

PERENCO



PERENCO GAS (UK) LIMITED

Galahad 48/12a

Installation Decommissioning Programme

January 2025

Consultation Draft

Document Control

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Terms and Abbreviations

Abbreviation	Explanation
"	Inch
AB3	Permanently Abandoned
AWMP	Active Waste Management Plan
CCS	Carbon Capture Storage
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CIP	Communication Interface Plan
COMOPS	Combined Operations Notification
COP	Cessation of Production
DP	Decommissioning Programme
EA	Environmental Agency
EBS	Environmental Baseline Assessment
EC	European Commission
EEEGR	East of England Energy Group
EL	Elevation
EMT	Environmental Management Team
ESDV	Emergency Shutdown Valve
ERW	Extended Reach Well
EU	European Union
EUNIS	European Nature Information System
GHG	Greenhouse Gases
HAS	Habitat Assessment Survey
HAZMAT	Hazardous Materials
HCS	Hydrocarbon Safe
HLV	Heavy Lift Vessel
HSEx	Health and Safety Executive
IPR	Interim Pipeline Regime
ILT	Internal Lifting Tool
IWS	International Waste Shipment
JNCC	Joint Nature Conservation Committee
km	Kilometres

Abbreviation	Explanation
LAPS	Lancelot Area Production System
LAT	Lowest Astronomical Tide
LSA	Low Specific Activity
m	Metres
MAT	Master Application Template
MARPOL	International Convention for the Prevention of Pollution from Ships
MBES	Multibeam Echo Sounder
MCZ	Marine Conservation Zones
MEI	Major Environmental Incident
MOD	Ministry of Defence
MOD DEA	Ministry of Defence Danger and Exercise Area
NFFO	National Federation of Fishermen’s Organisations
NM	Nautical Miles
NMPi	National Marine Plan Interactive
NORM	Naturally Occurring Radioactive Material
NSTA	North Sea Transition Authority
NUI	Normally Unattended Installation
OEUK	Offshore Energies UK
OPEP	Oil Pollution Emergency Plan
OPRED	Offshore Petroleum Regulator for Environment & Decommissioning
OPOL	The Offshore Pollution Liability Association Ltd
OSRL	Oil Spill Response Limited
OSPAR	Oslo and Paris Convention
OIW	Oil In Water
P&A	Plug and Abandonment
PERENCO	Perenco Gas (UK) Limited
PL	Pipeline
POB	Personnel on Board
PPM	Parts per million
PWA	Pipeline Works Authorisation
ROV	Remotely Operated Vehicle
S29	Section 29 Notice Holder

Abbreviation	Explanation
SAC	Special Area of Conservation
SAT	Subsidiary Application Template
SCAP	Supply Chain Action Plan
SEMS	Safety and Environment Management System
SLV	Sheer Leg Vessels
SMRU	Sea Mammal Research Unit
SNS	Southern North Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SPCS	Subsea Production Control System
SSIV	Subsea Isolation Valve
SSS	Side Scan Sonar
Te	Tonne
TELECOM	Telecommunications
TFSW	Transfrontier Shipment of Waste
UK	United Kingdom
UKCS	UK Continental Shelf
UKHO	UK Hydrographic Office

1. EXECUTIVE SUMMARY

1.1 Decommissioning Programme

This document contains a decommissioning programme (DP) for the Galahad installation, referred to as part of the Lancelot Area Production System (LAPS) in the Southern North Sea (SNS), further details are provided in Table 2.1.

Perenco Gas (UK) Limited (Perenco) have prepared this DP on behalf of all Section 29 (S29) Notice Holders. The Section 29 notice holder's letters of support will be provided in Section 8 in the final approved revision of this document.

1.2 Requirement for Decommissioning Programme

Installations:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Galahad installation (see Table 1.2) are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the installation detailed in Section 2.1 of this programme. (See also Section 8 - Partner Letter(s) of Support).

In conjunction with public, stakeholder and regulatory consultation, this DP is submitted in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for a decommissioning project commencing in Q2 2025 for a period of 2 years.

The infrastructure and equipment on the Galahad installations, which are on the Section 29 Notice are covered under this DP document.

Pipelines:

There will be a separate DP for the pipelines 12-inch (") PL1166 and 3-inch (") PL1167 which is connected to the LAPS pipeline network, shown in Figure 1.2, and cannot be fully decommissioned until the LAPS field reaches COP, which is currently expected after 2030.

To date, a short section of PL1166 and PL1167, between the ESDV at the topsides and the subsea open-ended cut at the base of the Galahad structure is out of use and remains open-ended and flooded. The pipelines were flushed with consent Pipeline Works Authorisation (PWA) reference 20/W/95, variation 106/V/21 and 239/V/21 in 2021. The pipelines were verified as hydrocarbon safe (HCS) following seawater flushing to <30 parts per million oil in water. They were isolated and physically air-gapped topside on the Galahad platform.

In a separate campaign in 2021, both pipelines were air-gapped subsea just outside the monopod structure whereby small pipeline sections were removed to separate the respective risers from the rest of the pipeline system. Isolation plugs were installed into the downstream cut ends on PL1166 and PL1167 in accordance with the consented PWA. The risers remain attached to the monopod structure and will be removed along with the monopod structure during the installation removal campaign. An Interim Pipeline Regime (IPR) has been completed for the PL1167 line but not for the PL1166 because downstream of the pipeline plug is operational for other production assets in the LAPS field.

1.3 Introduction

The Galahad Installation is a normally unattended (satellite) installation with an extended reach well (ERW) called Mordred (which is not included in this installation DP). Galahad is part of the Lancelot Area Production System (LAPS). It is located in the Southern Basin of the United Kingdom Continental Shelf (UKCS) in licence block 48/12a, approximately 76 km from the nearest UK coastline, and approximately 106 km from the UK/Netherlands transboundary line. The co-ordinates of the 48/12a Galahad installation are: Latitude: 53° 32' 47.7893" North, Longitude: 01° 21' 37.9614" East. Its licence number is P142.

The Galahad field was discovered in 1975 but not developed until the 1990s, with the first gas produced in November 1995. Wells 48/12a-G1 (later renamed as 48/12a-7) and 48/12a-G2 were completed in 1994 and 1995, respectively. In 1996 a third producer was drilled, 48/12a-G3, into the neighbouring Mordred field. By the 2020's, it was considered that the Galahad field had been developed to its full potential, it was no longer economical to operate, and the export of production fluids was no longer required.

A COP was approved by the North Sea Transition Authority (NSTA) on 10th March 2021. Pre-decommissioning geophysical and environmental surveys were conducted in 2021. Its wells, detailed in Table 2.2, were plugged and abandoned during the topside hydrocarbon safe campaign in the summer of 2021. The Galahad pipelines (PL1166 and PL1167) were cut subsea, near the monopod base to remove the required section necessary to create the air gap between the riser and the rest of the pipeline system to facilitate the removal of the monopod structure.

Galahad's wet gas was exported via a 12" flowline PL1666, passing through the Galahad Tee where gas from the Malory field was mixed and went onto the Lancelot subsea isolation valve (SSIV). At the Lancelot SSIV, the Galahad, Malory, and Mordred gas was injected into the 20" LAPS pipeline (PL876) system to the Bacton Gas Terminal.

Galahad stands in 19m water depth and is not located in a Marine Protected Area (MPA). Galahad is located 1.5 km south west of the Summer section of the Southern North Sea Special Area of Conservation (SAC), which is designated for the Harbour porpoise. North Norfolk Sandbanks & Saturn Reef SAC and Inner Dowsing, Race Bank & North Ridge SAC are located 24 km to the east and 34 km south west of Galahad respectively. Both SACs are designated for the protection of Sandbanks which are slightly covered by sea water all the time, and (biogenic) reefs. Holderness Offshore Marine Conservation Zone (MCZ) is located approximately 36 km to the north west of Galahad. Its protected features are Subtidal coarse sediment, Subtidal sand, Subtidal mixed sediments, Ocean quahog (*Arctica islandica*) and North Sea glacial tunnel valleys.

Galahad installation will be decommissioned because no other viable opportunities were identified for the re-use of the installation due to a lack of assets within the vicinity.

1.4 Overview of Installation Being Decommissioned

1.4.1 Installation(s)

Table 1.1: Installations Being Decommissioned					
Fields		Galahad	Production Type (Oil/Gas/Condensate)		Gas
Water Depth (m)		19	UKCS Block		48/12a
Distance to median (km)		106	Distance from nearest UK coastline (km)		76
Surface Installations					
Number		Type	Topsides Weight (Te)		Monopod Weight (Te)
1		Mono tower Structure	466.4*		540.3*
Subsea Installations			Number of Wells		
Number	Type	Template Weight (Te)	Platform	Subsea	
1	Drilling Template	5.3	4**	0	
Drill Cuttings Piles					
Number of Piles		0	Total Estimated Volume (m ³)		N/A

*Includes the weight of the outboard protection frame, piles, marine growth, and grout.

**4 developed wells and 2 E&A wells

Table 1.2a: Installations Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest (%)
PERENCO GAS (UK) LIMITED	00715529	72.23
ROCKROSE (UKCS2) LIMITED	08724360	27.77
PERENCO UK LIMITED	04653066	0
ROCKROSE ENERGY LIMITED	09665181	0

Table 1.3b: Pipelines (Riser) Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest (%)
PERENCO GAS (UK) LIMITED	00715529	72.23
ROCKROSE (UKCS2) LIMITED	08724360	27.77
PERENCO UK LIMITED	04653066	0
ROCKROSE ENERGY LIMITED	09665181	0

1.5 Summary of Proposed Decommissioning Programme

Table 1.4: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	Reason for Selection
Topsides	
Topsides rendered HCS and removed by Heavy Lift Crane Vessel in one section. Re-use followed by recycling and other recovery routes before disposal as a final option is considered.	Complies with Oslo and Paris Conventions (OSPAR) requirements and OPRED guidelines. It maximises the recycling of materials.
Risers	
The short section of the pipelines, which remains attached to the Galahad risers will be removed from the seabed together with the Galahad topsides and monopod structure for dismantlement onshore. Recycle and other recovery methods will be the prioritised disposal options.	Meets HSEx regulatory requirements and the OEUK and North Sea Transition Authority (NSTA) guidelines.
Substructures	
The monopod structure will be removed and dismantled at an onshore location. Recycle and other recovery methods will be the prioritised disposal options. Piles will be severed at least -3.0 m below the seabed with the surrounding seabed backfilled. If any practical difficulties are encountered Perenco will consult OPRED.	Leaves clear seabed (except the tie-in spools cut ends), removes a potential obstruction to fishing operations and maximises recycling of materials, to comply with OSPAR requirements.
Wells	
Plug and abandoned have already been completed in 2021 to comply with the HSEx regulation, i.e. "The Offshore Installations and Wells (design and construction etc.) Regulations 1996", and the Offshore Energies UK (OEUK) Well Decommissioning Guidelines	Meets HSEx regulatory requirements and the OEUK and North Sea Transition Authority (NSTA) guidelines.
Drill Cuttings	
Any drill cuttings will remain in situ and may be disturbed during decommissioning. However, this will result in no significant environmental impact.	The cuttings pile is widely dispersed and falls below OSPAR 2006/5 thresholds.
Interdependencies	
The monopod structure can be removed; the cuttings pile has little influence on monopod options. Small amounts of sediment and cuttings may have to be displaced to allow pile cutting.	

1.6 Field Location Including Field Layout and Adjacent Facilities

Figure 1.1: Field Location in UKCS

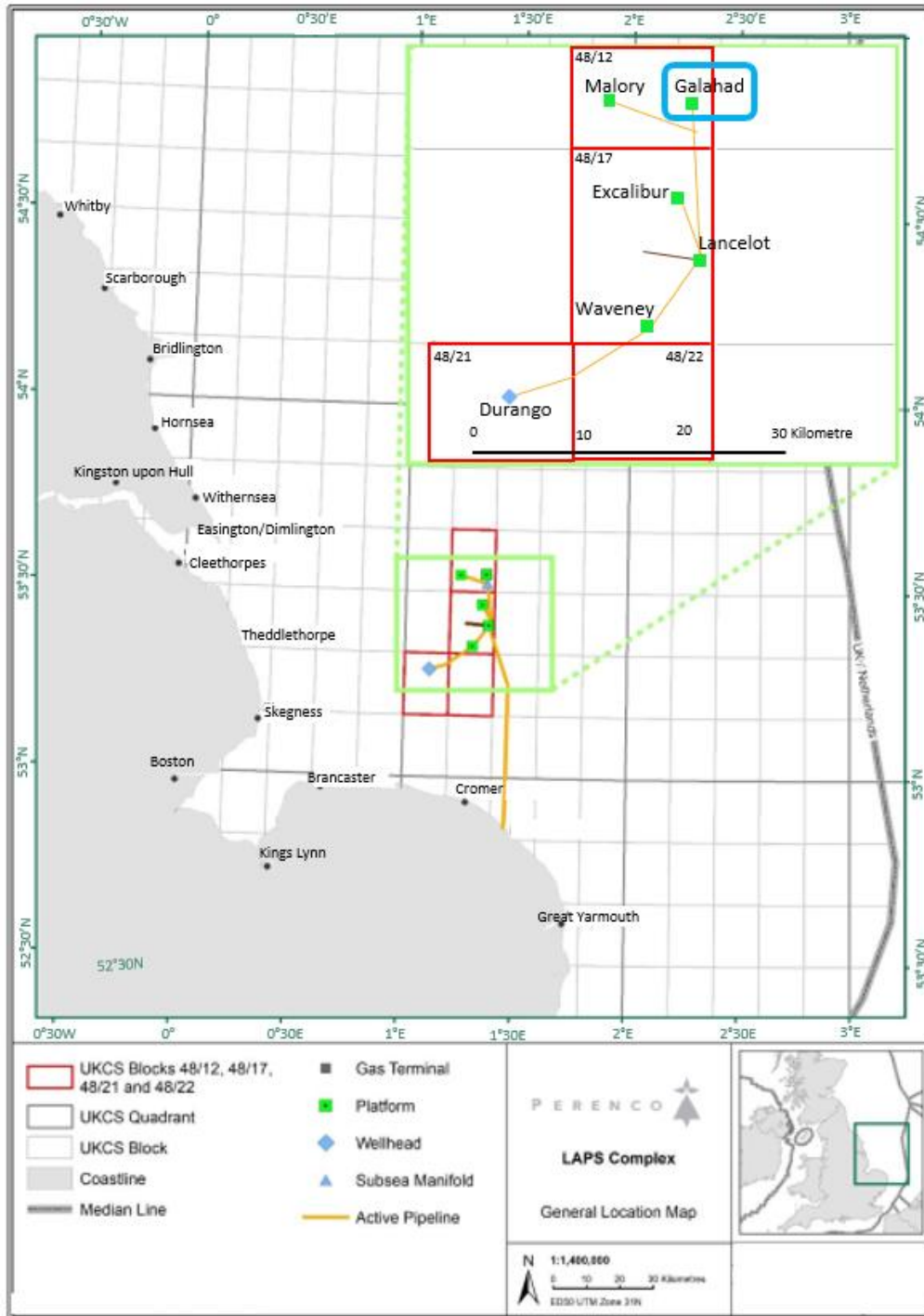


Figure 1.2: Field Layout

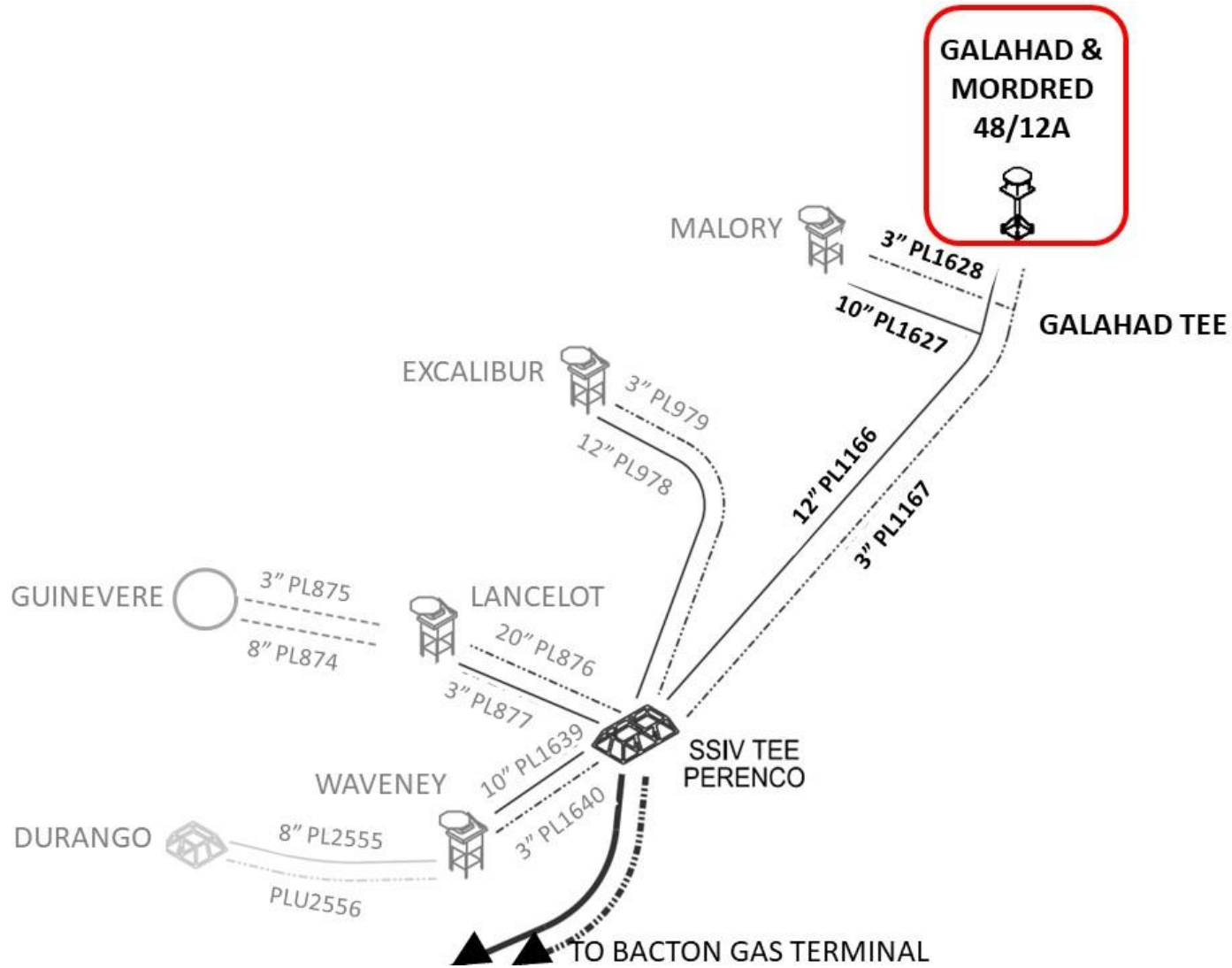
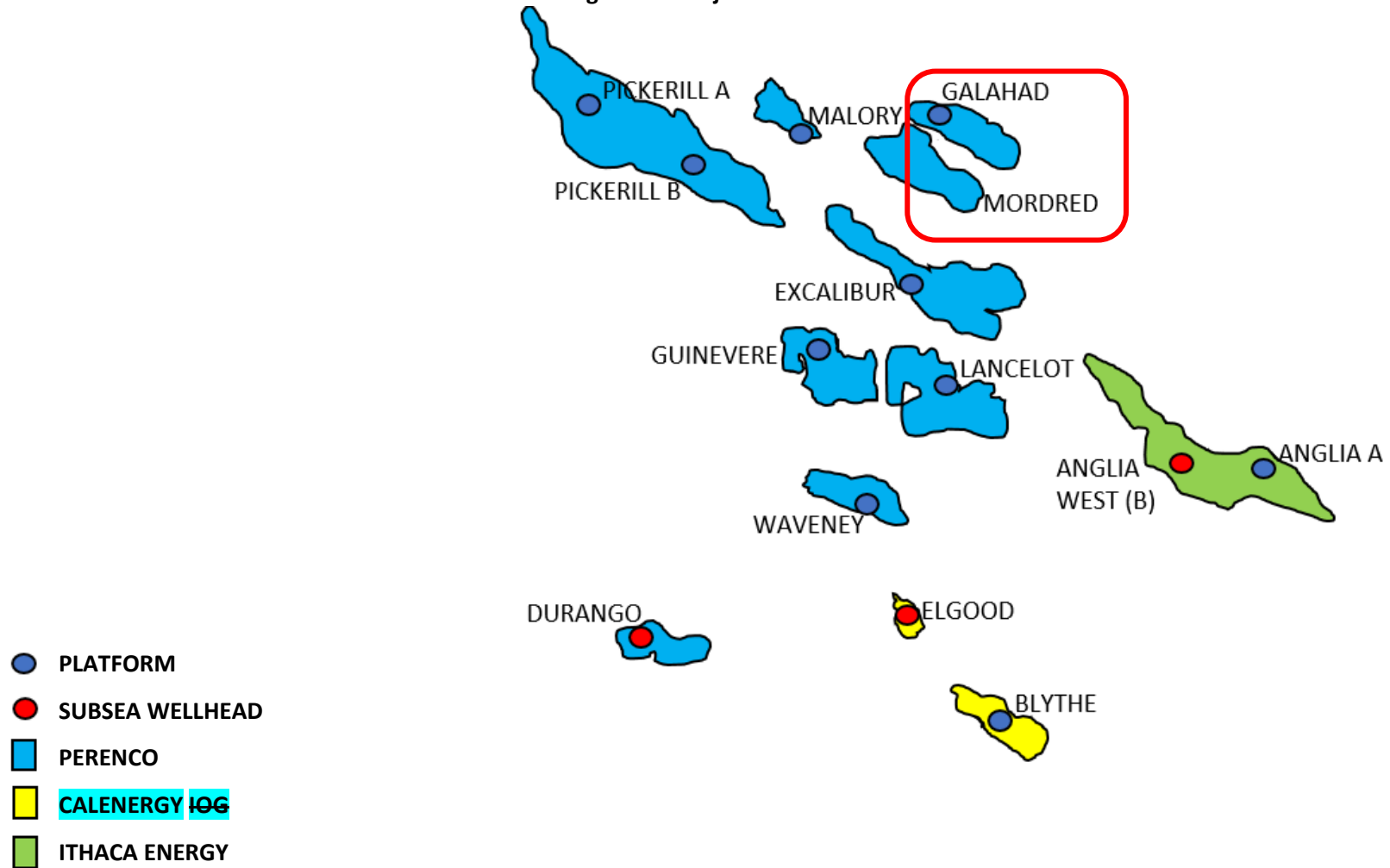




Table 1.5: Adjacent Facilities					
Operator	Name	Type	Distance/Direction	Information	Status
Perenco Gas (UK) Limited	Malory	Platform	8 km west of Galahad	Adjacent Platform	Operational
Perenco Gas (UK) Limited	Excalibur	Platform	9 km south of Galahad	Adjacent Platform	Operational
Perenco Gas (UK) Limited	Pickerill Bravo (Pick B)	Former Platform	13 km west of Galahad	Adjacent Jacket	Out-of-use
Perenco Gas (UK) Limited	Lancelot	Platform	15 km south of Galahad	Adjacent Platform	Operational
Perenco Gas (UK) Limited	Pickerill Alpha (Pick A)	Former Platform	19 km west of Galahad	Adjacent Jacket	Out-of-use
Perenco North Sea Limited	Waveney	Platform	22 km south of Galahad	Adjacent Platform	Operational
Calenergy North Sea Limited	Elgood	Subsea Well	27 km south of Galahad	Adjacent Subsea Well	Operational
Perenco North Sea Limited	Durango	Subsea Well	33 km south west of Galahad	Adjacent Subsea Well	Out-of-use
Calenergy North Sea Limited	Blythe	Platform	34 km south of Galahad	Adjacent Platform	Operational
Impacts of Decommissioning Proposals					
Decommissioning of the Galahad Monopod Structure will not impact the adjacent facilities listed above.					

Figure 1.3: Adjacent Facilities



1.7 Industrial Implications

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

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

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 Installations: Surface Facilities

Table 2.1: Surface Facilities Information							
Name	Facility Type	Location (WGS84)	Topsides/Facilities		Monopod (if applicable)		
			Weight (Te)	No. of Modules	Legs	No. of Piles	Weight of Piles (Te)
Galahad	Topside	53° 32' 47.7893" N 01° 21' 37.9614" E	466.4	1			
	Monopod Structure		540.3*		1**	4	165.4***
	Drilling Template		5.3	1			

* The 540.3 Te entry for the monopod is inclusive of the 165.4 TE pile weight

**Single monopod supported by four piles

***One pile weight 41.3te

2.2 Wells

Table 2.2: Well Information			
Platform Wells	Designation	Status	Category of Well
48/12-2	Exploration	AB3	PL-0-0-0
48/12a-7 (alias 48/12a-G1)	Appraisal	AB3	PL-0-0-0
48/12a-7Y	Gas Production	AB3	PL-0-0-0
48/12a-7Z	Gas Production	AB3	PL-0-0-0
48/12a-G2	Gas Production	AB3	PL-0-0-0
48/12a-G3	Gas Production	AB3	PL-0-0-0

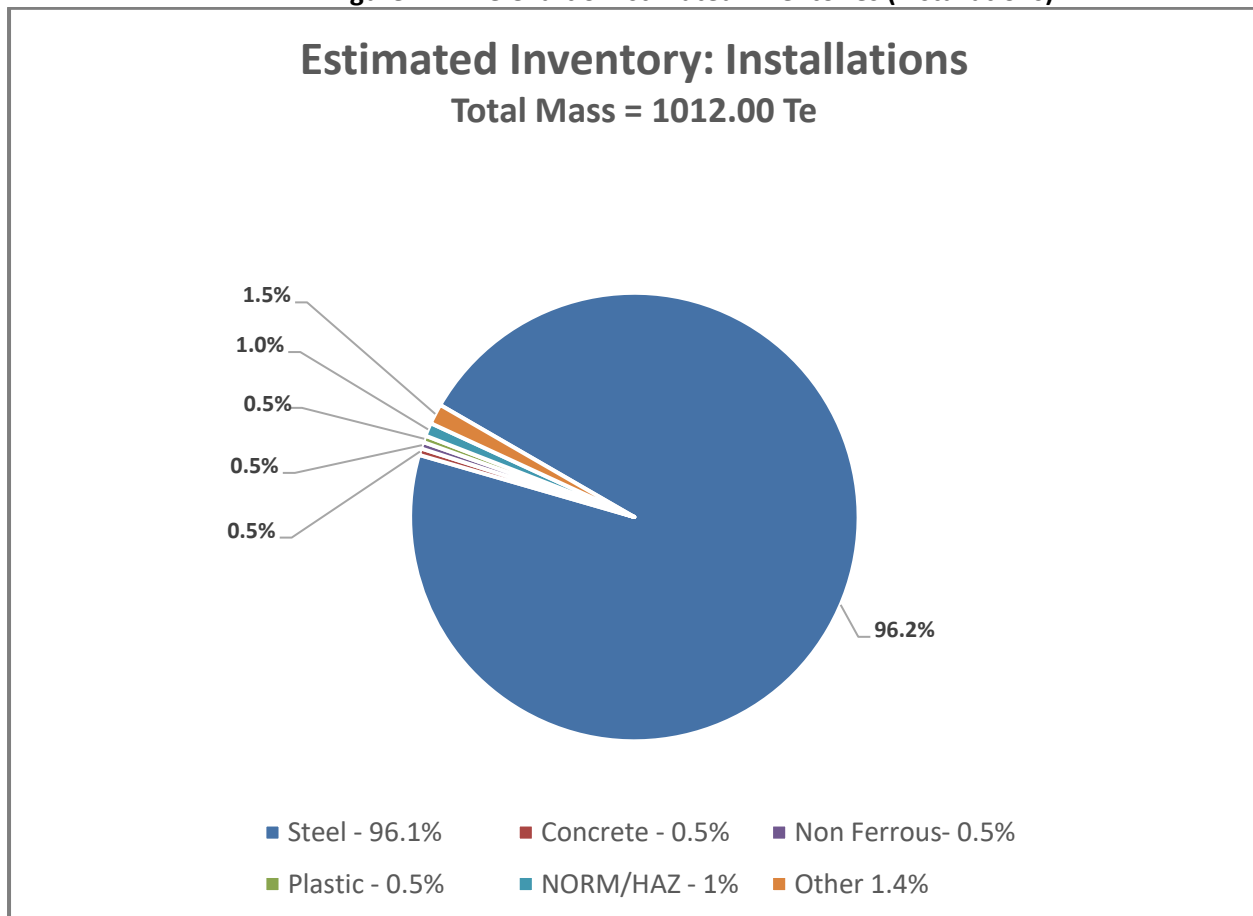
**48/12a- 7 (alias 48/12a-G1) was the original wellbore, this was sidetracked to become 48/12a-7Z which was then sidetracked to become 48/12a-7Y. Both 48/12a-7Z and 48/12a-7Y were produced as a multilateral well.*

2.3 Drill Cuttings

Table 2.3: Drill Cuttings Pile(s) Information		
Location of Pile Centre (Latitude/Longitude)	Seabed Area (m ²)	Estimated Volume of Cuttings (m ³)
N/A	N/A	N/A

2.4 Inventory Estimates

Figure 2.1: Pie Chart of Estimated Inventories (Installations)



3. REMOVAL AND DISPOSAL METHODS

In line with the waste hierarchy, in which the prevention of waste is preferred, Perenco has assessed the options for extending the producing life of the platforms, but this was not commercially viable.

The re-use and relocation of the platform topsides have also been considered but are not likely due to the ageing technology and high maintenance costs of the fabric and structural integrity, technically viable reuse options are limited.

Perenco will continue to review the platform's equipment inventories to assess the potential for adding to their existing asset portfolio spares inventory or for resale to the open market.

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

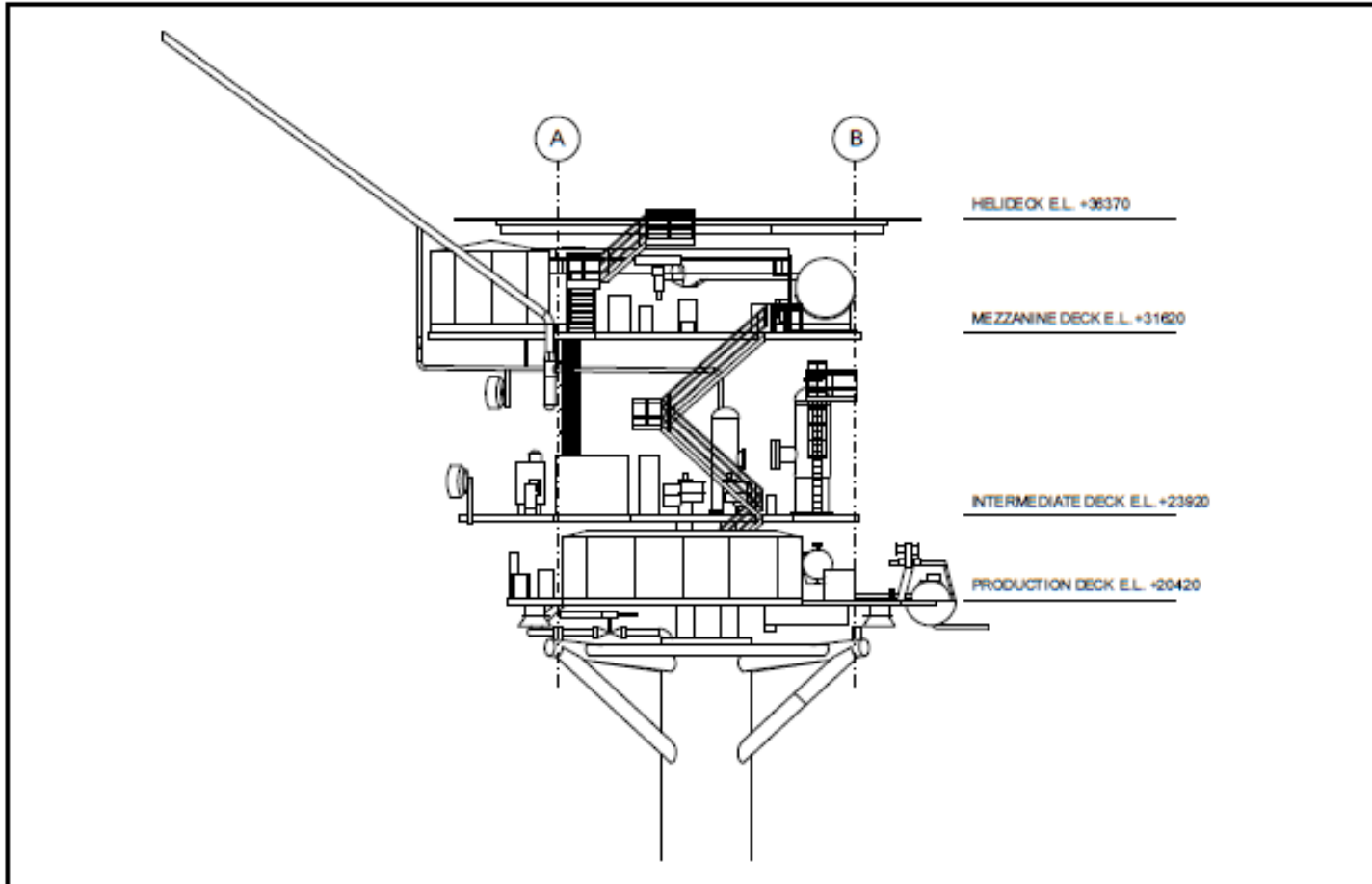
If the installation will be disposed of outside of the United Kingdom, Perenco will apply to the Environment Agency (EA) for International Waste Shipment (IWS) consent, in accordance with the International Waste Shipments (Amendment of Regulation (EC) No 1013/2006 and 1418/2007) Regulations 2021.

3.1 Topsides

3.1.1 Topsides Decommissioning Overview

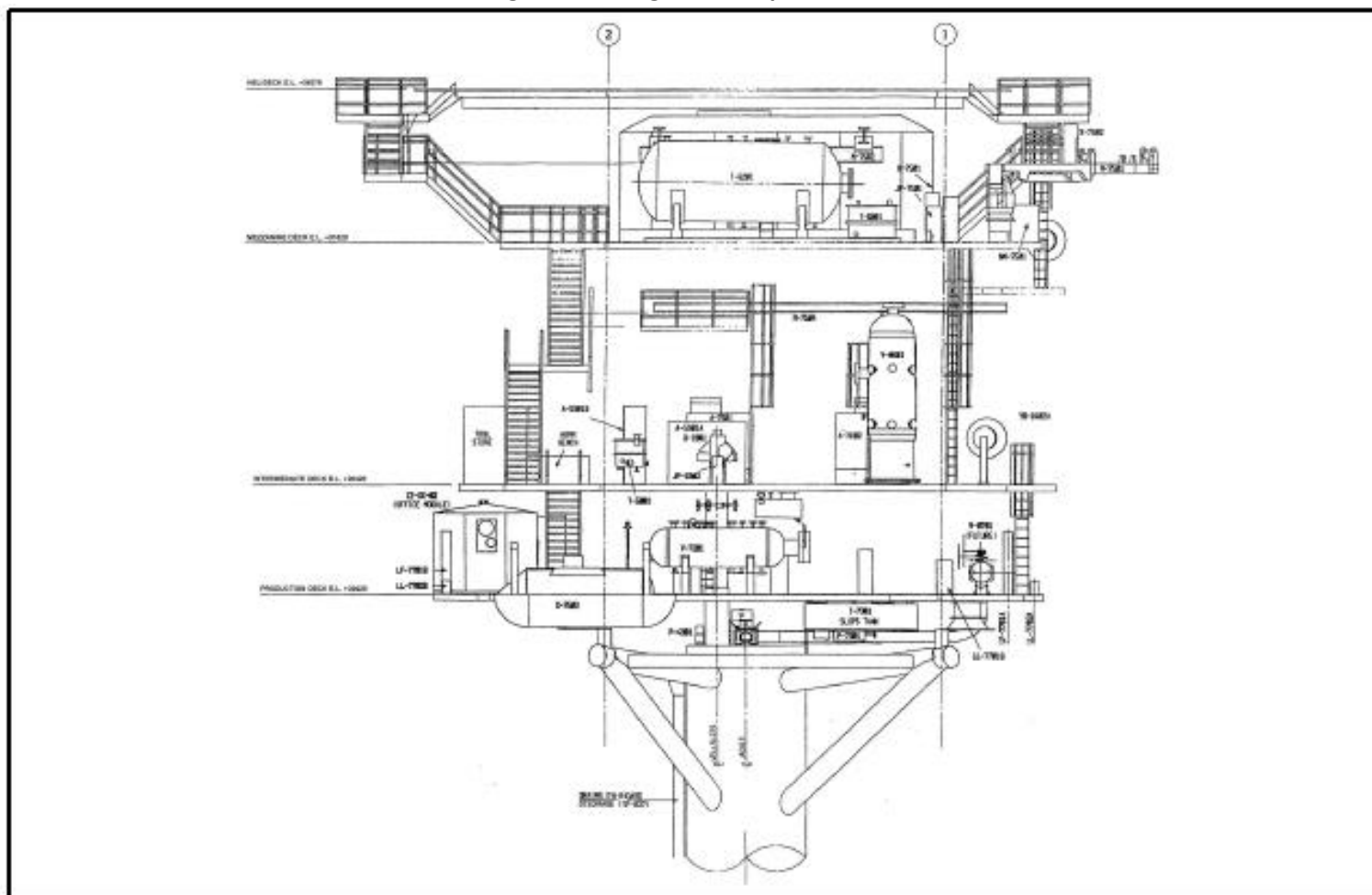
The Galahad topside is an integrated deck with three levels comprising a production deck at elevation (EL) +20.420 Lowest Astronomical Tide (LAT), an intermediate deck at EL +23.920 LAT, a mezzanine deck at EL +31.620 LAT, and a helideck located above at EL +36.370 LAT.

Figure 3.1: Diagram of Topside – East Elevation



The Blastwalls, Firewalls, Heat Shields and ID signs were omitted for clarity. (A photo of Galahad Topsides is shown on the Title page of this document).

Figure 3.2: Diagram of Topside – North Elevation



The Blastwalls, Firewalls, Heat Shields and ID signs were omitted for clarity. (A photo of Galahad Topsides is shown on the Title page of this document).



Preparation/Cleaning:

Table 3.1: Cleaning of Topsides for Removal		
Waste Type	Composition of Waste	Disposal Route
On-board hydrocarbons	N/A	N/A
Other hazardous materials	NORM and radioactive material, instruments containing heavy metals, batteries	Transported ashore for re-use, recycling, or disposal by appropriate methods. If a Transfrontier Shipment of Waste (TFSW) permit is required, Perenco will liaise with the Environment Agency to ensure all relevant permits/consents are in place.
Original paint coating	Lead-based paints	Quantitative testing will be required at the dismantling facility. Transported ashore for re-use, recycling, or disposal by appropriate methods. If a Transfrontier Shipment of Waste (TFSW) permit is required, Perenco will liaise with the relevant Waste Authority and ensure all relevant permits/consents are in place.
	Chromium (VI) paints	
Asbestos and ceramic fibre	Minor quantities	Appropriate control and management will be enforced. Transported ashore for disposal by appropriate methods.

Removal Methods:

Table 3.2: Topsides Removal Methods	
1) HLV (semi-submersible crane vessel) <input checked="" type="checkbox"/> 2) SLV <input type="checkbox"/> 3) Piece small <input type="checkbox"/> 4) Other (<i>describe briefly</i>)	
Method	Description
Single lift removal by SLV/HLV	The Topsides will be removed as a complete unit and transported to shore for re-use of selected equipment, recycling, break up and disposal. The single lift is dependent on vessel availability.

3.2 Monopods

3.2.1 Monopod Decommissioning Overview

A single lift removal option using a suitable heavy lift vessel and transportation ashore for cleaning, break up and recycling is considered the most likely removal methodology currently. A high-level description of this removal option is presented below.

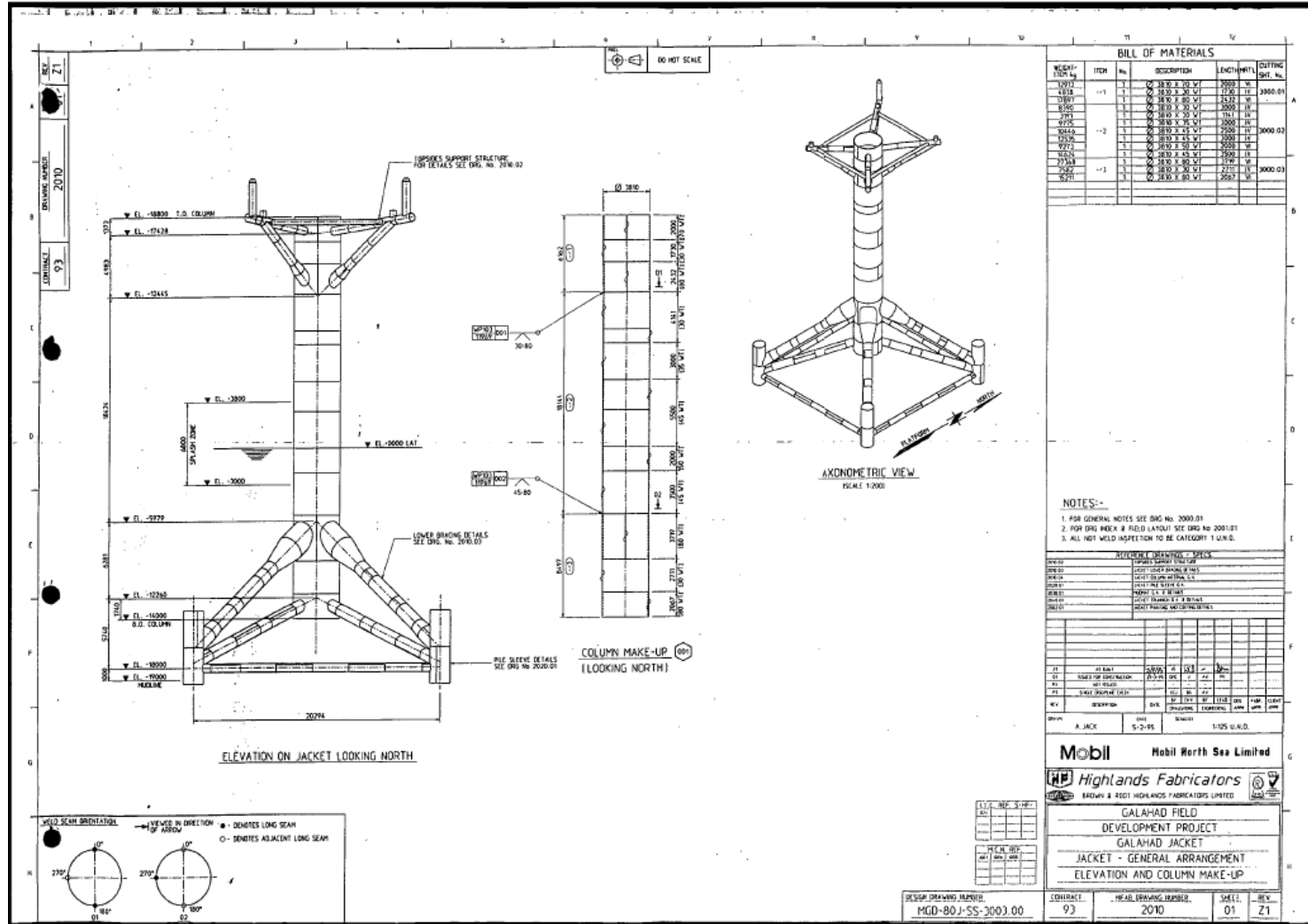
The riser sections and the protection frame attached to the monopod structure will likely be removed with the jacket, an assessment will be completed as part of the detailed design to confirm they can remain in place during removal.

The steps presented below provide a high-level chronological summary of the key stages of the Galahad topside and monopod structure dismantling as a single lift using a heavy lift vessel:

- Mobilisation of equipment and personnel to Heavy Lift Vessel.
- Transit of Vessel to Galahad Field.
- Arrive at 500m safety zone and complete pre-entry checks.
- Move into position next to the structure.
- Launch a Remotely Operated Vehicle (ROV) to inspect the structure.
- Transfer topside team to prepare topside for removal (stabbing guides cut)
- Connect rigging to the main crane.
- Connect rigging to topside padeyes.
- Lift topside to the deck of the vessel and seafasten in place.
- Deploy an internal cutting tool to cut all four skirt piles below the seabed (2 lots of cuts per pile to prevent stick-up on HLV).
- Connect rigging to the main crane.
- Connect rigging/ILTs to the monopod.
- Lift the monopod to the vessel deck and seafasten in place.
- Recover any remaining piles sticking out of the seabed.
- Execute as-left survey.
- Complete safety checks in preparation for leaving the field and move out of the 500m safety zone.
- Transport the topside and monopod to the disposal yard for onshore disposal and recycling



Figure 3.3: Jacket Elevation - Monopod General Arrangement





3.2.2 Monopod Removal Methods

The monopods will be removed to shore for cleaning and disposal. The pile cuts will be made below the seabed level at such a depth to ensure that any remains are unlikely to become uncovered. The means of cutting could be diamond wire or internal high-pressure abrasive water jet cutting; explosives will also be explored.

The substructure consists of four skirt piles braced to a single vertical column suspended above the mudline. The optimum pile length and diameter were determined to be 31.456m long and 1.37m in diameter. The topsides are supported off the central column by a trussed frame, the substructure is orientated such that platform North is 170°.

The structure lies in a water depth of 19.0m LAT. All locations are related to a pre-drilled well 48/12a-7Y and 48/12a-7Z. The Galahad structure's top-of-column elevation (EL) is +18.800 LAT, bottom-of-column elevation (EL) -14.000 LAT and mudline (EL) -19.000 LAT. The plan dimensions from the centre line of the piles are 20.294m x 20.294m.

The estimated weight of the structure to be removed is 540.3 Te; this includes the outboard protection frame, the weight of piles to be removed including (165.4 Te incl. grout) and marine growth (119 Te).

Table 3.3: Monopod Removal Methods	
1) HLV (semi-submersible crane vessel) <input checked="" type="checkbox"/> 2) SLV <input type="checkbox"/> 3) Piece small <input type="checkbox"/> 4) Other (describe briefly)	
Method	Description
Single lift removal by SLV/HLV	The Structure (including 4 No. piles) will be removed as a complete unit and transported to shore for re-use of selected equipment, recycling, break up and disposal. The single lift is dependent on vessel availability.

3.3 Subsea Installation(s) and Stabilisation Features

Subsea installation and stabilisation features will be covered when the Galahad Pipeline Decommissioning Programme is submitted.

Table 3.4: Subsea Installations and Stabilisation Features Decommissioning Options			
Subsea Installations and Stabilisation Features	Number	Option	Disposal Route (if applicable)
N/A	N/A	N/A	N/A

3.4 Wells

Table 3.5: Well Plug and Abandonment
All wells are already plugged and abandoned to AB3 category PL-0-0-0.

3.5 Waste Streams

Table 3.6: Waste Stream Management Methods	
Waste Stream	Removal and Disposal Method
Bulk Liquids	Removed from vessels and pipework, and either injected into platform wells for disposal or discharged into tote tanks for transport and appropriate disposal onshore. Relevant permits will be sought for the desired disposal method before commencement. Vessels, pipework, and sumps will be drained before removal to shore and shipped following maritime transportation guidelines. Package filtration equipment for disposal of liquids to sea may be utilised and relevant permits will be sought for such operations.
Marine Growth	Removed offshore/onshore. Disposed according to guidelines.
NORM/LSA Scale	Tests for NORM/LSA will be undertaken offshore by the Radiation Protection Supervisor. Any encountered NORM will be dealt with and disposed of following guidelines and company policies and under the appropriate permit(s).
Asbestos	Tests for asbestos will take place offshore and will be dealt with/disposed of according to guidelines and company policies.
Other Hazardous Wastes	Detailed surveys for other hazardous wastes will be undertaken offshore and dealt with/disposed of according to guidelines and company policies.
Onshore Dismantling Sites	Appropriate licensed sites will be selected. The chosen facility must demonstrate a proven disposal track record and waste stream management throughout the deconstruction process and demonstrate its ability to deliver recycling options. OPRED will be advised when a decision is made.

Table 3.7: Inventory Disposition			
	Total Inventory (Te)*	Planned (Te) to Shore	Planned Left in Situ**
Installations	1012	930	82

* The total inventory includes the weight of the piles, the monopod, and marine growth.

** Planned tonnage left in situ includes piles left in situ once cut 3m below the seabed.

4. ENVIRONMENTAL APPRAISAL OVERVIEW

4.1 Environmental Sensitivities (Summary)

Table 4.1: Environmental Sensitivities	
Conservation Interests	<p>Galahad is not located in a Marine Protected Area (MPA). Galahad is located 1.5 km south west of the Summer section of the Southern North Sea Special Area of Conservation (SAC), which is designated for the Harbour porpoise.</p> <p>North Norfolk Sandbanks & Saturn Reef SAC and Inner Dowsing, Race Bank & North Ridge SAC are located 24 km to the east and 34 km south west of Galahad respectively. Both SACs are designated for the protection of Sandbanks which are slightly covered by sea water all the time, and (biogenic) reefs.</p> <p>Holderness Offshore Marine Conservation Zone (MCZ) is located approximately 36 km to the north west of Galahad. Its protected features are Subtidal coarse sediment, Subtidal sand, Subtidal mixed sediments, Ocean quahog (<i>Arctica islandica</i>) and North Sea glacial tunnel valleys.</p>
Seabed	<p>The EUNIS seabed classification identified at Galahad is A5.14: Circalittoral Coarse Sediment; defined as tide-swept circalittoral coarse sands, gravel, and shingle generally in depths of over 15-20m. The pre-commissioning habitat survey confirmed this habitat type at Galahad.</p> <p>Sediment chemistry analysis identified slightly elevated concentrations of hydrocarbons and certain metals, but concentrations were consistent with other studies in the region.</p> <p>Drilling records from the development of the field indicated that no Oil Based Mud (OBM) cuttings were discharged overboard.</p>
Sensitive Habitats and Species	<p>There were no potentially sensitive species habitats recorded in the vicinity of Galahad during the benthic survey.</p> <p>There was no evidence of Biogenic reefs formed by <i>Sabellaria spinulosa</i>, Horse mussel (<i>Modiolus modiolus</i>) beds, Fragile sponge and anthozoan communities on subtidal rocky habitats and Ocean quahog (<i>Arctica islandica</i>).</p> <p>There was a low probability of the following habitats at Galahad; Stony reefs formed from iceberg scour or moraine deposits, Herring spawning grounds, Sandeel habitat and Sandbanks which are slightly covered by seawater all the time.</p> <p>No invasive non-native species were noted at the site.</p>
Fish	<p>The following species spawn in the vicinity of the project (spawning months in brackets): Cod (Jan-Apr), Herring (Aug-Oct), Lemon Sole (Apr-Sept), Mackerel (May-Aug), Nephrops (Jan-Dec), Plaice (Dec-Apr), Sandeels (Nov-Feb), Sprat (Mar-Aug), Whiting (Feb-June).</p> <p>The following species have nursery grounds in the vicinity of the project: Anglerfish, Cod, Herring, Horse Mackerel, Lemon Sole, Mackerel, Nephrops, Plaice, Sandeels, Sprat, Whiting.</p>



<p>Fisheries</p>	<p>The fishing effort in ICES Rectangle 36F1 (where Galahad is located), with a monthly average over the five years from 2018 to 2022 was 56 days of effort per month. This is below the North Sea fishing effort average of 81 days effort, but slightly above the median of 54 days effort. In 36F1, the fishing effort is generally higher between July and November.</p> <p>Fisheries landing data indicates that area 36F1 is important for crustaceans (crabs and lobsters) and shellfish (Scallops and Whelks).</p>
<p>Marine Mammals</p>	<p>The Southern North Sea generally has a relatively low density of marine mammals. While over ten species of cetaceans have been recorded in the Southern North Sea, only the Harbour Porpoise and White-Beaked Dolphin can be considered regularly occurring throughout most of the year, and the Minke Whale is a frequent seasonal visitor. Low densities of Harbour Porpoise have been recorded in block 36F1 during the Summer and Autumn months.</p> <p>The Southern North Sea SAC, located 1.5 km north east of Galahad, is designated for the Harbour Porpoise.</p> <p>The seas around Galahad are not important feeding grounds for the Gray Seal. Galahad is located towards the outer extent of the feeding grounds of the Harbour Seal, which has breeding grounds at The Wash, approximately 90km south east of Galahad.</p>
<p>Birds</p>	<p>It is reported that Block 48/12 (where Galahad is located) is not within a hotspot area, nor defined as an important area of high seabird density at sea. The Seabird Oil Sensitivity Index (SOSI) for Block 48/12 ranges from 5 (low sensitivity) in the summer months to 2 (very high) and 1 (extremely high sensitivity) between October and April.</p> <p>Seabird breeding surveys in 2023 and 2024 indicated no nesting on Galahad.</p>
<p>Onshore and Coastal Communities</p>	<p>A number of beaches are located along the Yorkshire and Lincolnshire coast including Hornsea, Mablethorpe, Skegness, Sutton-on-Sea, Scarborough, Whitby and Withernsea. Mablethorpe and Skegness are important coastal towns in Lincolnshire. These areas are important for tourism.</p>
<p>Other Users of the Sea</p>	<p>There is significant surface and subsurface infrastructure in the UKCS Blocks around 48/12, which is predominantly associated with the LAPS Complex, although many have now ceased production.</p> <p>There are no marine aggregate areas within Block 48/12.</p> <p>The density of shipping traffic is regarded as 'high' in UKCS Block 48/12 due to the relative proximity to important ports around the Yorkshire, Lincolnshire and Norfolk coasts and offshore energy activity.</p> <p>No subsea telecommunication cables cross the blocks of interest.</p> <p>Galahad is approximately 3 km south of the EGD323E Southern Complex, a Royal Airforce Manageable Danger Area.</p> <p>The windfarms currently in operation that are closest to Galahad are Triton Knoll, Dudgeon and Hornsea Projects 1 and 2.</p> <p>Galahad is located within the footprint of the planned Outer Dowsing Windfarm Development. Based on current planning application time frame, the windfarm will not commence construction until 2026/2027. It is likely that Galahad will be decommissioned prior to the commencement of the windfarm construction phase. If there is an overlap in timing, the impact on either project will be minimal. Galahad's 500m zone will be in place to ensure safety of the decommissioning project. The decommissioning activity does</p>



	<p>not generate significant marine noise that would cause an accumulative affect with the windfarm construction activity. There are no wrecks recorded on the Admiralty Chart within 5km of Galahad.</p>
Oil Spill potential	<p>There are limited sources of hydrocarbon on the installation. The only potential source would be from a bunkering incident, which would have insufficient volumes to constitute a potential for a Major Environmental Incident (MEI).</p>
Atmosphere	<p>The offshore decommissioning activities will produce atmospheric emissions, primarily through fuel combustion. The emissions will be minimal in terms of the overall carbon footprint of the UKCS oil and gas activity and the UK national carbon budget.</p>

4.2 Potential Environmental Impacts and Their Management

Environmental Impact Assessment Summary:

Table 4.2 : Environmental Impact Management

Activity	Main Impacts	Management
Topsides Removal	Seabed disturbance from positioning the HLV.	The re-suspension of sediments will be minor in the context of the background turbidity. Sediment plumes will be extremely short lived, given the strong tidal currents in the area. There were no sensitive benthic habitats recorded in the vicinity of the installation. The impact is considered insignificant.
	Impact on potential nesting birds habitat	PUK appointed an ornithologist to undertake a seabird survey of Galahad in 2023 and 2024. No nesting birds were encountered on the installation on both occasions. It is recommended to continue undertaking an annual nesting survey of Galahad and to maintain a Seabird Management Plan for the installation. The impact is considered insignificant.
	Engine emissions from operational activity of HLV and support vessels (GHG emissions)	The emissions will be minimal in terms of the overall carbon footprint of the UKCS oil and gas activity and the UK national carbon budget. Best practices will be employed to minimise this carbon footprint, including optimising the logistical planning of vessels and operating effective environmental management systems to minimise emissions. The impact is considered insignificant.
	Vessel collision – loss of containment	The only identified potential source of a spill is during bunkering. The Galahad installation will have an OPEP, and a Communications Interface Plan (CIP) will be prepared and approved before the commencement of the decommissioning activity. A bunkering procedure will be in place to control the process to limit the potential for diesel release during bunkering. The impact is considered insignificant.
Monopod(s) Removal	Noise from cutting piles	The Harbour Porpoise is the species most sensitive to marine noise in the Southern North Sea. The current guidance for assessing the significance of noise disturbance against harbour porpoises (JNCC, 2020) does not classify abrasive water jet cutting as a significant noise source. Therefore, it is deemed that abrasive water jet cutting does not have an auditory impact on Harbour Porpoise or other marine species. The noise impact of abrasive jet cutting is not considered a risk to marine animals.



		The impact is considered insignificant.
	Suspension of sediment from the removal of the monopod	See above - Seabed disturbance from positioning the HLV
	Engine emissions from operational activity of HLV and support vessels (GHG emissions)	See Topside Removal above
	Vessel collision – loss of containment	See Topside Removal above



5. INTERESTED PARTY CONSULTATIONS

Consultations Summary:

Perenco as part of the Installation DP consultation process, plan to include the following statutory stakeholders of the DP:

- NFFO - National Federation of Fisherman’s Organisation
- SFF - Scottish Fisherman’s Federation
- NIFPO - Northern Ireland Fish Producers Organisation
- Global Marine Systems
- Public

Table 5.1: Summary of Stakeholder Comments		
Who	Comment	Response
Statutory Consultations		
NSTA		
NFFO		
SFF		
NIFPO		
Global Marine Systems		
Other Consultations		
Public		
Informal Stakeholder Consultations		
JNCC		
HSEx		
Environment Agency		
MOD		
CEFAS		



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 standard procedures for operational control and 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 consents and the consultations required as part of this process.

6.2 Post-Decommissioning Debris Clearance and Verification

In 2021, before the commencement of all physical decommissioning activities as proposed in this DP, a pre-decommissioning survey was completed along the Galahad Pipelines and inside the Galahad 500m safety zone. This survey included: a bathymetry survey, to identify any free spans, exposures, or large objects (which may present a snagging hazard), and an Environmental Baseline Survey (EBS) and Habitat Assessment Survey (HAS).

Following the completion of these activities detailed in this DP, an as-left survey will be completed.

A clear seabed certificate will not be obtained, as required under the Decommissioning Debris Surveys and Recovery and Seabed Clearance Verification guidance by OPRED and NFFO, because the isolation plugs installed on the cut ends of the Galahad pipelines (PL1166 and PL1167) protrude above the seabed. This design choice was intentional to facilitate visibility during routine integrity inspections of the plugs and the cut ends of the pipelines. However, this configuration poses a snagging hazard. Therefore, we plan to request a new 500m safety zone order (ON54) around Galahad.

This 500m safety zone will remain in place until the pipelines are fully decommissioned because the PL1166 is connected to the operational LAPS field export pipeline, as shown in Figure 1.2. The Galahad pipelines will only be fully decommissioned once the LAPS field has reached the end of its production life and an agreement on the cessation of production (CoP) has been established. This is expected in 2030. The post-decommissioning surveys will be conducted as part of the Pipeline DP.

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.

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



6.3 Schedule




Several decommissioning activities have been carried out before the submission of the Installation DP, as detailed in Sections 1.2 and 1.3. This work has been carried out under the appropriate permitting regime for the activity, i.e., OPRED, NSTA and HSEx.

The remaining decommissioning activities include a post-decommissioning survey and the completion of the Close Out Report. This report is expected to be submitted in 2030 because the Galahad export pipeline is connected to the LAPS pipeline network and cannot be fully decommissioned until the LAPS field reaches COP.

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

Figure 6.1: Gantt Chart of Project Plan

Year	2024				2025				2026				2027			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Installation Decommissioning Programme																
Submission of DP																
Consultation																
Approval of DP																
Topsides and Monopod Removal Campaign																
Topsides Removal																
Monopod Removal																
Close Out Letter & progress Report																

LEGEND	
	Earliest date task could be completed
	Period in which task is to be completed
	Date Tasks were completed



6.4 Costs

The decommissioning costs detailed within this Installation DP have been provided to OPRED. The costs cover the scope of work associated with the removal of the installation, dismantlement onshore, decommissioning surveys and closeout.

6.5 Close Out

In accordance with the OPRED Guidelines, a Close Out Report will be submitted to OPRED explaining any variations from the DP. A Close Out Report will be submitted within 12 months of the completion of the post-decommissioning surveys, including debris removal, and if deemed required for a clear seabed certificate an overtrawl survey.

6.6 Legacy Monitoring and Evaluation

The Close Out Report will provide a proposed frequency for any further legacy monitoring surveys based on the survey results and comparisons. The legacy monitoring regime will be discussed and agreed upon with OPRED as part of the Pipeline DP close out process.

As the remaining PL1166 and PL1167 sections downstream of the plugged end to the Lancelot SSIV are operational, they will continue to be monitored as part of routine integrity surveys for operational pipelines until the LAPS Field reaches COP.



7. SUPPORTING DOCUMENTS

Table 7.1: Supporting Documents		
Document Number	Title	Reference
1	Galahad Pre-Decommissioning Geophysical Survey	NSO-PJ0171-RR-DC-SUR-01A_1.0
2	Galahad Pre-Decommissioning Environmental Survey	2043_Galahad_EBS_HAS_00
3	HCS Certificate – Lloyd’s Register Report of Examination	PRJ11100324575 1 Galahad HCF report
4	End of Well Reports – AB3	CDIL EOWR Galahad 48-12a-7z & -7y P&A Ph3 2021, CDIL EOWR Galahad 48-12a-G2 P&A Ph3 2021 and CDIL EOWR Galahad 48-12a-G3 P&A Ph3 2021
5	Seabird Survey 2023	Biocensus (2023). Perenco Assets Ornithological Assessment 2023. RSK Biocensus, UK.
6	Seabird Survey 2024	Xodus (2024). Perenco: Ornithological Support Perenco Asset Survey 2024. Xodus, Aberdeen, UK.



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

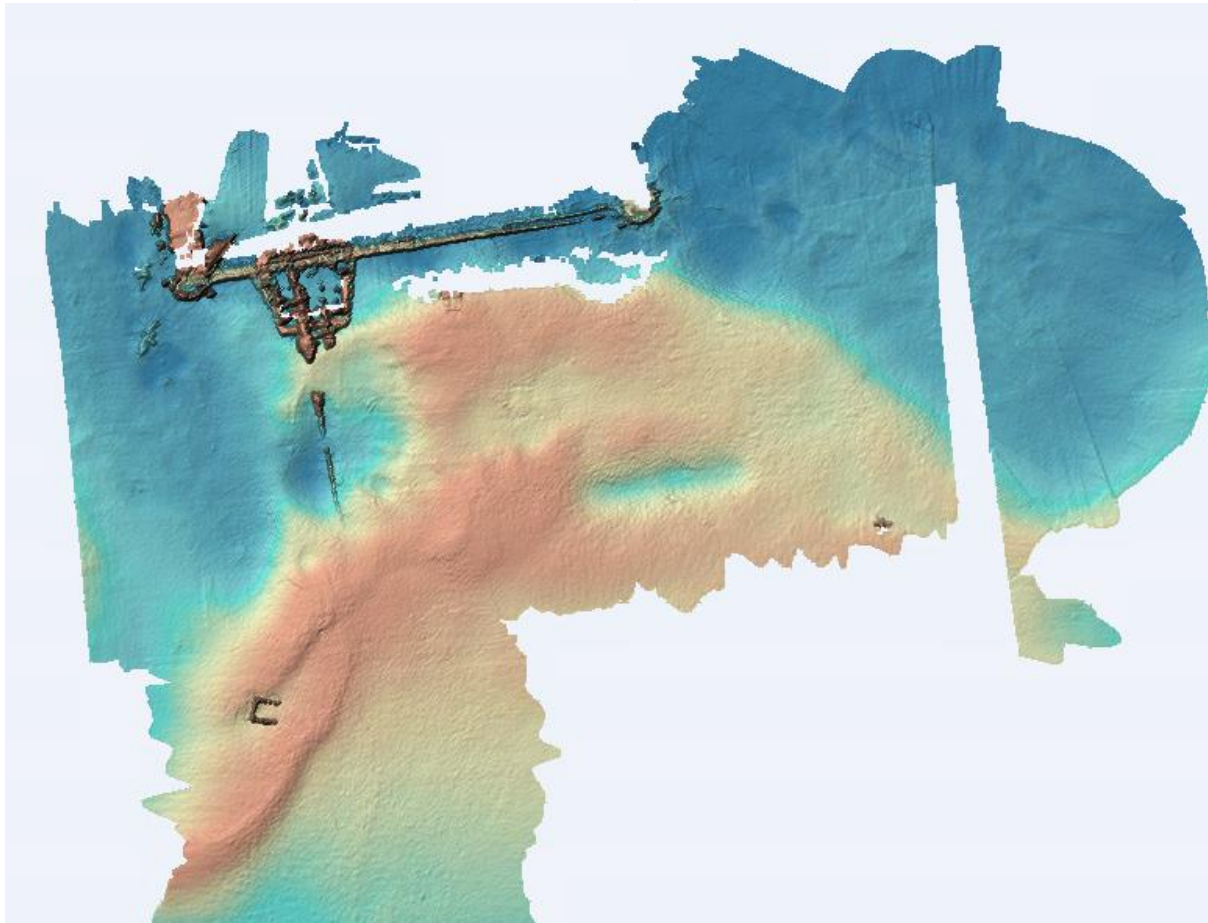
Insert in the Final DP Version

9. APPENDICES

Appendix 1: Pre-Decommissioning Geophysical Survey Galahad 500m Safety Zone (SSS 2021)

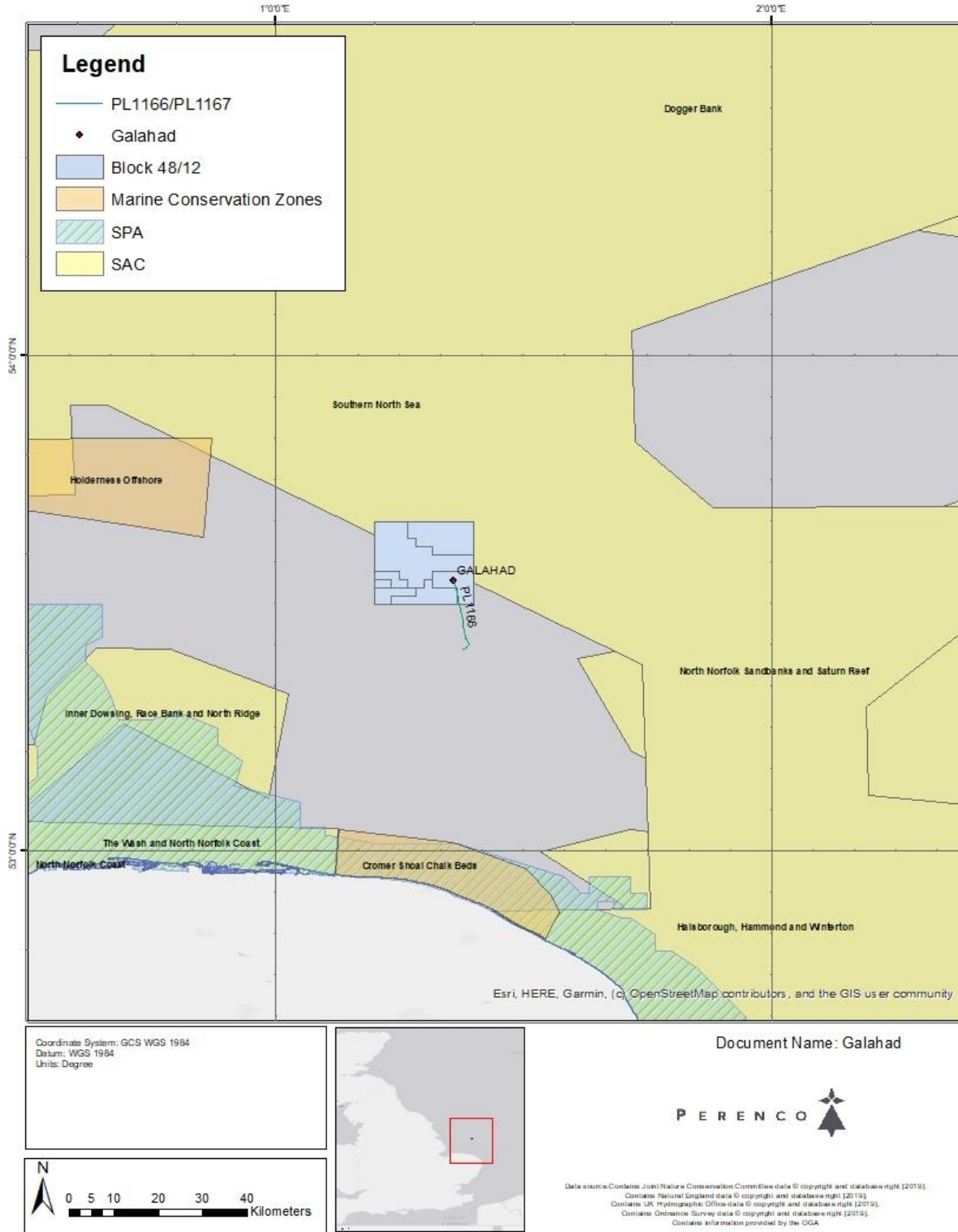


Appendix 2: Post Removal of Subsea Pipeline Sections and Installation of Subsea Plugs (MBES 2021)

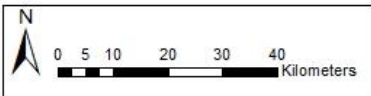




Appendix 3: Marine Protected Areas within the Vicinity of the Galahad Field



Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree



Document Name: Galahad



Data source: Contains Joint Nature Conservation Committee data © copyright and database right (2019).
 Contains Natural England data © copyright and database right (2019).
 Contains UK Hydrographic Office data © copyright and database right (2019).
 Contains Ordnance Survey data © copyright and database right (2019).
 Contains information provided by the OGA.