PERENCO UK LIMITED

Indefatigable 23AC & AQ Installations, Bridges and 23AC Risers Decommissioning Programmes

January 2026

Consultation Version

Document Control

Approvals

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Terms and Abbreviations

Abbreviation	Explanation
“	Inch
AtoN	Aids to Navigation
BGT	Bacton Gas Terminal
CA	Comparative Assessment
CO_2	Carbon Dioxide
DESNZ	Department for Energy Security and Net Zero
DP	Decommissioning Programme
EA	Environmental Appraisal
E&A	Exploration & Appraisal
ENVID	Environmental Impact Identification
F-Gas	Fluorinated Gas
HAZID	Hazard Identification
HCS	Hydrocarbon Safe
HIRA	Hazard Identification Risk Assessment
HLV	Heavy Lift Vessel
HSEx	Health and Safety Executive
Inde 18A	Indefatigable 18 Alpha
Inde 18B	Indefatigable 18 Bravo
Inde 23A	Indefatigable 23 Alpha
Inde 23AC	Indefatigable 23A Compression Platform
Inde 23AQ	Indefatigable 23A Quarters Platform
Inde 23AT	Indefatigable 23A Terminal Platform
Inde 23C	Indefatigable 23 Charlie
Inde 23D	Indefatigable 23 Delta
JUB	Jack-up Barge
JNCC	Joint Nature Conservation Committee
km	Kilometre
LAT	Lowest Astronomical Tide
LSA	Low Specific Activity
m	Metre

Abbreviation	Explanation
MARPOL	International Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency
MEG	Monoethylene Glycol
MMO	Marine Management Organisation
N/A	Not Applicable
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Ireland Fish Producers' Organisation
NORM	Naturally Occurring Radioactive Material
NSTA	North Sea Transition Authority
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (Oslo-Paris Convention)
Perenco	Perenco UK Limited
PL	Pipeline
RAT	Rope Access Technician
ROV	Remotely Operated Vehicle
S29	Section 29
SAC	Special Area of Conservation
SFF	The Scottish Fishermen's Federation
SHARP	Southern Hub Area Rationalisation Project
SLV	Single Lift Vessel
SNS	Southern North Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SZ	Safety Zone
Te	Tonne
TEMPSC	Totally Enclosed Motor Propelled Survival Craft
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
UKHO	UK Hydrographic Office
W2W	Walk to Work
WGS	World Geodetic System

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Figures

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Appendices

1. EXECUTIVE SUMMARY

1.1 Decommissioning Programme

This document contains two Decommissioning Programmes (DPs) for:

- Two platforms in the Indefatigable 49/23 Alpha (Inde 23A) installation: the Compression (AC) and Quarters (AQ) platforms, comprising two steel jackets and two topsides and two bridges: one connecting the AQ and AC platforms and the other connecting the AC and Terminal (AT) platforms.
- The Wenlock PL2355 and PL2356 riser sections attached to the AC platform.

The DPs do not contain programmes for the AT platform or its connected risers/pipelines (PL22, PL77, PL78, PL1053, PL1054, PL1055 and PL1056). The platform is operational and will be decommissioned post-2030. The DPs also do not contain programmes for the rest of the Wenlock pipelines (PL2355 and PL2356) connected to AC. These were covered in the *Wenlock Decommissioning Programmes* [1] prepared by Alpha Petroleum Resources Limited and approved on 23rd February 2022.

1.2 Requirement for Decommissioning Programme

Installations: In accordance with the Petroleum Act 1998, the Section 29 (S29) notice holders of the Inde 23A AC and AQ installations (see Table 1.2) are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the installations detailed in Section 2.1 of these programmes. (See also Section 8 - Section 29 Notice Holders Letters of Support).

Pipelines:
In accordance with the Petroleum Act 1998, the S29 notice holders of pipeline riser sections PL2355 and PL2356 on AC (see Table 1.4) are applying to OPRED to obtain approval for decommissioning the pipelines detailed in Section 2.2 of these programmes. (See also Section 8 – Section 29 Notice Holders Letters of Support).

In conjunction with public, stakeholder and regulatory consultation, these DPs are submitted without derogation and in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for an 8.5-year decommissioning plan due to begin in Q2 2026.

1.3 Introduction

The Indefatigable is located approximately 90 kilometres (km) northeast of the Bacton Gas Terminal (BGT) in 29 metres (m) water depth in the United Kingdom (UK) sector of the North Sea. The field was discovered in 1966 and brought into production in 1971 by Amoco. The first gas was produced in September 1972, six years after the discovery was made. In 2003, the field operatorship was transitioned from BP to Perenco.

The Indefatigable field development consists of five installations, all of which are normally unattended installations: Inde 23A, Inde 49/23C, Inde 49/23D, Inde 49/18A and Inde 49/18B. Inde 23A comprises a series of bridge-linked platforms which together form a natural gas gathering installation. No gas is

produced from Inde 23A (Licence Number 16). The purpose of the installation is to provide facilities for the gathering of gas from neighbouring production platforms (Inde 49/23C, Inde 49/18B, Davy 49/30A and Bessemer 49/23E) and for its separation before export to BGT via Leman 49/27B, PL106, Leman 49/27A and PL23.

Three platforms make up the installation: Terminal (AT) (operational), Compression (AC) (lighthouse mode) and Quarters (AQ) (mothballed). AT was installed in June 1972 while AQ and AC were installed in April 1980 and November 1980 respectively. AC's co-ordinates are WGS84 Latitude 53° 19' 22.3364" N, Longitude 02° 34' 24.6836" E. AQ's co-ordinates are WGS84 Latitude 53° 19' 24.4998" N, Longitude 02° 34' 27.8886" E.

The AC platform superstructure consists of a cellar deck and a main deck, which constitute an integral unit formed by horizontal steel trusses supported by vertical members mated to the jacket legs. The 8-inch (") PL2355 import pipeline riser and the 3" PL2356 monoethylene glycol (MEG) export riser are located at the south-west corner of the AC platform. They are routed up the south face of the jacket in a protective caisson. These risers are redundant in situ and have been flushed, cleaned, water-filled, air gapped and verified as hydrocarbon safe (HCS) on the AC topside. The risers will be air-gapped subsea at the base of the AC platform, approximately 2m above the seabed (-27m lowest astronomical tide (LAT)) before jacket removal.

Perenco will give permission to Energean UK Limited to decommission the PL2355 and PL2356 pipelines and associated pipeline stabilisation features within the Inde 23AC 500m safety zone (SZ) (see *Wenlock Decommissioning Programmes* [1] for details). A small section of pipeline (<5m) from the riser flange to the start of the buried spool within existing rock cover near the base of the AC jacket will be cut and removed to create an air gap between the cut ends and the jacket. The cut ends will either be re-buried under the existing rock cover or, if exposed as a potential snagging hazard, will have one of the existing mats further along the pipeline in the Inde 23A 500m SZ relocated over the end.

The AQ platform superstructure comprises a cellar deck, main deck, accommodation module and helideck. There are no subsea pipelines or risers connected to the AQ platform.

A 39.6m-long bridge connects the AT and AC platforms. The bridge is on two levels and comprises welded steel tubulars constructed as space frames carrying a longitudinal, open walkway. The bridge also provided support for piping and services. The AT-AC bridge will likely be removed earlier than the other structures covered in the DP to split the Inde 23A Safety Case so that operatorship of the platforms can be divided. Perenco will remain the operator of the operational AT platform, while the operatorship of the AC platform will be transferred to a third party. A separate 48.5m bridge connects the AC and AQ platforms. This bridge is constructed in a similar fashion to the AT-AC bridge. Both bridges will be decommissioned under the scope of this DP. The AC-AQ bridge will likely be removed during the AQ and AC installation decommissioning campaign.

AC & AQ were put in lighthouse mode and mothballed, respectively, following completion of the Southern Hub Area Rationalisation Project (SHARP) project in 2023. SHARP removed the requirement for compression on Inde 23A and moved this to Leman 27B. The 23A process was significantly simplified such that only AT is now operational. AC and AQ have been in their lighthouse mode and mothballed states since May 2023 and will remain so until the installation removal campaign. AT will remain operational into the 2030s. As a result of the SHARP simplification, the equipment left on Inde 23AC and AQ was redundant and there are no viable alternatives but to decommission the platforms.

Inde 23A is located 4.96km east of the Annex I Habitat, North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC), which is designated due to the presence of Annex I sandbank habitat which supports communities of invertebrates and includes the presence of *Sabellaria spinulosa* biogenic reef. It is also 19.00km southeast of the Southern North Sea SAC.

The DPs explain the principles of the removal activities and are supported by an Environmental Appraisal (EA).

1.4 Overview of Installations Being Decommissioned

1.4.1 Installations

Table 1.1: Installations Being Decommissioned			
Field	Indefatigable	**Production Type (Oil/Gas/Condensate)**	Gas
Water Depth (m)	29	**UKCS Block**	49/23A
Distance to median (km)	32	**Distance from nearest UK coastline (km)**	90
Surface Installations			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)
1	Compression Platform	7,652*	1,651**
1	Quarters Platform	1,299***	479****
Subsea Installations		**Number of Wells**	
Number	Type	Platform	Subsea
0	N/A	0	0
Drill Cuttings piles			
Number of Piles	N/A	Total Estimated Volume (m^3)	N/A

**Includes weight of AC topside (7,500 Te) and AT-AC connecting bridge (152 Te)*
***Includes weight of AC jacket (953 Te) and piles (698 Te)*
****Includes weight of AQ topside (1,264 Te) and AQ-AC connecting bridge (35 Te)*
***** Includes weight of AQ jacket (245 Te) and piles (234 Te)*

Table 1.2: Installations Section 29 Notice Holders Details		
Section 29 Notice Holders	**Registration Number**	**Equity Interest (%)**
Perenco UK Limited	04653066	76.92
RockRose UKCS 10 Limited	04105025	23.08

Amoco (U.K.) Exploration Company, LLC	BR005086	0
Amoco U.K. Petroleum Limited	00799710	0
BG International Limited	00902239	0
Enterprise Oil Limited	01682048	0
Esso Exploration and Production UK Limited	00207426	0
Hess Limited	00807346	0
RockRose UKCS15 Limited	SC375371	0
Shell U.K. Limited	00140141	0

1.4.2 Pipelines

Table 1.3: Pipelines Being Decommissioned	
Number and total length (m) of Pipeline(s) / umbilical(s) (Full details given in Table 2.2)	1 x PL2355 riser – 85m 1 x PL2356 riser – 85m

Table 1.4: Pipeline Riser Section 29 Notice Holders Details		
Section 29 Notice Holders	**Registration Number**	**Equity Interest (%)**
Perenco UK Limited	04653066	100

1.5 Summary of Proposed Decommissioning Programme

Table 1.5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason for Selection**
Topsides (including bridges)	
Complete removal, reuse of scrap material or disposal.	To comply with the Oslo-Paris Convention (OSPAR) requirements and OPRED guidelines to maximise the recycling of materials.
Substructures (jackets)	
Complete removal to shore for re-use/recycling. The leg piles will be cut to a target depth of at least -3m below the mean seabed level. Cutting of the piles is anticipated to be executed by internal cutting equipment. However, if this proves unfeasible, it would be necessary to excavate the seabed around the piles to enable external cutting. Perenco will assess alternative options for removal based on structural integrity, project efficiency and vessel capability.	To comply with the OSPAR requirements to leave a clear seabed, remove a potential obstruction to fishing operations and maximise the potential for recycling of materials.
Pipelines, Flowlines, Umbilicals & Riser Sections	
PL2355 and PL2356 risers will be cut approximately 2m above seabed (-27m LAT) at the base of the Inde 23AC platform. A small section of pipeline (<5m) from the riser flange to the start of buried spool within existing rock cover near the base of the AC jacket will be cut and removed. This will facilitate the removal of the risers and AC jacket from the seabed. The cut ends will either be re-buried under the existing rock cover or, if exposed as a potential snagging hazard, will have one of the existing mats further along the pipeline in the Inde 23A 500m SZ relocated over the end. The risers will be removed to shore for re-cycling.	To comply with the OSPAR requirements to leave a clear seabed, remove a potential obstruction to fishing operations and maximise the potential for recycling of materials.
Interdependencies	
Inde 23AC is connected to Inde 23AT via a 39.6m-long bridge. Inde 23AT will be decommissioned in the 2030s. The Wenlock pipelines, owned by Energean UK Limited, are covered in a separate DP and will be decommissioned up to the first riser elbow flanges approximately 2m above the seabed at the Inde 23AC platform. Removing parts of installations will not prejudice decommissioning solutions.	

1.6 Field Location Including Field Layout and Adjacent Facilities

Figure 1.1: Field Location in UKCS

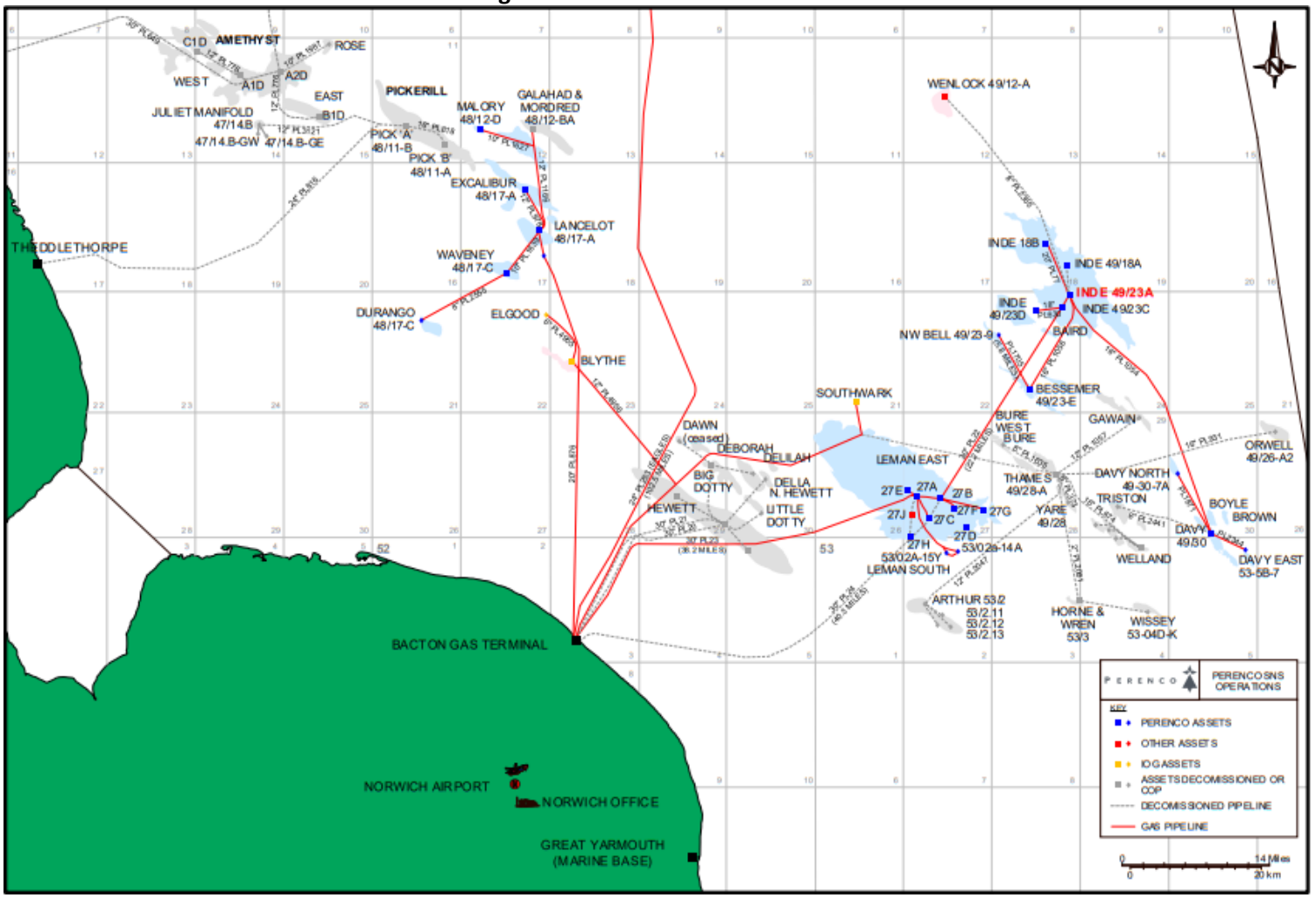


Figure 1.2: Indefatigable Field Layout

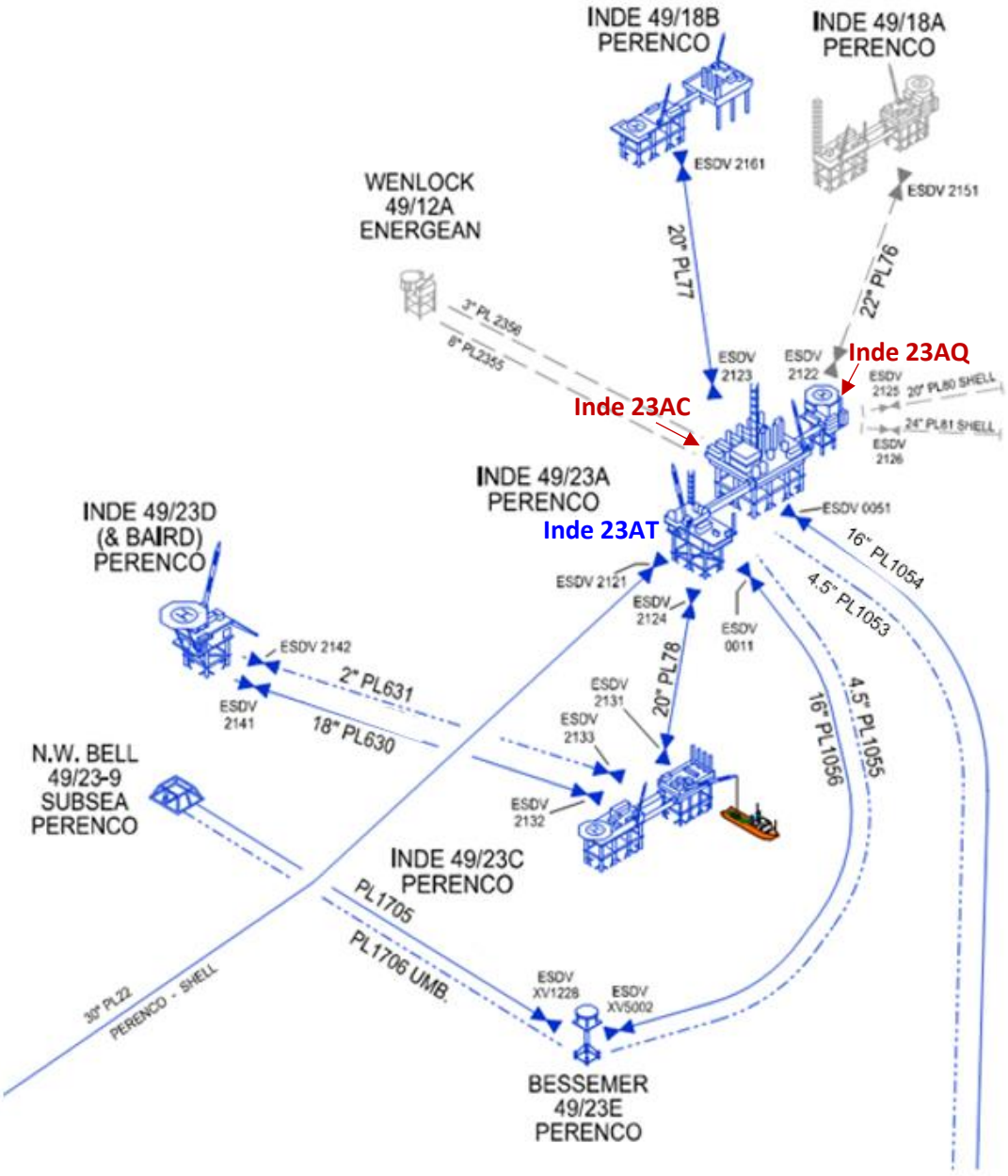
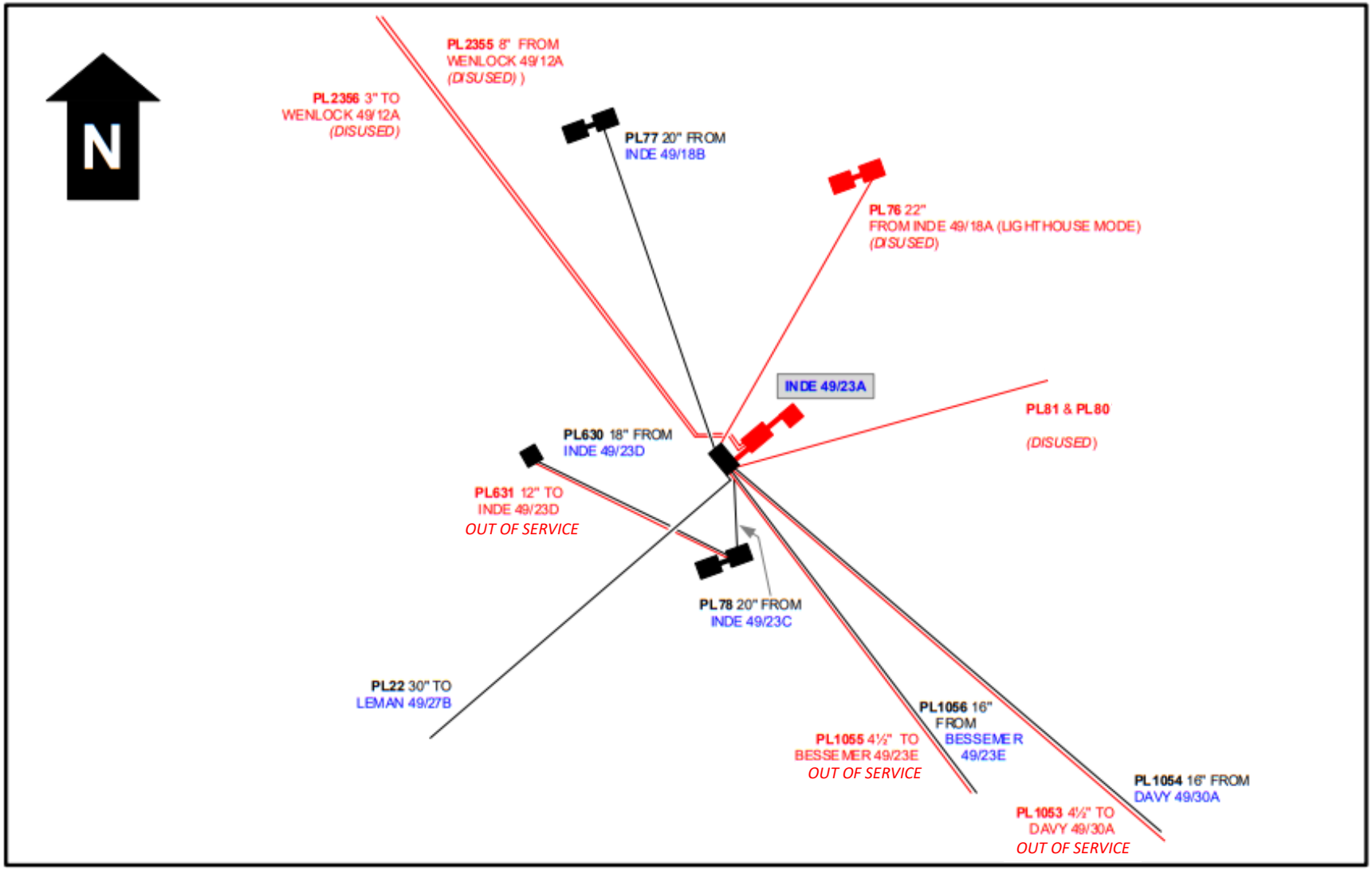


Table 1.6: List of Adjacent Facilities					
Owner Operator	**Name**	**Type**	**Distance/ Direction**	**Information**	**Status**
Perenco UK Limited	Inde 18A	Platform	4.3km north	Drilling platform and production platform	Non-operational
Perenco UK Limited	Inde 18B	Platform	8.3km northwest	Drilling platform and production platform	Operational
Perenco UK Limited	Inde 23C	Platform	1.9km south	Drilling platform and production platform	Operational
Perenco UK Limited	Inde 23D	Platform	5.5km southwest	Production platform	Operational
Perenco UK Limited	PL22	Pipeline	83m south	30” joint trunkline	Operational
Perenco UK Limited	PL76	Pipeline	36m west	22” infield pipeline	Non-operational
Perenco UK Limited	PL77	Pipeline	65m west	20” infield pipeline	Operational
Perenco UK Limited	PL78	Pipeline	77m south	20” infield pipeline	Operational
Shell U.K. Limited	PL80	Pipeline	61m south	20” pipeline	Non-operational
Shell U.K. Limited	PL81	Pipeline	61m south	24” pipeline	Non-operational
Perenco UK Limited	PL630	Pipeline	1.8km south	18” infield pipeline	Operational
Perenco UK Limited	PL631	Pipeline	1.8km south	2” piggybacked infield pipeline	Out of Service
Perenco UK Limited	PL1053	Pipeline	85m south	4.5” piggybacked pipeline	Out of Service
Perenco UK Limited	PL1054	Pipeline	85m south	16” infield pipeline	Operational
Perenco UK Limited	PL1055	Pipeline	87m south	4.5” piggybacked pipeline	Out of Service
Perenco UK Limited	PL1056	Pipeline	87m south	16” infield pipeline	Operational
Energean UK Limited	PL2355	Pipeline	0km	8” gas export pipeline	Non-operational

Table 1.6: List of Adjacent Facilities					
Energean UK Limited	PL2356	Pipeline	0km	3" chemical injection pipeline	Non-operational
Impacts of Decommissioning Proposals					
An additional Walk to Work (W2W) access gate, on the opposite side of the AT platform to the current access gate, will need to be installed to ensure the W2W vessel can remain in the drifting off position.					

Figure 1.3: Adjacent Facilities



1.7 Industrial Implications

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

The Inde 23AC and AQ installations, bridges and PL2355 & PL2356 risers are managed by Perenco to ensure the safe, efficient, and legally compliant delivery of the various elements of the decommissioning scope. The intention is to make efficient use of the supply chain to generate value through the application of knowledge, innovation, and technology, explore collaboration opportunities and employ best practices in the management of the supply chain to deliver a cost-effective and reliable service. Where appropriate, existing framework agreements may be used for decommissioning activities.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 Installation: Surface Facilities (Topsides/Jackets)

Table 2.1: Surface Facilities Information

Name	Facility Type	Location		Topsides/Facilities		Jacket			
		WGS84 decimal	WGS84 decimal of a minute	Weight (Te)	No. of modules	Weight (Te)	No. of Legs	No. of Piles	Weight of Piles (Te)
Inde 23AC	Fixed leg steel platform	53.32287123N 02.57352321E	53° 19' 22.3364" N 02° 34' 24.6836" E	7,652*	1	953	8	8	698
Inde 23AQ	Fixed leg steel platform	53.32347217N 02.57441351E	53° 19' 24.4998" N 02° 34' 27.8886" E	1,299**	1	245	4	4	234

**Includes weight of AC topside (7,500 Te) and AT-AC connecting bridge (152 Te)*
****Includes weight of AQ topside (1,264 Te) and AQ-AC connecting bridge (35 Te)*

2.2 Pipelines including Stabilisation Features

Table 2.2: Pipeline/Flowline/Umbilicial Information

Pipeline Number	Description	Length (m)	Product Conveyed	From – To Location Points	Burial Status	Pipeline Status	Current Content
PL2355*	8” Gas export riser	85	Gas	From cut point 2m above seabed at riser bottom tie in flange to Inde 23AC isolation valve.	Exposed; attached to jacket and topside	Out-of-use	Seawater
PL2356*	3” Chemical injection riser	85	Chemicals	From cut point 2m above seabed at riser bottom tie in flange to Inde 23AC isolation valve.	Exposed; attached to jacket and topside	Out-of-use	Seawater

**Riser on AC platform*

2.3 Wells

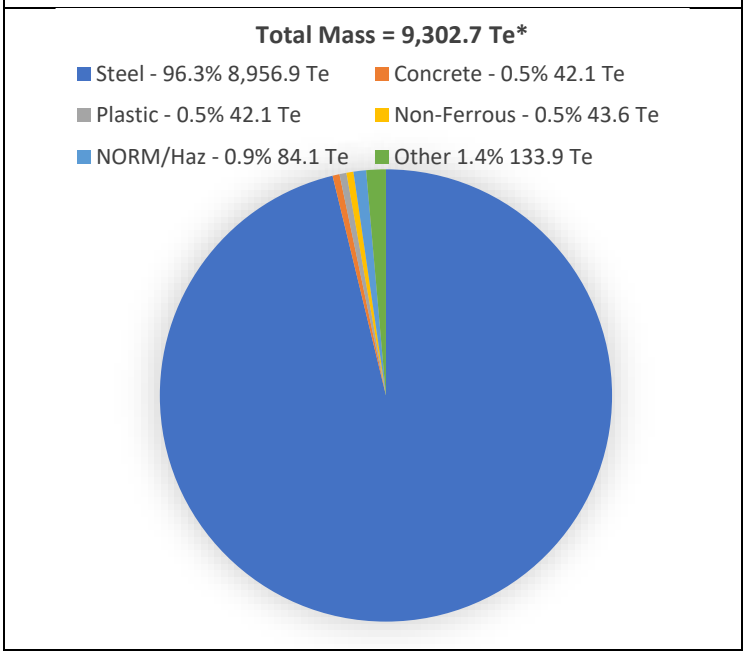
Table 2.3: Well Information			
Platform Wells	**Designation**	**Status**	**Category of Well**
N/A	N/A	N/A	N/A
Subsea Wells			
There are no subsea wells associated with the Inde 23AC and 23AQ installations.			
E&A Wells			
There are no E&A wells associated with the Inde 23AC and 23AQ installations.			

2.4 Drill Cuttings

Table 2.4: Drill Cuttings Piles Information		
Location of Pile Centre (Latitude/Longitude)	**Seabed Area (m^2)**	**Estimated volume of cuttings (m^3)**
N/A	N/A	N/A

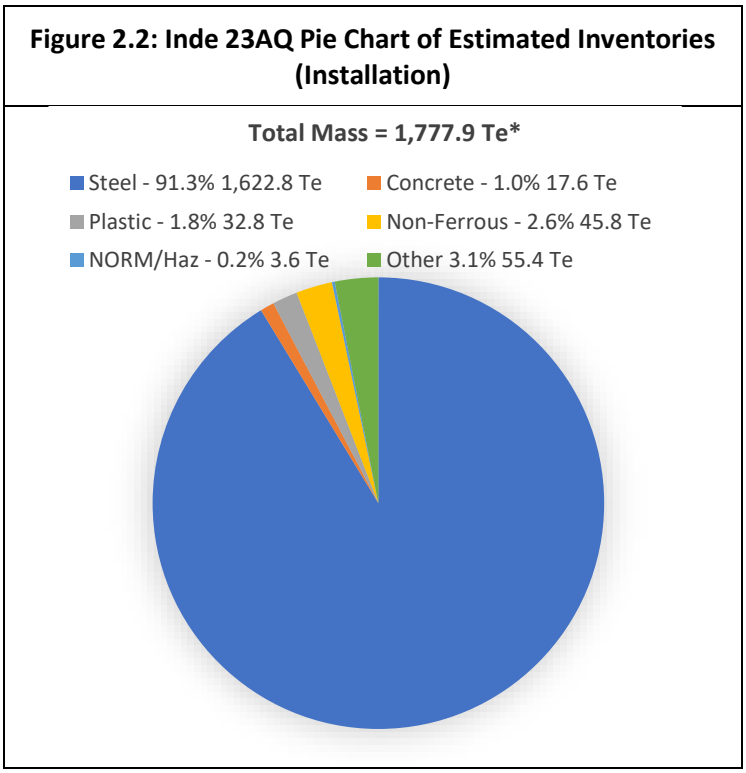
2.5 Inventory Estimates

Figure 2.1: Inde 23AC Pie Chart of Estimated Inventories (Installation)



**Includes topside, jacket, piles, PL2355 & PL2356 risers and AT-AC bridge.*

Figure 2.2: Inde 23AQ Pie Chart of Estimated Inventories (Installation)



**Includes topside, jacket, piles and AC-AQ bridge.*

3. REMOVAL AND DISPOSAL METHODS

Disposal option selection will be in accordance with the Environmental Agency Waste Management Hierarchy. Perenco will consider the disposal options available, taking into account the business needs within Perenco to reuse equipment and materials where appropriate.

At the current time a suitable relocation or reuse as a whole for the topsides, jackets, bridges and risers has not been identified; therefore, at present, dismantling of the jackets at an onshore disposal facility is considered the most likely disposal option. Due to the ageing technology and high maintenance costs of the fabric and structural integrity, technically viable reuse options are limited. Those materials deemed suitable for recycling are to be recovered at an appropriate recycling facility.

3.1 Topsides

3.1.1 Topsides Decommissioning Overview

Topsides Description:
Inde 23AC was the low-pressure and high-pressure gas compression plant, 49/12A Wenlock reception facilities and the main power generation equipment. The platform has been converted to lighthouse mode.

Inde 23AQ had the living accommodation utility services equipment and the helideck. The platform has been mothballed.

The AC and AQ topsides and jackets will be removed using a reverse installation approach. A heavy lift vessel (HLV) or jack-up barge (JUB) will dismantle the topsides in the reverse order of installation to ensure safe and efficient removal. Where practicable, modules will be combined to reduce offshore separation work, including piping and secondary steel disconnections, thereby improving safety and schedule efficiency. Each module will be lifted and either backloaded onto a transportation vessel or securely sea fastened on the HLV/JUB deck for a batch transportation to the onshore disposal facility. At the disposal yard, the modules will be offloaded, dismantled, and processed for material recovery and environmentally compliant disposal.

Figure 3.1 Inde 23AC General Arrangement of Topside

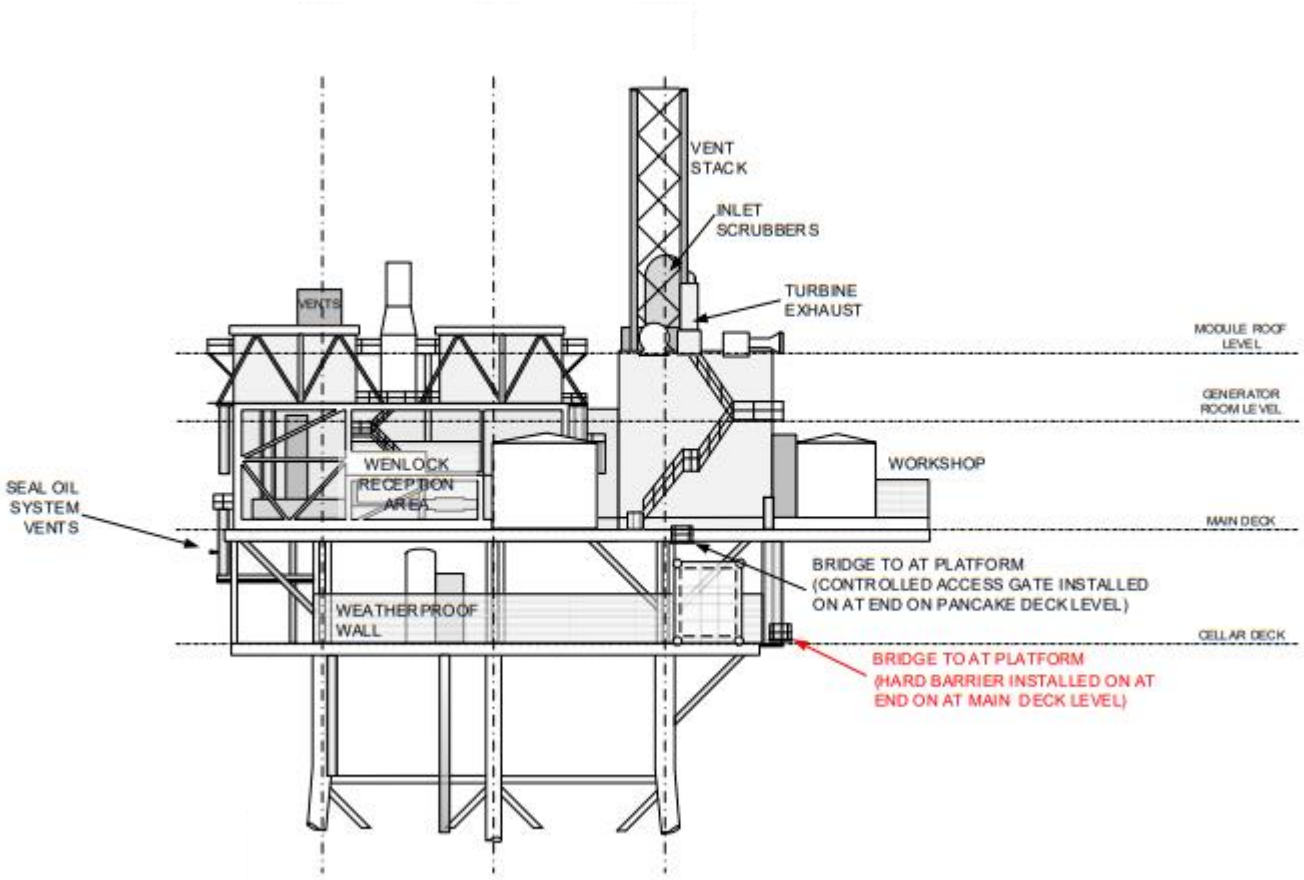
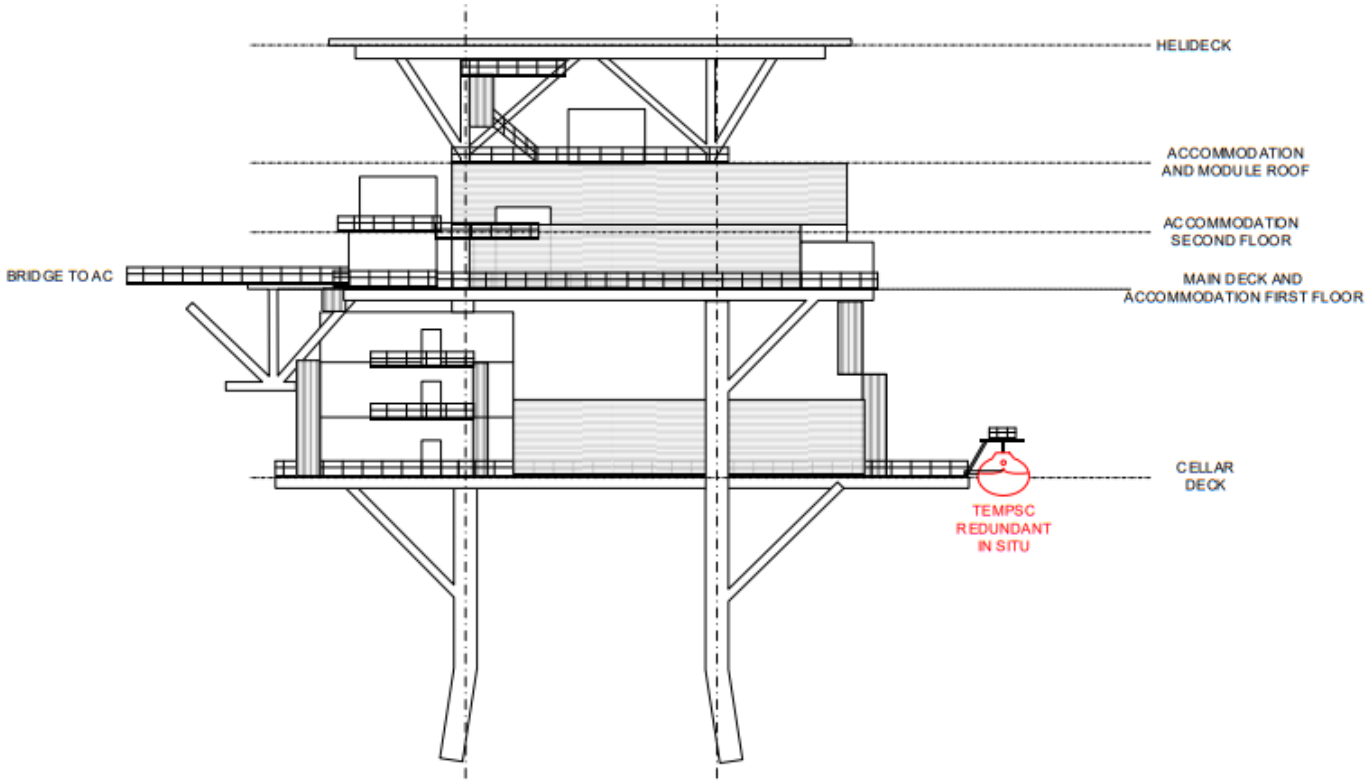


Figure 3.2 Inde 23AQ General Arrangement of Topside



Preparation/Cleaning:

The methods that have been/will be used to flush, purge, or clean the topsides offshore before removal to shore are given in the table below. For each stage of the decommissioning operation, a HIRA/HAZID and ENVID will be conducted to assess and mitigate the activity risks causing a substance release. Perenco has assessed the likelihood of there being inventories of hydrocarbons, chemicals and/or fluorinated gases.

Table 3.1: Cleaning of Topsides for Removal		
Waste Type	**Composition of Waste**	**Disposal Route**
Onboard hydrocarbons	Process fluids, fuels, and lubricants	All lines on AC and AQ have been flushed. Residual hydrocarbons are likely to remain within the systems.
Hazardous materials	Naturally Occurring Radioactive Material (NORM), Low Specific Activity (LSA) scale, radioactive material, instruments containing heavy metals, batteries	23A was proven to be NORM positive during the destruct activity during the SHARP project. Purging, flushing, and venting of process pipework (on AC) and domestic pipework (on AQ) have been carried out, but there may be small elements of residue within the systems. The remaining process pipework on AC that is assumed to be NORM positive cannot be flushed or removed before topside removal. NORM treatment will be done under permit by a specialist company and disposed of safely in line with legal requirements.
Original paint coating	Lead-based and chromium VI paints	The topsides have low concentrations of lead and chromium VI in the paintwork. Quantitative testing will be required at the onshore dismantling facility.
Asbestos and ceramic fibre	Asbestos	Any suspected asbestos-containing material will be left in-situ during offshore works. Appropriate removal and disposal controls will be used during onshore dismantlement.

Removal Methods:

Table 3.2: Topsides Removal Methods	
1) HLV (semi-submersible crane vessel) ☑ 2) Single Lift Vessel (SLV) ☑ 3) Jack-up barge (JUB) ☑ 4) Piece small ☑ 5) Other ☐	
Method	**Description**

Onshore disposal using HLV/SLV/JUB	Removal of the topsides in single lifts and transport to shore for re-use of selected equipment for break up, recycling and disposal. If the decommissioning method changes, OPRED will be notified.
Offshore removal 'piece small' for onshore reuse/disposal	Removal of topsides by breaking up offshore and transporting to shore using work barge. Items will then be sorted for re-use, recycling, or disposal.

3.2 Jackets

3.2.1 Jacket Decommissioning Overview

A single lift removal option using a suitable HLV/JUB and transportation ashore for cleaning, break up, and recycling is considered the most likely removal methodology. The means of cutting will be an industry standard technique, such as diamond wire (most likely) or high-pressure abrasive water jet internal cutting.

The process will be the same for both AC and AQ jackets. The pile cuts will be made -3m below the seabed to ensure that any remains are unlikely to become uncovered.

The steps presented below provide a high-level chronological summary of the key stages of jacket dismantling using an HLV/JUB single lift:

- Mobilisation of equipment and personnel to HLV/JUB. Transit of vessel to Indefatigable field.
- Arrive at 500m SZ and complete pre-entry checks.
- Move into position next to the jacket.
- Launch a Remotely Operated Vehicle (ROV) to inspect the jacket.
- Connect rigging to the solar Aids to Navigation (AtoNs) grillage with help from Rope Access Technicians (RATs) (if required).
- Connect rigging to the main crane.
- Lift grillage and solar AtoNs from the jacket.
- Connect rigging to jacket pad-eyes with RAT and hang off rigging to the vessel deck.
- Remove soil plug from pile annulus and complete pile cuts.
- Cut risers subsea at the base of the jacket (on AC).
- Connect rigging to the main crane.
- Lift the jacket to the deck of the vessel and seafasten it in place.
- Execute as-left survey/debris removal with ROV.
- Complete safety checks in preparation for leaving the field and moving out of 500m SZ.
- Transport the jacket to the disposal yard for onshore disposal and recycling.

Trinity House will be consulted on changes required to the AtoNs at all stages of the project, including AtoN failure responses.

Figure 3.3 Inde 23AC General Arrangement of Jacket

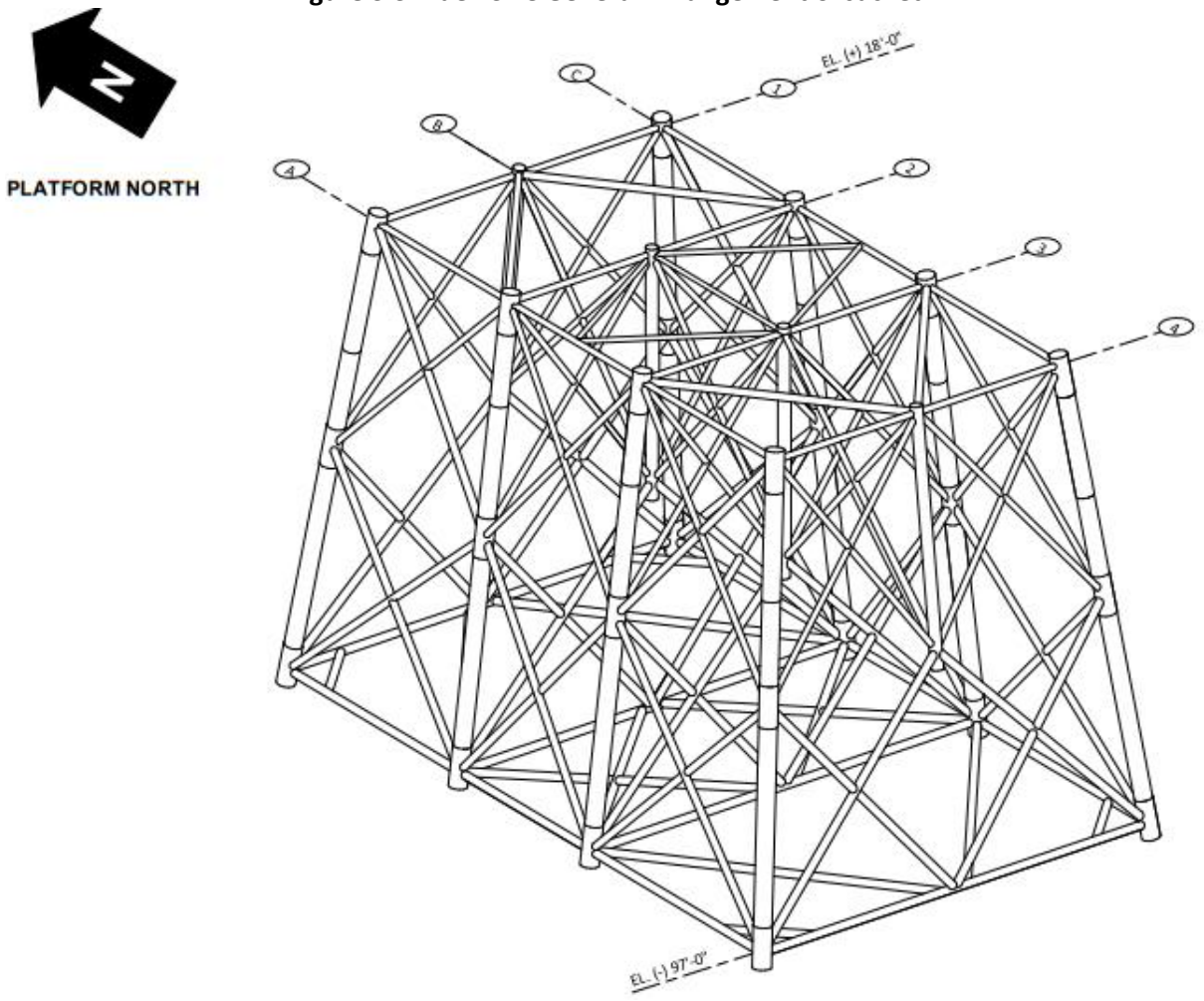
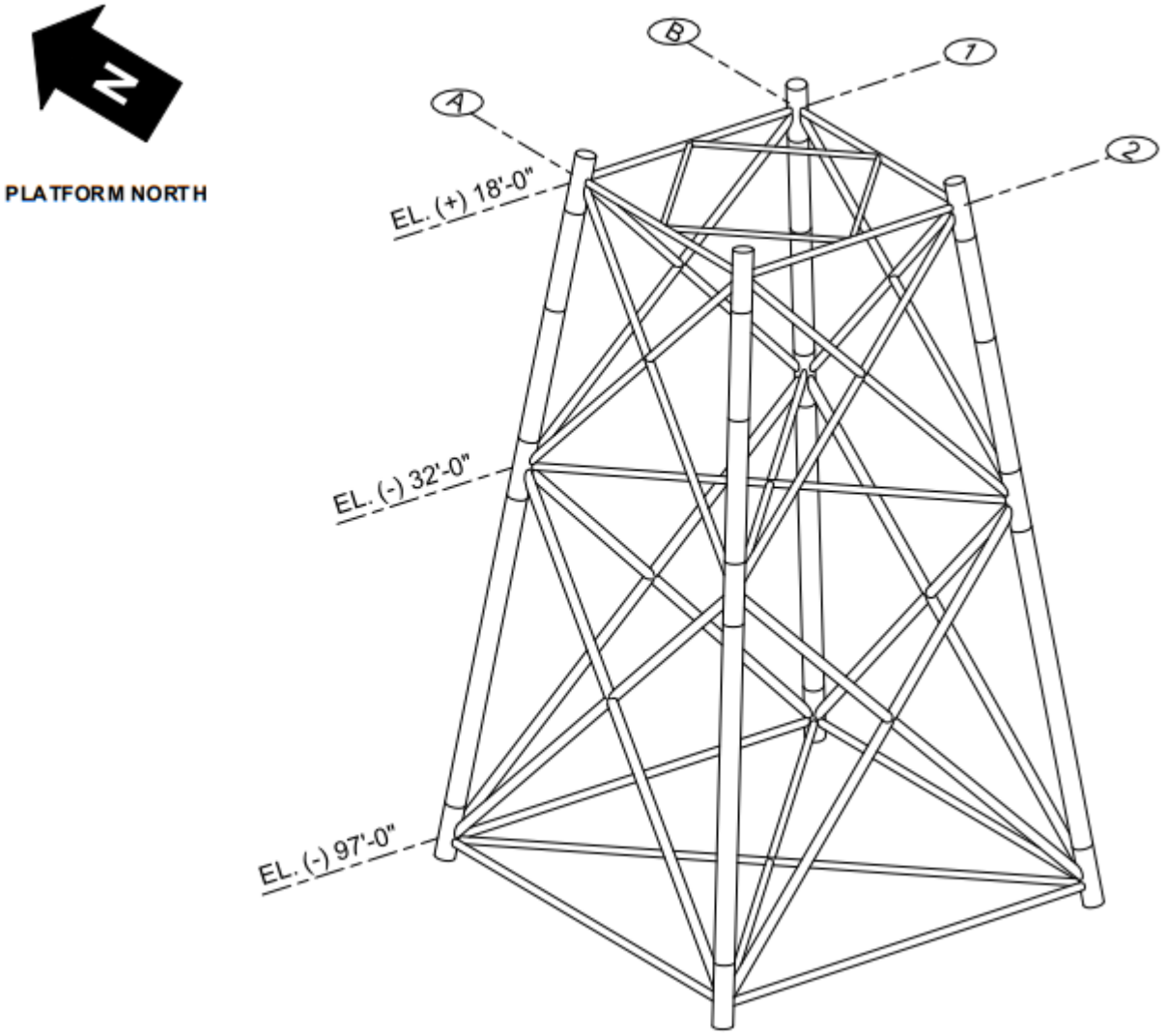


Figure 3.4: Inde 23AQ General Arrangement of Jacket



Removal Methods:
The jackets will be removed to shore for cleaning and disposal. The pile cuts will be made -3m below the seabed so that the remains will not become uncovered. The means of cutting could be diamond wire, oxyacetylene or high-pressure abrasive water jet cutting.

The Inde 23AC and 23AQ jackets will be removed by the methods outlined in the table below.

Table 3.3: Jacket Removal Methods	
1) HLV (semi-submersible crane vessel) ☑ 2) Single Lift Vessel (SLV) ☑ 3) Jack-up barge (JUB) ☑ 4) Piece small ☑ 5) Other ☐	
Method	**Description**
Onshore disposal using HLV/SLV/JUB	Removal of the jackets in single lifts and transport to shore for re-use of selected equipment for break up, recycling and disposal. If the decommissioning method changes, OPRED will be notified.
Offshore removal 'piece small' for onshore reuse/disposal	Removal of jackets by breaking up offshore and transporting to shore using work barge. Items will then be sorted for re-use, recycling or disposal.

3.3 Bridges

3.3.1 Bridges Decommissioning Overview

The AT-AC bridge will likely be removed in the summer of 2026, before the decommissioning of the AC and AQ installations, riser sections and AC-AQ bridge.

The bridges will be decommissioned one at a time. The AT-AC bridge will be rigged up to the HLV/JUB crane and prepared for lifting. It will then be disconnected at AT and AC. Once disconnected, the AT-AC bridge will be lifted using the HLV/JUB crane and transferred to a predetermined position on the HLV/JUB. The process will be the same for the AC-AQ bridge, except the disconnections will be made AC and AQ. Both bridges will be transported to an onshore disposal yard for dismantlement and processing.

Figure 3.5: AT-AC Bridge Aerial View

Figure 3.6: AC-AQ Bridge Aerial View

3.4 Pipelines

Decommissioning Options:
A Comparative Assessment (CA) is not required because the risers are attached to AC jacket and will be fully removed.

Table 3.4: Pipeline Decommissioning Options			
Pipeline or Group (as per PWA)	**Condition of line/group**	**Whole or part of pipeline/group**	**Decommissioning options considered**
PL2355*	Attached to jacket, exposed	Whole of riser section	A CA is not required; the risers will be fully removed.
PL2356*	Attached to jacket, exposed	Whole of riser section	

**Riser section only*

3.5 Waste Streams

Table 3.5: Waste Stream Management Methods	
Waste Stream	**Removal and Disposal Method**
Bulk liquids	N/A
Marine growth	Removal offshore/onshore. Disposed of according to guidelines.
NORM / Low Specific Activity (LSA scale)	Inde 23A was proven to be NORM positive during destruct activity during the SHARP project. All systems handling hydrocarbons will be treated as NORM contaminated and appropriate controls applied. Any encountered NORM will be dealt with and disposed of following guidelines and company policies and under the appropriate permit(s).
Asbestos	Asbestos has been identified in electrical, mechanical, and architectural equipment throughout the AC and AQ platforms. Appropriate removal and disposal controls will be used during onshore dismantlement in accordance with guidelines and company policies
Other hazardous wastes	The topsides have low concentrations of lead and chromium VI in the paintwork. It is assumed the jackets will have similar lead and chromium VI content as the topsides. Hazardous wastes will be dealt with/disposed of according to guidelines and company policies.
Onshore dismantling sites	Appropriate licensed sites will be selected. The dismantling site must demonstrate a proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver re-use and recycling options. OPRED will be advised when a decision is made.

Table 3.6: Inventory Disposition			
	Total Inventory (Te)	Planned (Te) to Shore	Planned (Te) Left in Situ
Inde 23AC	9,303	8,877*	426
Inde 23AQ	1,778	1,640**	138

**Topside, bridge, jacket, risers and 272 Te of piles*

*** Topside, bridge, jacket and 96 Te of piles*

4. ENVIRONMENTAL APPRAISAL OVERVIEW

4.1 Environmental Sensitivities (Summary)

Table 4.1: Environmental Sensitivities	
Environmental Receptor	**Main Features**
Conservation Interests	Inde 23A is located 4.96km east of the Annex I Habitat, North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC) and 19.00km southeast of the Southern North Sea SAC. No Annex I habitats or species of conservation interest were identified during the Environmental Baseline Survey (EBS) undertaken by Ocean Ecology Limited in 2022 [4].
Seabed	The seabed surrounding Inde 23A is mostly flat at approximately 29m LAT. Scouring can be observed under the areas surrounding the installations up to a depth of about 31.6m LAT. The EBS found the Inde 23A 500m SZ had a JNCC/EUNIS habitat classification of 'Circalittoral muddy sand' (SS.SSa.CMuSa), although the benthic fauna more closely resembled '*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (SS.SSa.IMuSa.FfabMag / A5.242). The sediment classification of 'Circalittoral muddy sand' was in keeping with the habitats predicted by EMODnet mapping of marine sediments. Seabed chemistry indicated low levels of total organic carbon and hydrocarbon concentrations below North Sea background levels. Heavy metals and trace metals were generally low, although cadmium, copper and mercury exceeded reference thresholds at one station.
Fish	Species that spawn or nurse within ICES 35F2 rectangle, where Inde 23A is located, include: sandeel (*Ammodytes marinus*), cod (*Gadus morhua*), herring (*Clupea harengus*), mackerel (*Scomber scombrus*), plaice (*Pleuronectes platessa*), nephrops (*Nephrops norvegicus*), sprat (*Sprattus sprattus*), whiting (*Merlangius merlangus*) and tope shark (*Galeorhinus galeus*).
Fisheries	There is currently no data published on fishing effort in ICES rectangle 35F2. However, activity within the adjacent ICES rectangle 36F2 included 235 days of fishing effort during 2023, 200 days of fishing effort in 2022 and 196 days of effort in 2021. A total of 340 Te was landed in 36F2 in 2023, 336 Te in 2022 and 289 Te in 2021. Landed species were made up predominantly of edible crab (*Cancer paguru*) and Great Atlantic scallop (*Pecten maximus*).
Marine Mammals	The relative abundance and density of cetaceans in the vicinity of Inde 23A can be derived from data obtained during the Small Cetacean Abundance of the North Sea (SCANS-IV) aerial and ship-based surveys. The Inde 23A field is situated within the SCANS-IV Block 'NS-C', in which harbour porpoise, bottlenose dolphin, white-beaked dolphin, common dolphin and minke whale have been recorded. The ocean around Inde 23A has a relatively high estimated density of harbour porpoise (*Phocoena phocoena*), suggesting that the area represents an important habitat area.

	In addition, two species of seals are found in the Southern North Sea: grey seal (*Halichoerus grypus*) and the harbour (or common) seal (*Phoca vitulina*). On the east coast of England, harbour seals tend to concentrate around The Wash and grey seals tend to be found more regularly around the Humber Estuary and foraging offshore. The presence of seals around Inde 23A are relatively low, with an estimated mean density of 0.00247008 individuals per 25km^2 for grey seals and 0.000264111 individuals per 25km^2 for harbour seals.
Seabirds	Offshore structures, such as oil platforms in the Southern North Sea, create a manmade archipelago of islands that provide several opportunities to birds. Species recorded nesting on offshore assets include razorbill (*Alca torda*), guillemot (*Uria aalge*), lesser black-backed gull (*Larus fuscus*), herring gull (*Larus argentatus*), carrion crow (*Corvus corone*), common guillemot (*Uria aalge*), razorbill (*Alca torda*), and, most commonly, black-legged kittiwake (*Rissa tridactyla*). No bird species have been recorded nesting at the Inde 23A platforms in annual surveys conducted from 2023 to 2025.
Onshore Communities	The only interaction between the project and onshore communities will be via the handling and treatment of the removed jackets, bridges, and riser sections. This waste will be transported to a licensed onshore waste handling facility. No other impacts to onshore communities have been identified. As a result, no onshore communities are expected to be affected by the DPs.
Other Users of the Sea	The waters surrounding Inde 23A are described as having 'Very Low' shipping activity. There are significant oil and gas surface and subsurface infrastructure found within UKCS 49/23 and surrounding blocks, predominantly associated with the Inde field. Inde 23A is within a Carbon Storage Appraisal and Storage Licence area (licence reference CS027) held by Shell U.K. Limited. This area is currently under investigation for the feasibility of geological storage of captured carbon dioxide. The closest marine aggregate location is Indefatigable West, operated by Deme Building Materials Ltd, approximately 11.85km to the east of Inde 23A. The nearest offshore wind farm to Inde 23A is approximately 25.70km to the southeast (Norfolk Boreas). The Inde 23A platforms are approximately 9.39km from the near subsea cable (NORSEA COM 1 LOW-MUR TELECOM CABLE). The Inde 23A installation does not fall within a known Military Practice and Exercise Area. Due to the distance between the Inde 23A installation and the nearest landfall (90km northeast of Bacton Gas Terminal), recreational activities in the region are highly unlikely. There is a dangerous wreck recorded about 4.59km northeast of Inde 23A. The AT 500m SZ will remain in place and will still contain the cut ends of the PL2355 and PL2356 pipelines.
Atmosphere	Atmospheric emissions will occur as a result of operating vessels during the decommissioning works. A total of 5,609.78 Te of CO_2e is expected to be released to the atmosphere as a result of deploying the HLV/JUB, tug vessels and support

	vessels. This represents 0.04349% of the total upstream oil and gas industry emissions during 2023 and 0.00146% of the total UK 2023 CO_2e emissions.

4.2 Potential Environmental Impacts and Their Management

Environmental Impact Assessment Summary:
A detailed review of the proposed decommissioning activities, the environmental and social baseline, and potential impacts on environmental and social receptors occurred as part of the EA. This review determined that the proposed decommissioning works are unlikely to cause any significant impacts. The decommissioning option is well understood and can be managed through established mitigation measures.
Temporary disturbance to the seabed will occur from excavation, cutting, jacket lifting and NFFO clean seabed certificate over-trawling survey. Underwater noise will also arise due to vessel operation, as well as the operation of equipment. However, the assessment determined the potential impacts to not be significant following the implementation of the mitigation measures detailed below. The full assessment can be read in the supporting *Indefatigable 23AC and 23AQ Jackets and Bridges Environmental Appraisal* [2].

Overview:

Table 4.2: Environmental Impact Management		
Activity	**Main Impacts**	**Management**
Decommissioning the Inde 23AC and 23AQ installation	Seabed disturbance from the jack-up legs, anchor lines, excavation, removal of subsea infrastructure and seabed picking and trawling.	• Movement of the HLV/JUB will be reduced to minimise the number of times that the legs need to be placed on the seabed floor. • The anchor lines will be equipped with buoys, which reduce drag. Stabilisation will only be placed at the HLV/JUB legs if required. If stabilisation material is required, then gravel or grout bags will be used if possible, so that these can be retrieved. • Internal subsea leg cuts will be used if possible. • PL2355 and PL2356 will be re-buried.
	Underwater noise from vessels, cutting tools, dredging (if required), pipeline uncovering and burying.	• The decommissioning works will be planned to reduce vessel movement as much as possible. • Lower noise methods will be selected where possible. • Internal cuts using diamond wire will be prioritised if feasible. Cutting activities will also be minimised and carried out in isolation where possible. • Dredging will only be carried out if required. • Explosives will not be used. • All equipment will be subject to proper preventative maintenance to ensure that it is properly functioning, and unnecessary noise is not generated. • Any required post-decommissioning surveys will be scheduled and planned efficiently to minimise vessel operation time. JNCC guidelines for minimising noise impacts from surveys will be followed, where applicable.
	Unplanned events	• Standard navigation notifications will be followed, and Navaids used where required to reduce the risk of vessel collision. • Vessels will be managed in line with MARPOL requirements, including the requirement to operate an Oil Pollution Emergency Plan and a Communication and Interface Plan for a coordinated response to hydrocarbon spills to sea. • A Collision Risk Management Plan will be in place to manage the works. • An approved Lift Plan and company procedures will be followed regarding securing assets while in transit. • All dropped objects will be recovered if feasible to prevent the objects from causing navigational or fishing (snagging) impacts. • Pipelines and vessels are now typically opened or vented to atmosphere, also known as air-gapping, before cutting and removal. This allows any residual hydrocarbon vapours to dissipate safely.

	Energy and emissions	• Vessel and fuel use will be reduced where possible. • All used fuels will be MARPOL compliant. • The project will be compliant with the company's Atmospheric Emissions and Greenhouse Gas Management Procedures.
	Physical presence of vessels in relation to other sea users	• Transit of the vessels to Inde 23A will be managed through standard maritime notification and navigation rules. • Other sea users would be consulted in accordance with legal requirements.
	Light emissions	• Vessel presence will be temporary.
	Discharges to sea	• Vessel discharge such as sanitary water, bilge water and ballast water will be managed in accordance with MARPOL, International Convention on the Control and Management of Ship's Ballast Water and Sediments. • Discharge of deck water will be managed under an appropriate permit. Requirements for other discharge permits will be considered under the individual consent application for the decommissioning activities through the Portal Environment Tracking System. • All discharges to sea will be managed with PUK and Contractor procedures, including the 'Drainage and Discharge Procedure'.
	Snagging	• Once assets are removed, the area will be cleared to remove debris.
	Seabirds	• A further assessment on the presence of nesting will be carried out before the work starts. Should any nesting be observed, options will be discussed with OPRED.
	Waste management (including hazardous waste)	• PUK will comply with the Duty of Care and waste hierarchy to ensure that waste is managed correctly. • Only licensed contractors with demonstrable experience will be used. • A comprehensive Hazardous Materials survey will be completed to identify all hazardous substances, ensuring coverage of all areas, including those with potential fluorinated gas (F-gas) refrigerants. A dedicated F-gas register will be maintained. • Before any physical work begins, all relevant hazardous waste documentation—including the asbestos register and other hazardous waste records—will be handed over to the Principal Decommissioning Contractor or responsible contractor. • A Waste Management Plan will be implemented to guarantee all hazardous materials are handled safely and in compliance with legislation. • The NORM storage area on the AC will be emptied in preparation for decommissioning works. • The dismantling contractor has processes in place to aid in the identification and treatment of asbestos found.

		• A trained Radiation Protection Supervisor will be present onboard to oversee hazardous waste removal and to test pipework and other materials for NORM contamination before cutting. All NORM-related activities will be performed under permit by specialist contractors, adhering strictly to relevant regulations and safety protocols. • If possible, asbestos-containing building materials will not be cut during dismantling; instead, the entire affected module will be lifted intact to allow asbestos to be safely managed and disposed of onshore by licensed specialists. • Any waste transferred outside of the UK will be covered by an International Waste Shipment permit. • An audit trail will be maintained for waste materials from all vessels, through to the onshore decommissioning yard, and on to the recycling facility or disposal site. • The onshore yard contractor will keep an inventory of the types, quantities and dates of waste received and the quantities and dates of dispatch from the site.

5. INTERESTED PARTY CONSULTATIONS

Table 5.1: Summary of Stakeholder Comments		
Who	**Comment**	**Response**
1. Informal Stakeholder Consultations		
Health and Safety Executive		
UKHO		
MCA		
Environment Agency		
MMO		
Trinity House		
2. Public		
3. Statutory Consultations		
National Federation of Fishermen's Organisations		
Scottish Fishermen's Federation		
Northern Ireland Fish Producers' Organisation		
Global Marine Group		
North Sea Transition Authority	Perenco has consulted with NSTA under S29(2A) of the Petroleum Act.	

6. PROGRAMME MANAGEMENT

6.1 Project Management and Verification

A Perenco Project Management team will manage the operations of competent contractors selected for all decommissioning activities. The team will ensure the decommissioning is executed safely, in accordance with legislation and Perenco Policies and Principles.

Perenco's standard procedures for operational control, hazard identification and management will be used. Where possible, the work will be coordinated with other decommissioning operations in the SNS. Perenco will monitor and track the process of consents and the consultations required as part of this process.

6.2 Post-Decommissioning Debris Clearance and Seabed Clearance Verification

A pre-decommissioning environmental baseline survey was completed at the Inde 23A location in 2022 [4]. The survey included environmental sampling (drop-down camera and grabs). Following the installation removal campaign, an as-left survey will be completed. A post-decommissioning survey will also be completed around the 500m SZs of the former installation sites. The ends of pipelines PL2355 and PL2356 will remain in the AT 500m SZ and will be covered under Perenco's post-decommissioning surveys.

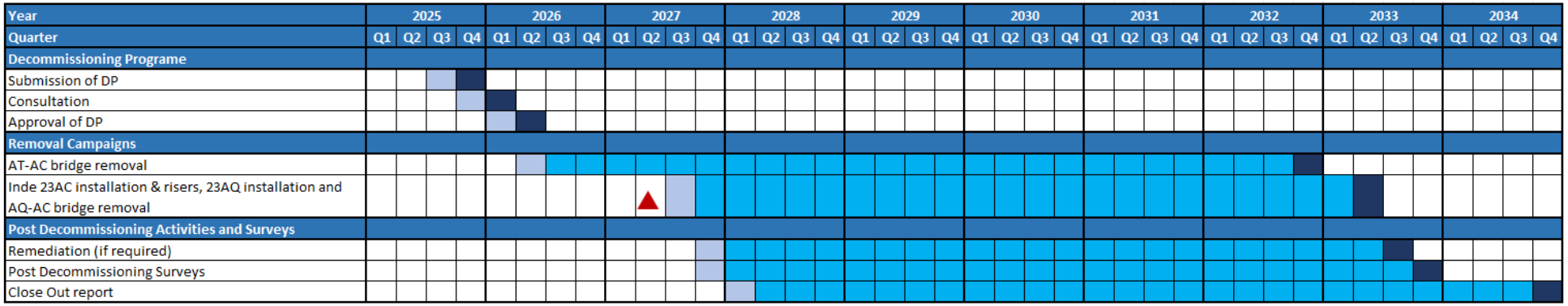
Any objects dropped during the removal preparations will be notified to OPRED via the PON2 process. Their subsequent recovery will be reported via the PON2 and DP Progress Reporting processes.

The sites of the AC and AQ jackets are within the 500m SZ of AT. Independent verification of seabed clearance will only be obtained after AT is decommissioned in the 2030s, with details of this activity to be contained in the AT DP.

6.3 Schedule

Figure 6.1 below provides the timeline of all decommissioning activities concerning this DP.

Figure 6.1: Gantt Chart of Project Plan



LEGEND
Earliest date installation removal campaign could start
Earliest date task could be completed
Period in which the task expected to be completed
Latest date task could be completed

6.4 Costs

The decommissioning costs detailed within this DP have been provided to OPRED.

6.5 Close Out

In accordance with OPRED Guidance Notes, a Close Out report will be submitted to OPRED within 12 months of the completion of the as-left survey. The report will detail the outcomes of surveys, a summary comparison of pre-and post-environmental surveys and explain any major variances from the programme.

6.6 Post-Decommissioning Monitoring and Evaluation

A post-decommissioning environmental seabed survey centred around the former installations will be carried out. The survey will focus on chemical and physical disturbances of the decommissioning and will be compared with the pre-decommissioning survey. The results of this survey will be forwarded to OPRED. Any requirement for future legacy monitoring based on the results of the pre- and post-decommissioning surveys will be agreed upon with OPRED as part of the closeout process.

7. SUPPORTING DOCUMENTS

Table 7.1: Supporting Documents	
Document Number	**Title**
1	Alpha Petroleum Resources Limited, Wenlock Decommissioning Programmes, 2022
2	GHD, Indefatigable 23AC and 23AQ jackets and bridges Environmental Appraisal, 2025
3	Xodus Group, Ornithological Surveys & Support 2025. Perenco Asset Survey, 2025
4	Ocean Ecology, Post-Decommissioning Environmental Surveys 2022 (Batch 2), 2023

8. SECTION 29 NOTICE HOLDERS' LETTERS OF SUPPORT

9. APPENDICES

Appendix 1: Extract from Perenco Asset Survey 2025

4.12 Inde 23A

Survey Date: 23/05/2025. **Boat:** Esvagt Christina. **Visibility:** Very good.
Observer Position: Bridge Deck for 500m survey.
Remarks: Data was collated during favourable conditions and completed in one day.
Summary: No nesting birds were observed during the vantage point survey conducted at Inde 23A. It is unlikely that there will be any successful nesting activity initiated during the 2025 breeding season.

ASPECT	AON	EVIDENCE OF BIRD ACTIVITY	SPECIES RECORDED
North Face	-	-	-
East Face	-	-	-
South Face	-	-	-
West Face	-	-	-
Undersides/Cellar Deck	-	-	-
Topsides	-	-	-
Derrick, Cranes	-	-	-
Flare Booms	-	-	-
Vicinity - 500 m zone	N/A	-	Fulmar (1), guillemot (2), kittiwake (1), gannet (1), LBBG (1)