Eider Platform Decommissioning Programmes. This will minimise risk, impacts on the environment and use of resources. While there is a drill cuttings pile at Eider, the core of the pile is on the opposite side of the platform to where the Otter pipelines and umbilical tie-in to the Eider platform and no disturbance to the cuttings pile is expected. However, given that the spatial distribution of seabed impacted by drill cuttings extends beyond the physical boundary of the cuttings pile itself, the potential for disturbance of this contaminated sediment – out with but proximate to the cuttings pile – as a result of the proposed decommissioning activities is addressed within the Otter EA [5]. The Eider cuttings pile itself will be assessed as part of the Eider platform footings future DP and derogation application and is outside of the Otter EA scope and the DPs that it supports. The upper sections of the risers and J tubes will be cut at -127m LAT and will be removed with the Eider upper jacket as described in the Eider Upper Jacket DP [6]. The lower sections of the Otter risers between the upper jacket cut depth at -127m LAT and respective riser bases will be included in the future Eider Jacket Footings DP. TAQA has communicated with NSTA regarding alternatives to decommissioning, such as re-use and repurposing, in accordance with Section 29 (2A) of the Petroleum Act 1998 (as amended).	

1.6 Field Locations Including Field Layouts and Adjacent Facilities

The location of the Otter field is shown in Figure 1-1. The facilities adjacent to Otter are shown in Figure 1-2 and listed in Table 1-6. Figure 1-3 shows the Otter facilities layout in more detail. The Otter field, Otter template, satellite well, MPP are located in UKCS Blocks 210/15a, the Otter pipelines cross block 211/16b and to a lesser extent blocks 211/16a, 211/16d and 210/20a. The Otter manifold is located approximately 119 km to the north-east of Shetland, in a water depth of approximately 182 m.

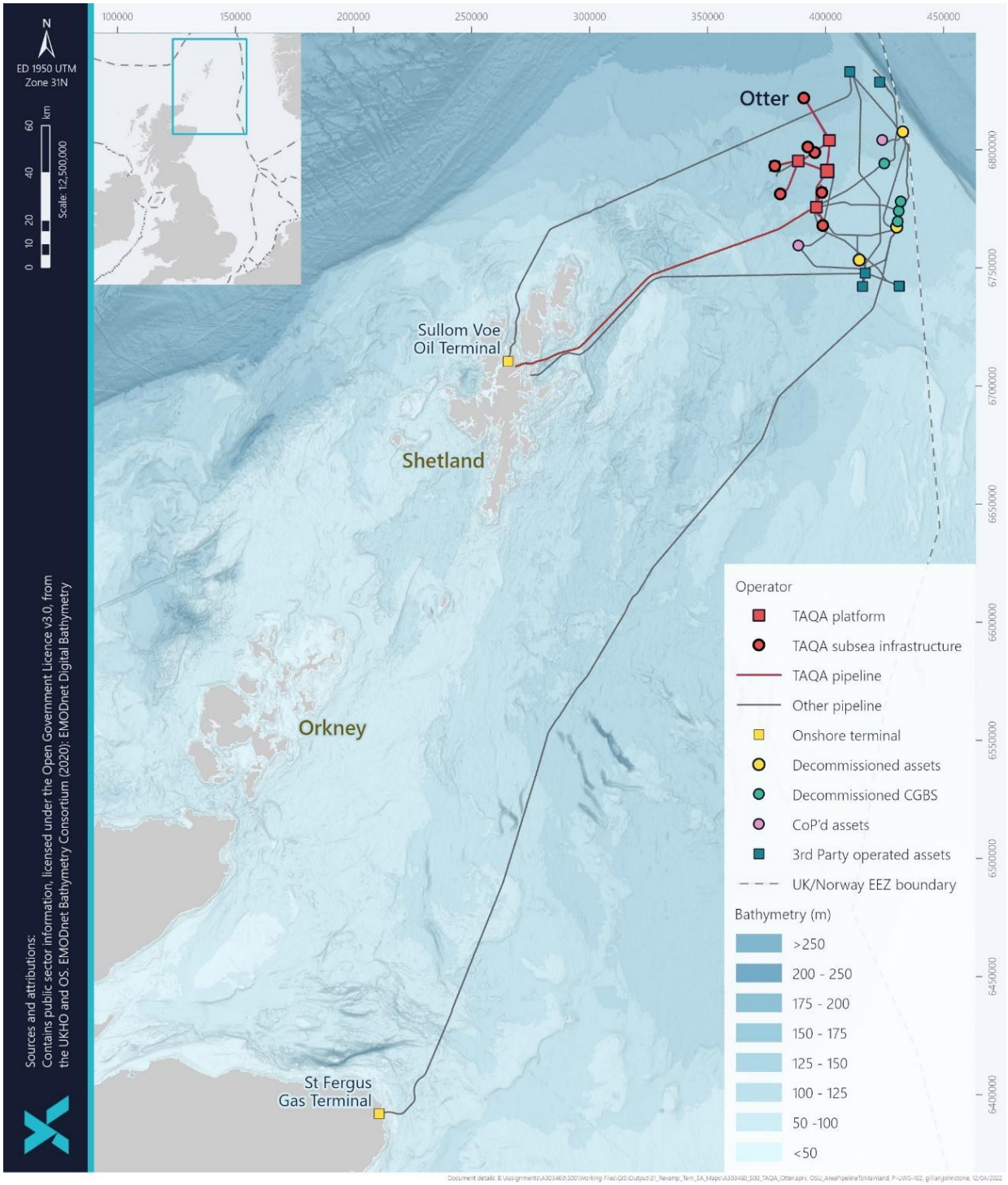

Figure 1-1: Otter Field Location within the UKCS

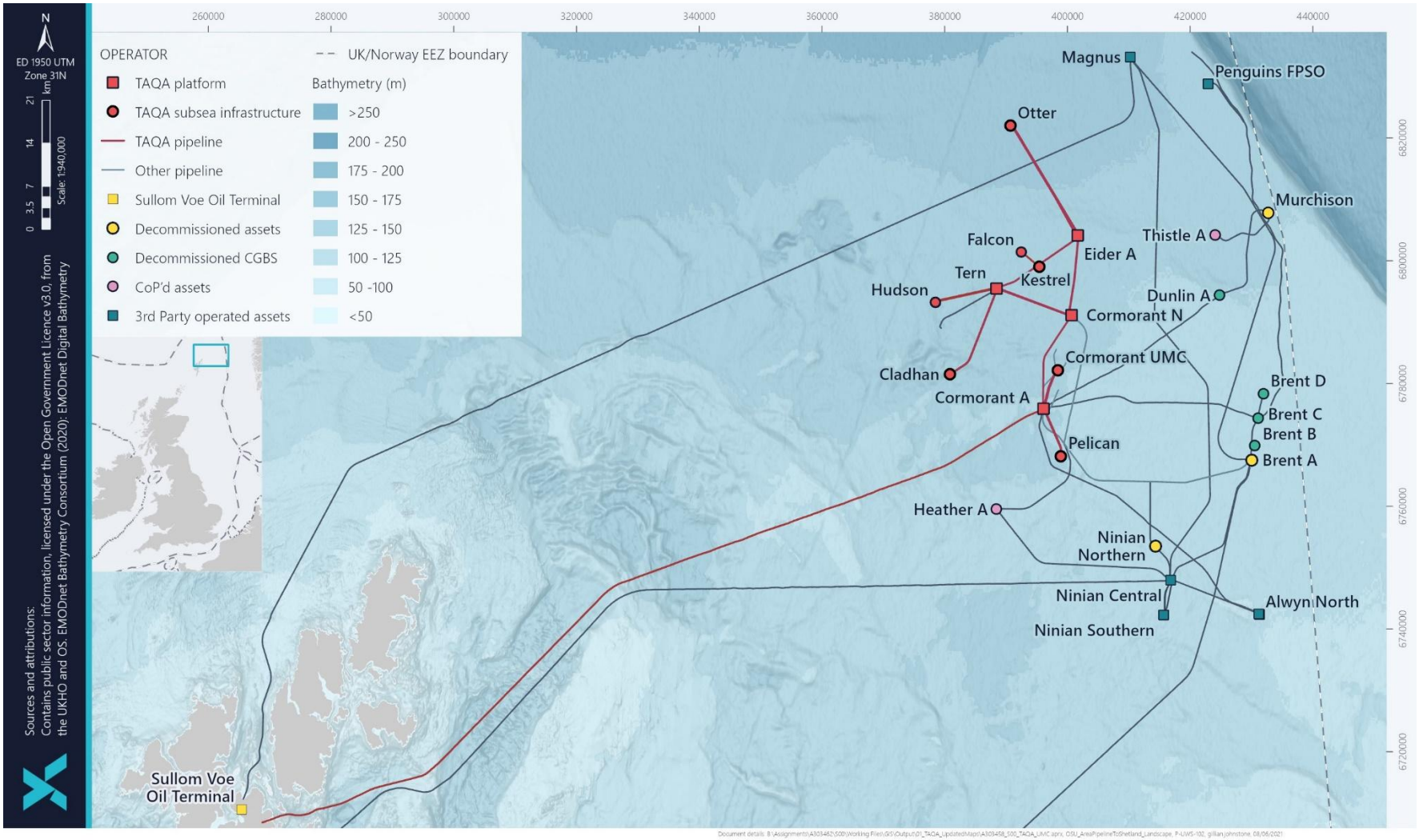

Figure 1-2: Otter Adjacent Facilities Layout

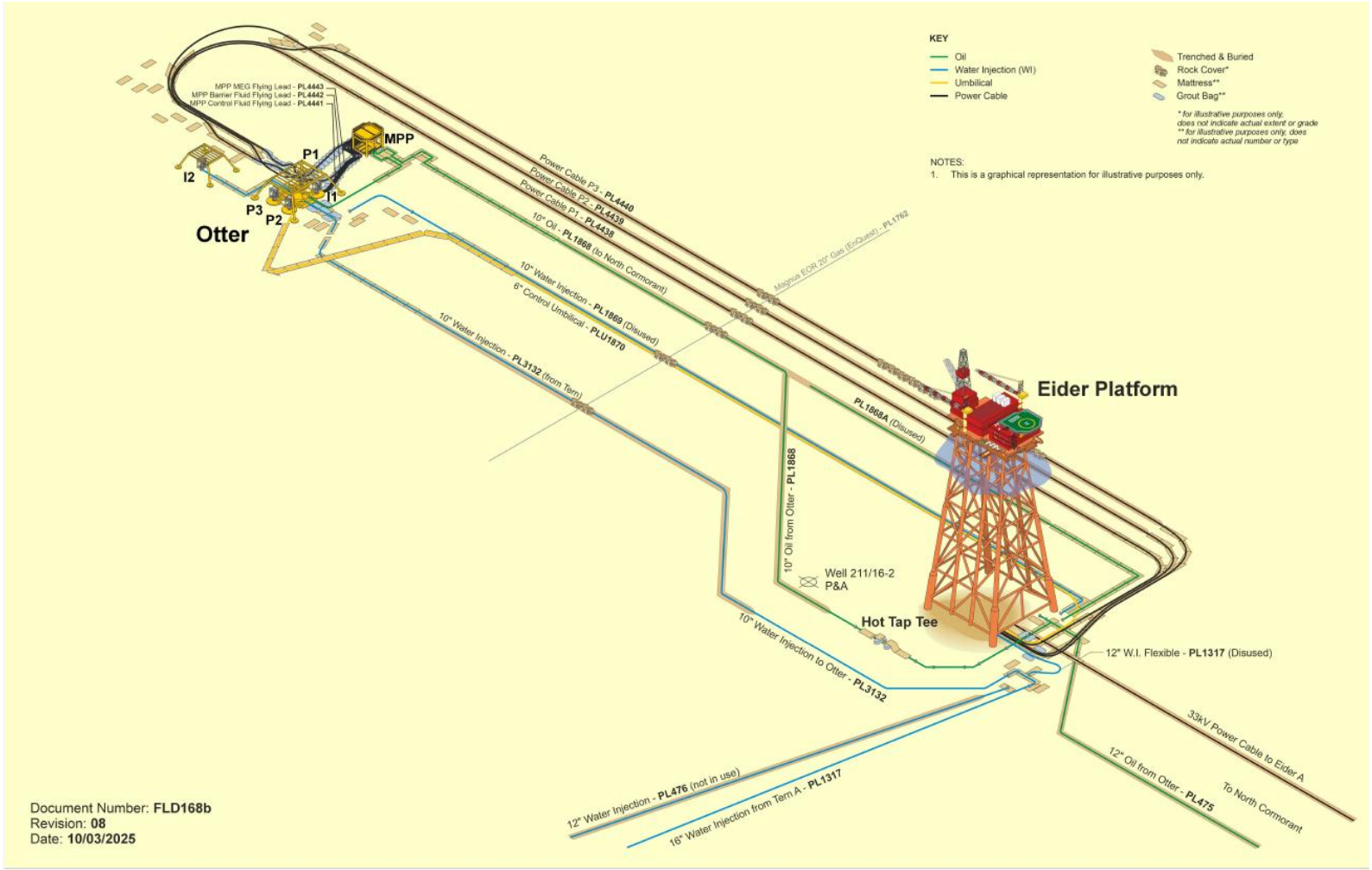

Figure 1-3: Otter Facilities Layout

Table 1-6: Adjacent Facilities					
Operator	**Name**	**Type**	**Distance/ Direction from Otter**	**Information**	**Status**
TAQA	Eider	Platform	21 km Southeast	Oil and Gas Development	Non-Operational
TAQA	Tern	Platform	26.9 km South	Oil and Gas Development	Non-Operational
TAQA	North Cormorant	Platform	32.5 km South-southeast	TAQA	Non-Operational
EnQuest Heather	Magnus PL1762	Pipeline crossing	6.9 km Southeast	Otter pipelines crossing over	Operational Pipeline
Impacts of Decommissioning Proposals on third party/adjacent facilities					
TAQA has been, and will continue to be, in contact with operators and owners of adjacent facilities. A number of the Otter pipelines cross Magnus pipeline PL1762, which connects the Magnus platform to the Sullom Voe Terminal. The decommissioning of these crossings will be managed in consultation with the Magnus Operator (EnQuest Heather Ltd). The connections to the TAQA operated non-operational Eider, Tern and North Cormorant platforms will be managed as part of the Otter decommissioning works.					

1.7 Industrial Implications

TAQA is developing the decommissioning contract and procurement strategy for these works, on behalf of the Section 29 Notice Holders. TAQA envisages that this strategy may include using incumbent contractors for recurring items and services covered by Master Services Agreements held by TAQA.

Notwithstanding, TAQA has, and will continue to

- Publish Otter decommissioning project information, including the project schedule, on the TAQA decommissioning website.
- Publish project information and contact details on the NSTA Pathfinder: Energy Pathfinder .
- Engage with the NSTA and the decommissioning supply chain on any relevant issues relating to the Otter decommissioning programmes and schedule.
- Where appropriate use the First Point Assessment Limited (FPAL) / SEQual databases for establishing tender lists.

2 Description of Items to be Decommissioned

2.1 Subsea Installations

Key information regarding the Otter facilities is presented in Table 2-1 and Table 2-2.

Table 2-1: Subsea Installations

Item	No.	Size (m) [LxWxH]	Weight (Te)	Location		Comments / Status
Otter Template	1	30.9 x 25.2 x 10.4	80	WGS84 Decimal	61.5141" N 00.9495" E	The Otter template is secured to seabed by four suction piles. The Manifold is located within the Otter template protection structure. The Template protection structure weight excludes roof hatches, which were removed in Q3 2024 [1]. The template protection structure is anchored to the seabed by four suction piles. These are separate to the template suction piles.
Otter Manifold	1	8.8 x 5.5	69			
Otter Template Protection Structure	1	30.9 x 25.2 x 10.5	69	WGS84 Decimal Minute	61°30.84' N 00°56.97' E	
Water Injection Wellhead Protection Structure	1	21.2 x 10.2 x 10.4	55	WGS84 Decimal	61.5142" N 00.9489" E	WHPS weight excludes roof hatches, which were removed in Q3 2024 [1]. The WHPS is secured to the seabed by four suction piles.
				WGS84 Decimal Minute	61°30.85' N 00°56.94 E	
Multiphase Pump Station	1	11.2 x 10.2 x 7.3	95	WGS84 Decimal	61.5142" N 00.9499" E	Weight of station structure includes weight of four steel foundation piles. Piles will be cut 3m below the seabed and the upper sections of the piles will be removed.
Multiphase Pump Module	1	4.3 x 3.3 x 5.7	42	WGS84 Decimal Minute	61°30.85' N 00°56.99' E	

2.2 Pipelines Including Stabilisation Features

Table 2-2: Pipeline / Flowline / Umbilical Information

Description	Pipeline Number	Diameter	Length (km)	Description of Component Parts	Product Conveyed	From – To	Burial Status	Pipeline Status	Current Contents
Production Flowline	PL1868	13.32”	21.041	Steel	Hydrocarbons	Otter Manifold – Production tie-in Tee (PL475)	Trenched and buried	Out of use	Seawater
Production Flowline	PL1868A[1]	13.32”	6.171	Steel	Hydrocarbons	Sealed Pipeline End at Mid-line – Sealed Spool Flange at Eider	Trenched and buried	Out of use	Treated seawater
Water Injection Pipeline	PL1869	10.95”	20.135	Steel	Water	Sealed Spool Flange at Eider – Sealed Pipeline End at Otter	Trenched and buried	Out of use	Treated seawater
Control and Chemical Injection Umbilical	PLU1870	6.38”	21.380	Umbilical	Chemicals	Cut Point A – Disconnected Flange Adjacent to Otter Manifold	Trenched and buried	Out of use	Hydraulic fluid, MEG
Water Injection Pipeline	PL3132	10.95”	20.813	Steel	Water	Water Injection Delivery Tee – Otter Manifold	Trenched and buried	Out of use	Seawater

[1] PL1868B, the riser that previously formed part of PL1868 is outside the scope of this DP. The portion of PL1868B attached to the Eider upper jacket is addressed in the Eider Upper Jacket DP [6]. The portion of PL1868B attached to Eider jacket footings will be addressed in the future Eider footings DP.

Table 2-2: Pipeline / Flowline / Umbilical Information									
Description	**Pipeline Number**	**Diameter**	**Length (km)**	**Description of Component Parts**	**Product Conveyed**	**From – To**	**Burial Status**	**Pipeline Status**	**Current Contents**
Water Injection Pipeline spool	PL4310[2] (Formerly part of PL1869)	10.95”	0.279	Steel	Water	Cut Point A – Cut Point F	Surface laid	Out of use	Treated seawater
Power Cable #1	PL4438[3]	3.56”	21.650	Power Cable	Power	Cut Point A – Disconnected Flange Adjacent to Otter Multiphase Pump	Trenched and buried	Out of use	N/A Power Cable
Power Cable #2	PL4439[3]	3.56”	21.650	Power Cable	Power	Cut Point A – Disconnected Flange Adjacent to Otter Multiphase Pump	Trenched and buried	Out of use	N/A Power Cable
Power Cable #3	PL4440[3]	3.56”	21.600	Power Cable	Power	Cut Point A – Connector (Termination)	Trenched and buried	Out of use	N/A Power Cable

[2] PL4310 extends the riser base flange to the Eider platform topsides. Decommissioning of the riser portion of PL4310 attached to the Eider upper jacket is addressed in the Eider Upper Jacket DP [6]. The riser portion of PL4310 attached to Eider jacket footings will be addressed in the future Eider Footings DP.
[3] Power cables PL4438, PL4439 and PL4440 extend beyond the base of the Eider platform to the platform topsides. The portions of these power cables attached to the Eider upper jacket are addressed in the Eider Upper Jacket DP [6]. The portions of these power cables attached to platform footings will be addressed in the future Eider footings DP.

Table 2-2: Pipeline / Flowline / Umbilical Information									
Description	**Pipeline Number**	**Diameter**	**Length (km)**	**Description of Component Parts**	**Product Conveyed**	**From – To**	**Burial Status**	**Pipeline Status**	**Current Contents**
Multiphase Pump Control Fluid Flying Lead	PL4441	1.14”	0.06	Umbilical	Control fluid	Otter Manifold Umbilical Termination Assembly (UTA) – Multiphase Pump	Surface laid	Out of use	Control Fluid
Multiphase Pump Barrier Fluid Flying Lead	PL4442	1.3”	0.062	Umbilical	Barrier fluid	Otter Manifold UTA – Multiphase Pump	Surface laid	Out of use	Barrier Fluid
Multiphase Pump MEG Flying Lead	PL4443	2.17”	0.063	Umbilical	MEG	Otter Manifold UTA – Multiphase Pump	Surface laid	Out of use	MEG

Table 2-3: Subsea Pipeline / Flowline / Umbilical Stabilisation Features				
Stabilisation Feature	**Total Number**	**Weight (Te)**	**Locations**	**Exposed/Buried/Condition**
Concrete Mattresses	239	1,549	PL1868	Exposed
Grout Bags	2,450	61	PL1868	Exposed
Concrete Block Support	8	338	PL1868	Exposed
Grout Bags	120	3	PL1868	Exposed
Grout Bags	120	3	PL1868, PL1869, PL3132	Exposed
Concrete Mattresses	117	758	PL1868A	Exposed

Table 2-3: Subsea Pipeline / Flowline / Umbilical Stabilisation Features				
Stabilisation Feature	**Total Number**	**Weight (Te)**	**Locations**	**Exposed/Buried/Condition**
Grout Bags	327	8	PL1868A	Exposed
Concrete Mattresses	85	551	PL1869	Exposed
Grout Bags	90	5	PL1869	Exposed
Concrete Block Support	8	338	PL1869	Exposed
Concrete Mattresses	145	940	PLU1870	Exposed
Grout Bags	264	7	PLU1870	Exposed
Grout Bags	60	2	PLU1870	Exposed
Concrete Mattresses	60	389	PL3132	Exposed
Grout Bags	3,628	91	PL3132	Exposed
Concrete Block Support	2	85	PL3132	Exposed
Concrete Mattresses	27	175	PL4438	Exposed
Grout Bags	250	6	PL4438	Exposed
Grout Bags	120	3	PL4438, PL4439	Exposed
Concrete Mattresses	41	266	PL4439	Exposed
Grout Bags	250	6	PL4439	Exposed
Concrete Mattresses	62	402	Power cable (PL4440)	Exposed
Grout Bags	117	3	Power cable (PL4440)	Exposed
Concrete Mattresses	1	7	Power Cable (PL4441)	Exposed
Grout Bags	117	3	Power Cable (PL4441)	Exposed
Concrete Mattresses	1	7	Power Cable (PL4442)	Exposed

Table 2-3: Subsea Pipeline / Flowline / Umbilical Stabilisation Features				
Stabilisation Feature	**Total Number**	**Weight (Te)**	**Locations**	**Exposed/Buried/Condition**
Grout Bags	117	3	Power Cable (PL4442)	Exposed
Concrete Mattresses	1	7	Power Cable (PL4443)	Exposed
Grout Bags	117	3	Power Cable (PL4443)	Exposed
Rock Cover	-	34,642	PL1868 - rock cover along length of pipeline and at Magnus pipeline crossing	Exposed
Rock Cover	-	2,670	PL1869 - rock cover at pipeline crossing and one location along pipeline between Otter manifold and Eider platform.	Exposed
Rock Cover	-	1,066	PLU1870 – rock cover at pipeline crossing.	Exposed
Rock Cover	-	3,000	PL3132 – rock cover to remediate pipeline exposure sections, and at 17 areas of span	Exposed
Rock Cover	-	2,042	PL4438 – rock cover at 6 locations between Otter manifold and Eider platform, and at pipeline crossing.	Exposed
Rock Cover	-	2,327	PL4439 – rock cover at 9 locations between Otter manifold and Eider platform, and at pipeline crossing.	Exposed
Rock Cover	-	31,408	PL4440 – rock cover at 176 locations between Otter manifold and Eider platform, and at pipeline crossing.	Exposed

Table 2-3: Subsea Pipeline / Flowline / Umbilical Stabilisation Features				
Stabilisation Feature	**Total Number**	**Weight (Te)**	**Locations**	**Exposed/Buried/Condition**
Each grout bags weighs 25 kg with exception to the grout bags located at PL1869 which weigh 50kg each. Each mattress weighs 6.5 Te. The total quantities of pipeline stabilisation features are: Mattresses: Total number = 779 Total weight = 5,051 Te Grout Bags: Total number = 8,147 Total weight = 207 Te Concrete Block Support: Total number = 18 Total weight = 761 Te Rock Cover: Total weight = 77,155 Te				

2.2.1 Pipeline and Umbilical Risers

The Otter pipelines and umbilical in the scope of the DPs in this document terminate at the Eider platform:

- PL1868A 10" oil production flowline
- PL1869 10" water injection flowline
- PLU1870 control and chemical injection Umbilical
- PL4438 power cable
- PL4439 power cable
- PL4440 power cable

The 10" production riser PL1868 (later renumbered as PL1868A) was installed in J-tube No 5. The 10" water injection riser PL1869 (later renumbered as PL3132 and renumbered again as PL4310) was installed in J-tube No 4. The three power cable risers PL4438, PL4439, and PL4440 were installed in J-tube No 6 and the control and chemical injection umbilical riser PLU1870 was installed in J-tube No 7.

The upper sections of the Otter risers and J tubes will be cut at -127m LAT and will be removed with the Eider upper jacket. These riser sections form part of the scope of the Eider Upper Jacket DP [6]. The lower sections of the Otter risers between the Upper Jacket cut depth at -127m LAT and the respective riser bases will form part of the scope of the future Eider Footings DP.

2.3 Wells

Table 2-4 lists the well information for the five Otter wells. The well category is evaluated in accordance with OEUK Well Decommissioning Guidelines [3]. Well decommissioning operations will be conducted under the Well Operations Notifications Scheme (WONS) and supported by appropriate regulatory applications and submissions.

Table 2-4: Well Information

Subsea Wells	Designation	Status	OEUK Well Category
210/15a-T1 (P2)	Oil Producer	Shut-In	SS 3-0-3
210/15a-T2 (P1)	Oil Producer	Shut-In	SS 3-0-3
210/15a-T3 (P3)	Oil Producer	Shut-In	SS 4-0-3
210/15a-T4 (I1)	Water Injector	Shut-In	SS 3-0-3
210/15a-T5 (I2)	Water Injector	Shut-In	SS 2-0-3

2.4 Drill Cuttings Piles

There are no drill cuttings piles in the scope of this DP.
There are, however, drill cuttings accumulations around the Otter template. These do not meet criteria that would classify them as drill cuttings piles. Further details on the cuttings accumulations in the Otter area and analysis results can be found in the Otter EA [5].

There is a cuttings pile at the Eider platform. This has an area of 15,891 m^2 with an estimated volume of 11,267 m^3 and a maximum height of 3.5 m. The core of the pile is at the opposite side of the platform footings (north) from the Otter pipelines and umbilical tie-in location (south). There is no direct

interaction with the Eider cuttings pile during Otter pipelines and umbilical decommissioning activities; nevertheless the impact of seabed disturbance in the contaminated sediment around the Eider cuttings pile due to these proposed activities is reviewed in the Otter EA [5]. A full assessment of the Eider cuttings pile is outside of the Otter EA scope and the DPs that it supports and will be conducted in a future DP and derogation application for the Eider platform footings.

2.5 Inventory Estimates

The estimated material inventories for Otter are presented in Table 2-5, Table 2-6 and in Figure 2-1. The inventories are described in section 2.5 of the Otter EA [5].

A focused review of the inventories of materials will be conducted during the detailed engineering phase of decommissioning.

Table 2-5: Otter Subsea Installations Inventory

Material	Weight (Te)	% of Total
Ferrous metals (all grades)	410	100
Non-ferrous metals (aluminium alloys)	0	0
Concrete	0	0
Hazardous – Naturally Occurring Radioactive Material (NORM)	0	0
Hazardous – Residual fluids	0	0
Total	410 Note 1	100

Note:

1. Inventory weight excludes weights of the roof hatches removed from the Otter template protection structure and water injection wellhead protection structure. These hatches are covered by a separate DP [1].

Table 2-6: Otter Pipelines and Stabilisation Materials Inventory		
Material	**Weight (Te)**	**% of Total**
Ferrous (all grades)	9,300	54.6
Non-ferrous metals (copper, aluminium alloys)	35	0.2
Plastics	1,670	9.8
Concrete (mattresses, grout bags, grouted support)	6,019	35.3
Other – Marine growth	6	<0.1
Other	0.4	<0.1
Hazardous – NORM	2	<0.1
Hazardous – Residual fluids	5	<0.1
Total	17,037 Note 1	100

Note:

1. Inventory weight includes all pipelines and stabilisation materials except rock. Total weight of rock is 77,155 Te.

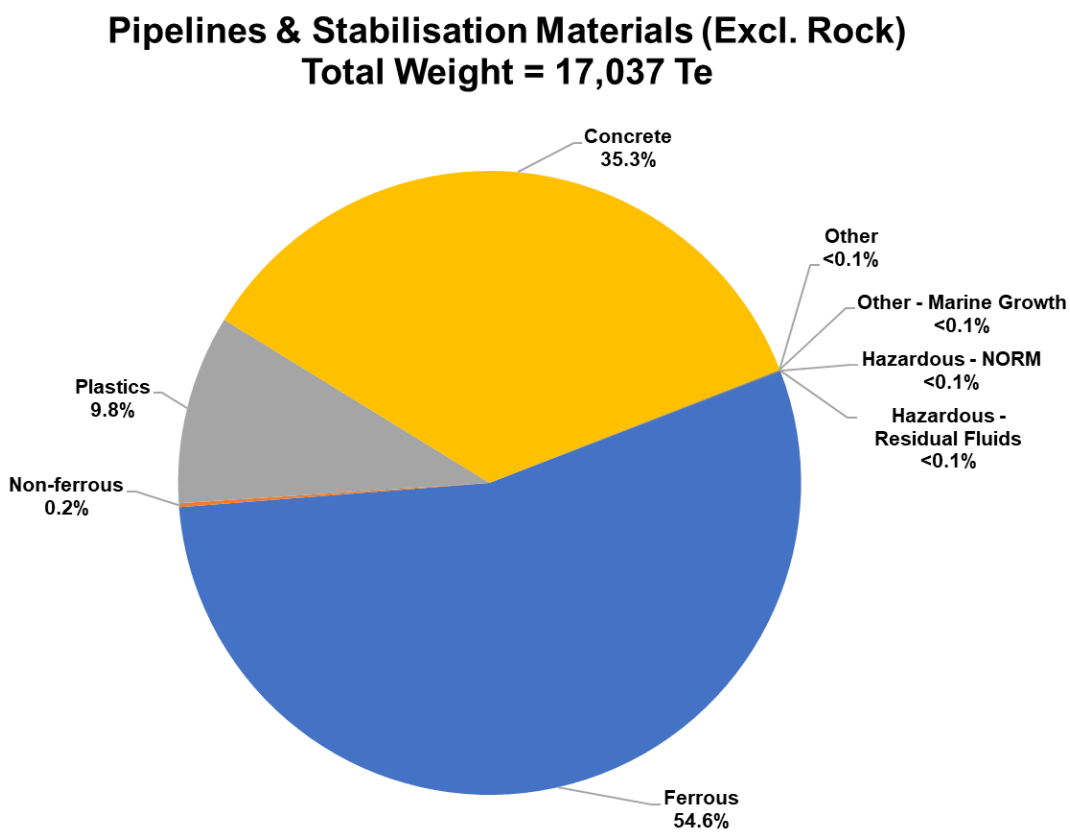

Figure 2-1: Pipelines and Stabilisation Materials Inventory

3 Removal and Disposal Methods

TAQA will implement an Active Waste Management Plan (AWMP) to identify and quantify available disposal options for waste materials from the decommissioning activities. The plan will detail the disposal route for recovered structures and equipment, and their materials and contents.

Recovered infrastructure will be returned to shore for dismantling and sorting before being transferred to suitably licenced waste facilities. It is the intent that, where possible, materials and equipment will be re-used or recycled. Materials management options will take account of the waste hierarchy, with reduction in volume of waste being the preferred option. OPRED will be advised once waste contractors have been selected.

3.1 Subsea Installations and Stabilisation Features

The options considered for the disposal of the subsea installations and stabilisation features and the selected disposal route are listed in Table 3-1.

Table 3-1: Subsea Installations and Stabilisation Features

Installation / Feature	No.	Option	Disposal Route
Otter Template	1	Full recovery	Return to shore for reuse or recycling or waste treatment as appropriate.
Otter Manifold	1	Full recovery	Return to shore for reuse or recycling or waste treatment as appropriate.
Otter Template Protection Structure	1	Full recovery	Return to shore for reuse or recycling or waste treatment as appropriate.
Water Injection Wellhead Protection Structure	1	Full recovery	Return to shore for reuse or recycling or waste treatment as appropriate.
Multiphase Pump Station (including piles to 3 m below seabed)	1	Full recovery	Piles will be recovered to approximately 3 m below seabed, which means approximately 10 m of each pile will be recovered and 10 m will be left in place. Recovered sections will be returned to shore for reuse or recycling or waste treatment as appropriate.
Multiphase Pump Module	1	Full recovery	Return to shore for reuse or recycling or waste treatment as appropriate.

3.2 Pipelines

Table 3-2: Pipeline Decommissioning Options		
Key to Options		
1 – Re-use	2A – Cut and Lift with De-burial	2B – Reverse Installation (S-lay or Reel) without De-burial
2C – Reverse Installation (S-lay or Reel) with De-burial	2D – Reverse Installation (Buoyancy)	2E – Cut, Float & Transport
3A – Rock Placement over entire line	3B – Retrench and Bury entire line	4A – Rock Placement over areas of Spans / Exposure / Shallow Burial
4B – Trench & Bury areas of Spans / Exposure / Shallow Burial	4C – Remove areas of Spans / Exposure / Shallow Burial	4D – Accelerated Decomposition
5 – Remove Ends & Remediate Snag Risk	6 – Leave As-is	

Note:

1. For full explanation of the pipeline decommissioning options, refer to the NNS Subsea Asset Comparative Assessment. [4]

Table 3-3: Pipeline or Pipeline Group Decommissioning Options Considered			
Pipeline or Group Note1	**Condition of Pipeline / Group**	**Whole or Part of Pipeline/Group**	**Decommissioning. Options Considered**
Group 3: PLU1870, PL4438, PL4439, PL4440.	Flexible flowlines and umbilicals, trenched and buried with areas of rock cover.	Whole umbilical and power cable	2A, 4A, 4B, 4C, 5
Group 12: PL1868, PL1868A, PL1869, PL3132, PL4310, PL4441, PL4442, PL4443.	Spools and jumpers, surface laid.	Whole group	Full removal Note 2
Group 18 Note1: PL1868, PL1868A, PL1869, PL3132.	Uncertain integrity and concrete coated rigid pipelines, trenched and buried.	Whole Pipelines	2A, 4A, 4B, 4C, 5

Note:

1. Different components of pipelines may fall into more than one CA group. For example, surface laid spools may be in one group while the main length of the pipeline may be buried, and therefore in another group.
2. If derogation is granted to leave the platform footings in place, sections of surface laid pipelines in close proximity (within approximately 75 m) to the Eider jacket/substructure footings may be left in place, If derogation is not granted for the footings, then these surface laid portions will be removed.

3.2.1 Comparative Assessment Method

TAQA conducted a Comparative Assessment (CA) of the decommissioning options for the Otter facilities [4]. TAQA's strategy for the CA process is aligned with the OEUK Guidelines for Comparative Assessment in Decommissioning Programmes [9] and OPRED Guidance Notes for the Decommissioning of Offshore Oil & Gas Installations and Pipelines [2].

All infrastructure has been scoped into logical groups. All feasible decommissioning options for each of the infrastructure groups have been identified, assessed, ranked, and screened. This process used five criteria: Safety, Environment, Technical, Societal and Economic to compare the relative merits of each decommissioning option for each infrastructure group.

Table 3-4: Outcome of Comparative Assessment

Pipeline or Group	Recommended Option	Justification
Group 3: (PLU1870, PL4438, PL4439, PL4440)	5 - Remove Line Ends and Remediate Snag Risk	The CA outcome is a significant preference for Option 5. Option 5 is preferred over other options against the Safety, Environment and Technical criteria. It is less preferred against the Societal criterion, however this does not offset the preference against the other criteria. If the Economic criterion is included, the preference for Option 5 remains and hence Option 5 is the recommended decommissioning option for Group 3.
Group 18: (PL1868, PL1868A, PL1869, PL3132)	5 – Remove Ends and Remediate Snag Risk	The CA outcome shows that the preference for Option 5 (remove line ends only) is moderate. Option 5 is preferred against the Technical criterion and marginally less preferred (to Option 4B) against the Safety and Environmental criteria. Option 2A is preferred from a Societal perspective however, there remains a preference for Option 5 overall. Once the Economics criterion is included, the preference for Option 5 is strengthened and hence Option 5 is the emerging recommendation for Group 18.

Note:

1. Following completion of the comparative assessment, further work was undertaken that identified additional remediation may be required on these lines. As such, TAQA propose the following approach to assess the worst-case environmental impact for these pipelines: rock placement to remediate spans, exposures, and shallow burial < 20 m long and removal of spans, exposures, and shallow burial > 20 m long by cut and lift.
2. Group 12 pipelines (PL1868, PL1868A, PL1869, PL3132, PL4310, PL4441, PL4442, PL4443) were not subject to CA as the only option considered for these pipelines was complete removal.

3.3 Pipeline Stabilisation Features

Table 3-5: Pipeline Stabilisation Features Disposal Route

Stabilisation Features	Number	Option	Disposal Route
Concrete Mattresses	779	Full recovery at end of field life. (If practical difficulties are encountered, TAQA will consult with OPRED to agree an alternative approach).	Returned to shore for recycling or disposal to landfill.
Grout Bags	8,147	Full recovery at end of field life. (If practical difficulties are encountered, TAQA will consult with OPRED to agree an alternative approach).	Returned to shore for recycling or disposal to landfill.
Concrete Block Supports	18	Full recovery at end of field life. (If practical difficulties are encountered, TAQA will consult with OPRED to agree an alternative approach).	Returned to shore for recycling or disposal to landfill.
Rock Cover	77,155 Te	Decommission *in situ* ensuring overtrawlability.	Decommission *in situ.*

3.4 Wells

Table 3-6: Wells Decommissioning Options

The Otter wells, 210/15a-T1 (P2), 210/15a-T2 (P1), 210/15a-T3 (P3), 210/15a-T4 (I1) and 210/15a-T5 (I2) will be plugged and fully abandoned to phase 3 in alignment with OEUK Well Decommissioning Guidelines [3] .

Well decommissioning operations will be conducted under the WONS and supported by appropriate regulatory applications and submissions.

3.5 Waste Streams

Table 3-7: Materials and Waste Streams	
Materials	**Removal and Disposal Method**
Bulk Liquids	Otter pipeline flushing operations were completed in June 2024. The flushing operations were carried out by the Edda Sphynx Remotely Operated Vehicle Support Vessel (ROVSV) The pipelines and umbilicals were flushed to facilitate abandonment scopes utilising topsides facilities and vessels as required. The subsea production pipelines were flushed, and left water filled. Spools, jumpers, and cables were disconnected to allow for future decommissioning activities. Any discharges offshore were managed, and risk assessed under the existing permitting regime. Any effluent shipped to shore was treated and disposed of according to relevant regulations and guidance.
Marine Growth	Marine growth is only anticipated on the risers associated with Otter production and water injection pipelines at Eider platform. These risers will form part of the Eider upper jacket Decommissioning Programme scope. Some marine growth is anticipated on some of the other Otter equipment; If marine growth is present on any other pipeline or subsea equipment, it will be disposed of in accordance with relevant regulations and guidance, either offshore under marine licence, or onshore.
NORM	NORM is assumed to be present in the Otter facilities. Monitoring and sampling will be carried out to verify the presence of NORM. If it is identified, it will be contained and treated in accordance with relevant regulations and guidance.
Asbestos	No asbestos materials are anticipated. However, if asbestos containing materials are found they will be recovered to shore and disposed of appropriately in accordance with relevant regulations and guidance.
Wax	Wax is not anticipated. In the unlikely event that wax is present, it will be disposed of in accordance with relevant regulations and guidance, either offshore under marine licence or permit, or onshore.
Other Hazardous Materials	Any other hazardous materials will be disposed of in accordance with relevant regulations and guidance.
Onshore Dismantling Sites	The removal contractor will use appropriately licenced dismantling, treatment, recycling, and disposal sites. TAQA will ensure that the removal contractor and selected sites have proven abilities to manage waste streams throughout the deconstruction process. The AWMP will follow the “reduce, reuse, recycle” paradigm. OPRED will be informed once a suitable site(s) has been selected. TAQA will conduct assurance activities to confirm that the sites comply with applicable company standards and legislation.

Table 3-8: Inventory Disposition			
	Total Inventory Tonnage (Te)	Planned Tonnage to Shore (Te)	Planned Tonnage Left In Situ (Te)
Subsea Installations	410	397	13[1]
Pipelines / Umbilicals (Including Protection & Stabilisation Features)	17,037	6,390	10,647
Rock Cover	77,155	0	77,155

Note:

1. The weight of the MPP station piles left *in situ* is 13 Te. The steel piles will be cut 3m below seabed and the upper part recovered to shore for reuse or recycling or disposal as appropriate.

Total inventory weights noted are approximate and include all stabilisation features and rock cover materials. It is TAQA's intention to maximise re-use or recycling of recovered inventory.

4 Environmental Appraisal Overview

4.1 Environmental Sensitivities

The environmental sensitivities in the Otter field are summarised in Table 4-1 and are based on surveys undertaken in the vicinity of the Otter facilities between 2012 and 2020. The impacts of decommissioning operations on these sensitivities are listed in Table 4-2. Further details can be found in the supporting Otter EA [5].

Table 4-1: Environmental Sensitivities

Environmental Receptor	Main Feature
	There are no Nature Conservation Marine Protected areas (NCMPAs), Special Areas of Conservation (SACs) or Special Protection areas (SPAs) within 40 km of the Otter field infrastructure. The closest protected site is the Pobie Bank Reef SAC, approximately 96 km southwest of the Otter manifold. The seabed in the Otter infrastructure area is located within a wider area of 'subtidal sand and gravels', a seabed type designated as a Priority Marine Feature (PMF) in Scottish waters. Whilst this feature is found in the Otter Area, it is anticipated since this subtidal habitat is common throughout the North Sea. This PMF supports fish populations including internationally important commercial fisheries e.g., scallops, flatfish, sandeels, and are important nursery grounds for juvenile commercial fish species such as sandeels, flatfish, bass, skates, rays, and sharks. The following fish species are listed as PMFs and are present around the Otter Area: ling, anglerfish, and cod. Additionally, cod is an OSPAR listed threatened and/or declining species.
Conservation Interests	Numerous depressions, or pockmarks, were identified during the Otter surveys [5] which could potentially be classified as '*Submarine structures made by leaking gases*' (Annex I Habitat). The lack of Methane-Derived Authigenic Carbonate (MDAC) present in the pockmarks across the Otter Area indicates that Annex I '*Submarine structures caused by leaking gases'* are not present [5]. Ocean quahog is listed on the OSPAR list of threatened and/or declining species and ocean quahog habitats are designated as PMFs. No ocean quahog individuals were observed in the vicinity of the Otter manifold or along the Otter to Eider pipeline survey route [5]. Ocean quahog individuals were identified at the Eider platform but not in aggregations. The habitat *'Seapen and burrowing megafauna communities'* is also on the OSPAR list of threatened and/or declining habitats and species and is a PMF. Surveys identified evidence of this habitat along the Otter to Eider pipeline route with a large burrow density classified as 'frequent' on the top of the trenching pipeline mounds. These areas featuring frequent burrows could therefore be considered as the '*Seapen and burrowing megafauna communities*' habitat [5].

Table 4-1: Environmental Sensitivities	
Environmental Receptor	**Main Feature**
Seabed	The water depth across the Otter Area ranges from 180.7 – 191.8 m below Lowest Astronomical Tide (LAT). The seabed deepens very gently towards the northwest with a gradient of <1º throughout. In the southern region of the Otter Area, the mean wave height ranges from 2.11 - 2.40 m whilst in the north it ranges from 2.41 - 3.30 m. Wave energy is classified as 'low'. The mean residual current through the Otter Area is approximately 0.05 to 0.1 m/s to the south or east. The physical seabed characteristics recorded during the surveys show a high degree of uniformity across the Otter Area. Sediments across the Otter Area comprised silty, shelly sand with occasional pebbles and cobbles, while within Eider platform survey area sediments were dominated by sands. Survey identified numerous depressions across the Otter Area, all less than one metre deep. Under the European Nature Information System (EUNIS) habitat classification, the most widespread seabed type across the Otter Area is predicted to be MD52 '*Atlantic offshore circalittoral sand*' with areas of MD62 '*Atlantic offshore circalittoral mud*' and MD32: '*Atlantic offshore circalittoral coarse sediment'*. This habitat type falls within the broad habitat PMF "*Offshore subtidal sands and gravels*" [5]. Surveys were undertaken of the Eider cuttings pile to determine the chemical composition. Elevated concentrations of cadmium, chromium, copper, mercury, nickel, lead, and zinc were recorded across the cuttings pile with levels generally exceeding their OSPAR Effect Range Low (ERL) levels. A gradient of decreasing Total Hydrocarbon Content (THC) levels with distance from the cuttings pile, suggesting a point source of hydrocarbons most likely related to drilling discharges. THC levels recorded at most sample stations exceeded the OSPAR 'ecological effect' threshold. The sediment leachate analysis results indicated that both the oil loss to the water column and the persistence of hydrocarbons in the Eider cuttings pile fall below the relevant OSPAR threshold values and could generally be ascribed as typical for cuttings piles at North Sea installations [5]. There is evidence of cuttings deposits in the vicinity of the Otter wellheads, but sediment samples show that the sediments are of similar physico-chemical composition to those at background locations around this area of the NNS. The samples did not contain the levels of contaminants typically associated with cuttings piles or drilling muds and were therefore the deposits were not classified as cuttings piles [5].
Fish	The Otter Area is a spawning ground for cod, haddock, Norway pout, saithe and whiting. Cod is the only species with a high intensity spawning ground in the Otter Area while other species have a lower or undetermined spawning. The Otter Area also is a potential nursery ground for anglerfish, blue whiting, European hake, haddock, herring, ling, mackerel, spurdog, whiting and Norway pout. Blue whiting is the only species with a high intensity nursery ground in the Otter Area [5].

Table 4-1: Environmental Sensitivities	
Environmental Receptor	**Main Feature**
Commercial Fisheries and Shipping	The Otter Area is located in International Council for the Exploration of the Sea (ICES) rectangles 52F0, 51F0 and 51F1. This region is primarily targeted for demersal species, with a negligible contribution from shell fisheries. Fishing effort is dominated by trawl fishing gears. Annual fishery landings by weight and value in ICES rectangles 52F0, 51F0 and 51F1 are considered broadly comparable to other high-performing ICES rectangles in the UKCS. Shipping density in the Otter Area is very low or low. There are localised increases in vessel activity around surface installations including the Eider platform, due to the presence operation and maintenance vessels. Some decommissioning activity will also be taking place within an existing 500 m safety exclusion zone where vessels other than oil and gas vessels are not permitted. Any impact on fishing or shipping within the 500 m zone is therefore discounted.
Marine Mammals	Harbour porpoise, Atlantic white-sided dolphin, minke whale and white beaked dolphin are the most abundant marine mammal species recorded in the Otter Area. The harbour porpoise is the most frequently recorded cetacean, which is reflective of this being the most abundant and widely distributed cetacean species in the North Sea. Both grey and harbour seal densities are low in the Otter Area. The average number of both grey and harbour seals in the vicinity of the area is predicted to be low, between 0-1 per 25 km² [5].
Birds	In the NNS, the most numerous species present are northern fulmar, black-legged kittiwake, and common guillemot. The Otter Area is located within, or in the vicinity of, a wider area of aggregation for northern fulmar, sooty shearwater, European storm petrel , northern gannet, long-tail skua, great skua, black-legged kittiwake, great black-backed gull, common gull, lesser black-backed gull, herring gull, glaucous gull s, common guillemot, razorbill, little auk and Atlantic puffin. Seabird sensitivity to oil pollution in the Otter Area is considered low throughout most of the year and is medium for November through to February in Block 210/15; November to January in Block 211/16 and November and December, increasing to high for January in Block 210/20 [5].
Onshore Communities	Waste generated during decommissioning will be brought to shore and will be managed in line with TAQA's Waste Management Strategy and the Waste Hierarchy, as part of the project AWMP, using approved waste contractors and in liaison with the relevant Regulators. Preventing waste is ultimately the best option, achieved through reducing consumption and using resources more efficiently. However, this is followed by re-use and recycling of goods. If all re-use opportunities have been taken by TAQA, the next preferable option is for recycling of materials. Should NORM be encountered, TAQA will ensure the onshore site(s) are suitably licenced to accept the waste arising from the decommissioning of the subsea infrastructure. All waste will be managed in compliance with relevant waste legislation by a licenced and/or permitted waste management contractor. The selected contractor will be assessed for competence through due diligence and duty of care assurance activities.

Table 4-1: Environmental Sensitivities	
Environmental Receptor	**Main Feature**
Other Users of the sea	The majority of the Otter pipelines cross Magnus pipeline PL1762, connecting the Magnus Field to Sullom Voe. Blocks 210/15, 210/20 and 211/16 are not of interest to the Ministry of Defence (MoD) [5]. There are no planned or operating telecommunication cables in close vicinity (< 40 km) of the Otter Area. The nearest telecom cable is the Cantat 3 Faroese, located 77 km east northeast of the Otter manifold [5]. There are no planned or operating renewable energy sites in close vicinity (<40 km) of the Otter Area. The closest renewable energy site is Tidal farm, Bluemull Sound, located 137 km west southwest from the Otter manifold. The closest Offshore Wind Farm (OWF) licence area is the NE1 ScotWind area, which lies approximately 119 km south-southwest of the Otter Area. The Otter Area is partially within areas identified under the Innovation and Targeted Oil and Gas (INTOG) scheme which targets smaller-scale OWF developments designed to reduce to oil and gas platform emissions. The Otter manifold is located within INTOG area NE-b and approximately 2 km to the south of INTOG area NE-a. There are no wrecks within close vicinity of Otter manifold, as identified by the UK Hydrographic Office (UKHO). There are four non-dangerous wrecks located between 30 and 40 km from the Otter manifold [5].
Atmosphere	The cumulative emissions generated by the activities associated with the decommissioning of the Otter infrastructure is small in comparison to lifetime emissions. Table 4-2 presents an estimate of Otter decommissioning emissions.

4.2 Potential Environmental Impacts and their Management

The EA [5] process considered the potential for significant environmental effects as a result of the decommissioning activities described within these DPs. The appraisal did not identify any significant residual environmental impacts and predicted that any physical, biological, or socio-economic impacts during the decommissioning activities will be negligible and short term.

Table 4-2 details the potential environmental impacts and the management and mitigation measures that will be put in place to further reduce the potential for environmental impacts.

Table 4-2: Environmental Impacts and Management		
Activity	**Main Impacts**	**Management**
Vessel activities and removal to shore	Contribution to local air quality, UK cumulative emissions and global warming Estimated carbon dioxide equivalent (CO_{2e}) emissions from the selected decommissioning options are **38,209 Te** CO_2e equating to approximately 0.19% of total UKCS emissions (2023). New manufacture to replace recyclable materials decommissioned *in situ* represents the largest CO_2e contribution (**17,190 Te**). A significant proportion also originates from vessel activity associated with the decommissioning activities (**14,061 Te**).	Impacts from project activities have been assessed as short-term and negligible in the EA [5]. The following mitigation measures are proposed to further minimise impacts from vessel activities: • Minimisation of emissions from vessels and waste management as part of the contractor selection process. • Shipboard Energy Efficiency Management Plan (SEEMP) containing information regarding minimising fuel consumption e.g., economical speeds when operationally appropriate and engine maintenance. • Green dynamic positioning or economical speeds when appropriate. • Limiting the number of mobilisations or demobilisations. • Exploiting opportunities to incorporate post-decommissioning surveys as part of the wider NNS campaign. • Streamlining activities through planning to reduce the time that vessels will be required for decommissioning operations.

Table 4-2: Environmental Impacts and Management		
Activity	**Main Impacts**	**Management**
Subsea installation removal (including stabilisation materials) and removal of pipeline ends	Seabed disturbance impacts from excavation and removal of subsea installations, stabilisation materials and pipeline ends. Temporary impacts of removal activities: Total direct impact: **0.024 km²** Total indirect impact*: **0.048 km²** *Note that the footprint of indirect impact from sediment mobilisation represents double the direct impact area.	Impacts to the seabed from project activities have been assessed as short term and negligible in the EA [5]. The following mitigation measures are proposed to further minimise impacts from decommissioning subsea installations, pipelines, and stabilisation materials: • It is envisaged that all vessels undertaking the decommissioning and removal works will be dynamically positioned vessels. As a result, there will be no impact to the seabed due to anchoring. • All activities which may lead to seabed disturbance will be planned, managed, and implemented in such a way that disturbance is minimised. • Activities will be appropriately assessed and permitted under a Marine Licence. • A debris survey will be undertaken at the completion of the decommissioning activities. Any debris identified as a result of oil and gas activities will be recovered from the seabed where possible. • Clear seabed verification will ensure there is no residual risk to other sea users. Non-intrusive verification techniques will be considered in the first instance and in agreement with OPRED and fishing bodies. • Minimal disturbance of cuttings pile through the choice of decommissioning technology to avoid unnecessary spread of contamination.

Table 4-2: Environmental Impacts and Management		
Activity	**Main Impacts**	**Management**
Decommissioning of buried Pipelines and Umbilicals *in situ* (including remediation at pipeline ends)	Seabed disturbance impacts from placement of rock on pipeline ends. Snagging risk to fisheries from pipelines decommissioned *in situ*. Potential remediation of future formation of mid-line spans/exposures Degradation of the materials decommissioned *in situ* over time. There will be a **0.00078 km^2** area of direct permanent disturbance because of new rock placement (on pipeline ends and depressions). This increases to **0.022 km^2** when the potential remediation of future formation of mid-line spans/exposures is considered. Total indirect impact is **0.044 km^2**.	The following mitigation measures are proposed to minimise impacts: • Pre-decommissioning status surveys will be carried out to enable planning for the decommissioning activities and to inform the requirement for remediation activities. • All activities which may lead to seabed disturbance will be planned, managed, and implemented in such a way that disturbance is minimised. • All vessels undertaking the decommissioning and removal works will be dynamically positioned vessels. As a result, there will be no impact to the seabed due to anchoring. • Activities will be risk assessed and permitted under a Marine Licence. • Any exposures or cut pipeline ends will undergo rock placement to ensure they are over-trawlable to active fishing gears. • Any remedial rock armour will be placed to reduce unnecessary spreading of the rock footprint and ensure the minimum safe quantity of rock is used. • Any fishing critical spans will be remediated. • Clear seabed verification will ensure there is no residual risk to other sea users. Non-intrusive verification techniques will be considered in the first instance and in agreement with OPRED and fishing bodies. • TAQA will monitor and remediate where debris, seabed depressions or clay berms present a snag risk. Any debris identified as a result of oil and gas activities will be recovered from the seabed where possible. • Post-decommissioning monitoring will be undertaken at a frequency agreed with OPRED. • TAQA will make information available to the Hydrographic office and the U.K. Fisheries Offshore Oil & Gas Legacy Trust Fund Limited (FLTC) to update Admiralty charts and the FishSAFE system. • Ongoing consultation with fisheries representatives.

5 Interested Party Consultations

TAQA consulted a wide range of interested parties during the planning and preparation stages of the Northern North Sea Fields subsea Comparative Assessment (CA) process. Workshops and individual consultations with stakeholders were held to describe the CA process, to invite feedback and to understand stakeholders' particular interests and concerns regarding the impacts of decommissioning. Following this, a CA report [4] was published documenting the findings from the CA process.

The consultees included:

- Scottish Fishermen's Federation (SFF)
- Department for Business, Energy, and Industrial Strategy (BEIS)
- Health and Safety Executive (HSE)
- Joint Nature Conservation Committee (JNCC)
- Oil and Gas Authority (OGA)
- Fairfield
- BP
- CNRI
- North Sea Transition Authority (NSTA)
- Scottish Environment Protection Authority (SEPA)
- TAQA Bratani LNS Limited
- Shell
- OPRED Offshore Decommissioning Unit (ODU; Observer)

Furthermore, CA workshop invites were issued to Dana Petroleum, ExxonMobil, Neo Energy, ConocoPhillips, Norske Shell, Chrysaor, MOL Energy UK, ONE-Dyas, NFFO, NIFPO, Global Marine Systems and the Marine Directorate, but these organisations did not attend.

Given that Otter is one of the NNS subsea fields, the recommendations from this CA have been applied to Otter [4].

These draft Decommissioning Programmes are still to be considered by the stakeholders. Following completion of the formal Decommissioning Programme consultation process, TAQA will complete Table 5-1 with comments received from stakeholders, and the company's responses to those comments.

Table 5-1: Summary of UK Stakeholder Comments [HOLD 1]		
Stakeholder	**Comment**	**Response**
1. Informal Stakeholder Consultations		
2. Public		
3. Statutory Consultations		
The National Federation of Fishermen's Organisations (NFFO)		
Scottish Fishermen's Federation (SFF)		
Northern Ireland Fish Producers' Organisation (NIFPO)		
Global Marine Systems Limited (GMS)		
North Sea Transition Authority (NSTA)		

6 Project Management

6.1 Project Management and Verification

TAQA, on behalf of the Section 29 Notice Holders, has appointed a project management team to manage the planning and execution of the decommissioning programmes described in this document. The team will ensure that decommissioning is conducted in accordance with TAQA health, environmental and safety management principles, and relevant legislation. TAQA's management principles will govern operational controls, hazard identification and risk management. The work will be coordinated with due regard to interfaces with other operators' oil and gas assets and with other users of the sea.

TAQA will control and manage the progress of all permits, licences, authorisations, notices, consents, and consultations required. Any significant changes to the decommissioning programmes will be discussed and agreed with OPRED.

6.2 Post-decommissioning Debris Clearance and Verification

Clear seabed verification will be carried out after decommissioning to ensure there is no residual risk to other sea users. A post-decommissioning site survey will be carried out within a 500 m radius of the Otter subsea installations sites and along corridors 50 m either side of each pipeline route. Non-intrusive techniques will be considered in the first instance to identify any remaining debris or seabed obstructions. It is then TAQA's intention that if present these would be recovered/removed ensuring no oilfield-related debris that could interfere with future fishing operations remain.

If the above cannot be achieved and potential debris or obstructions do remain then mitigations would be discussed with OPRED and fishing representative bodies. Following consultation with OPRED, the use of trawl sweeps or other intrusive means could in this instance, be deployed to provide seabed clearance verification.

Following verification, TAQA will issue a statement of clearance to all relevant governmental departments and non-governmental organisations.

The post-decommissioning survey results will be notified to the UK Fisheries Offshore Oil and Gas Legacy Trust Fund Ltd to allow appropriate modification to the FishSAFE system, and to the United Kingdom Hydrographic Office to allow appropriate modification of Admiralty charts and notices to mariners.

6.3 Schedule

The main milestones in the Otter decommissioning process are anticipated to be:

- Cessation of Production (CoP): Q2 2024
- Well plug and abandon window: 2025 – 2029
- Subsea installation & pipeline removal: 2027 – 2030
- Post removal survey: 2028 – 2032

A proposed schedule for the decommissioning of Otter subsea infrastructure is provided in Figure 6-1. The commencement of any execution activities is subject to commercial agreements and contracts.

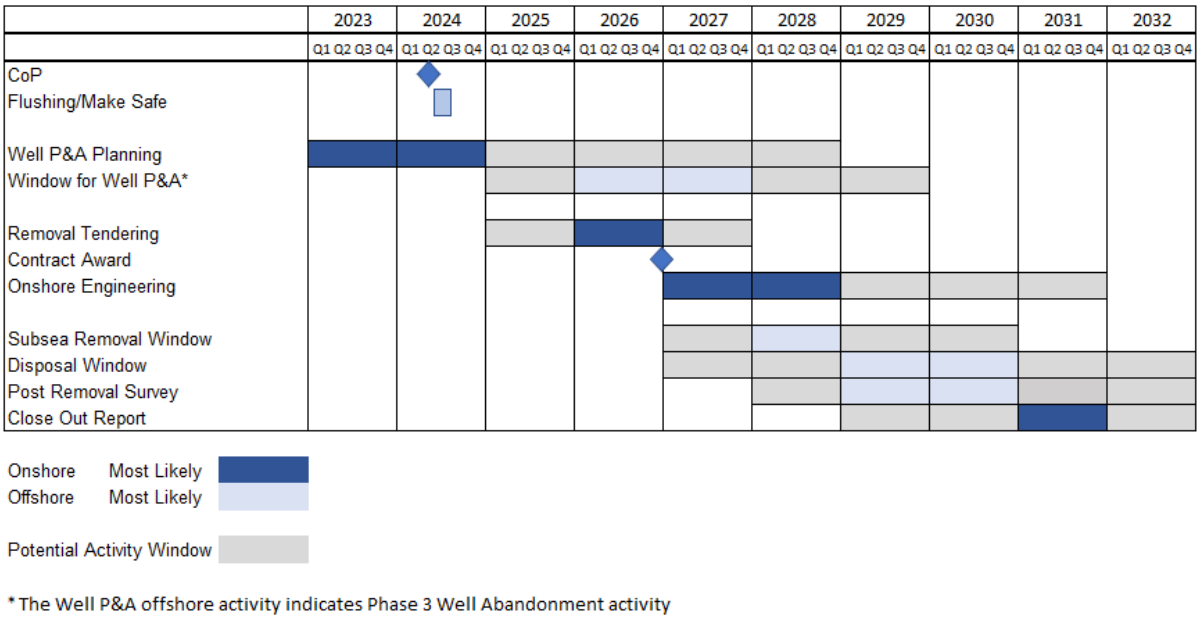

Figure 6-1: Otter Decommissioning Schedule

6.4 Costs

An overall cost estimate following Oil and Gas UK (OGUK) Guidelines on Decommissioning Cost Estimation (Issue 3, September 2013) [10] will be provided to OPRED in confidence.

Table 6-1: Provisional Decommissioning Costs

Item	Estimated Cost (£MM)
WBS 1 – Project Management	Provided to OPRED in confidence
WBS 2 – Post CoP Operational Expenditure (OPEX)	
WBS 3 – Well Abandonment	
WBS 4 – Facilities & Pipelines Permanent Isolation & Cleaning	
WBS 9 – Subsea Infrastructure Removal	
WBS 8 – Onshore Recycling	
WBS 10 – Site Remediation	
WBS 11 – Post-Decommissioning Monitoring	

6.5 Close Out

A close out report will be submitted to OPRED and posted on the TAQA decommissioning website detailing any variations from the Decommissioning Programme within twelve months of the completion of the offshore decommissioning scopes and disposal, including debris removal, verification of seabed clearance (where applicable) and the first post-decommissioning environmental survey.

6.6 Post-Decommissioning Monitoring and Evaluations

TAQA will carry out a post-decommissioning environmental seabed survey, centred around the sites of the Otter facilities.

All Otter sites and pipeline routes will be the subject of surveys when decommissioning activity has concluded. The facilities that are proposed to be left in place, e.g., buried pipelines will be subject to a monitoring programme to be agreed between TAQA and OPRED.

A copy of the survey results will be forwarded to OPRED. After the survey results have been sent to OPRED and reviewed, a post decommissioning survey regime will be agreed between TAQA and OPRED taking account of the findings of previous surveys, and a risk-based approach to the frequency and scope of subsequent surveys.

6.7 Management of Residual Liability

Any equipment that is left in place will remain the responsibility of the Otter S29 notice holders.

TAQA recognises that the parties to the programme will continue to retain the residual liability for any infrastructure left in place.

TAQA will engage with OPRED on all future legacy and liability matters and requirements relating to the infrastructure left in place.

7 Supporting Documents

[1] Otter Protection Structures Hatches Decommissioning Programmes, TAQA, TB-OTTDEC01-X-AD-0001-000.

[2] Guidance Notes Decommissioning of Offshore Oil and Gas Installations and Pipelines, November 2018, Department for Business, Energy & Industrial Strategy (BEIS).

[3] Well Decommissioning Guidelines, OEUK, 2022.

[4] Comparative Assessment Northern North Sea Subsea Assets, Xodus Group, 77IFS-154925-L99-0006-02, Revision A05, September 2025.

[5] Otter Field Subsea Environmental Appraisal, Xodus Group, 77IFS-188049-H99-0001-000, Revision A04, March 2026.

[6] Eider Upper Jacket Decommissioning Programme, TB-EIADEC01-X-AD-0001-000, Revision A4, May 2023.

[7] OSPAR, 2006a. OSPAR Recommendation 2006/5 on a Management Regime for Offshore Cuttings Piles, Meeting of the OSPAR Commission in Stockholm 26-30th June 2006.

[8] OSPAR, 2006b. Implementation Report on Recommendation 2006/5 on a Management Regime for Offshore Cutting Piles

[9] OGUK 2015, Guidelines for Comparative Assessment in Decommissioning Programmes, October 2015, ISBN: 1 903 004 55 1, Issue: 1.

[10] OGUK 2013. Oil and Gas UK Guidelines on Decommissioning Cost Estimation (Issue 3, September 2013).

8 Section 29 Notice Holders' Letters of Support [HOLD 2]

Letters of Support will be obtained from the Section 29 Holders on final approval of the Decommissioning Programme, in advance of CoP and full Field decommissioning, and will be provided within this section of the Programme.

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