



PERENCO UK LIMITED

Leman Southwest 53/02a-15Y WHPS and PL3731 & PLU3732 Pipeline Sections Decommissioning Programmes

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Consultation Version**

Document Control

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Terms and Abbreviations

Abbreviation	Explanation
"	Inch
%	Percentage
AB3	Abandonment Phase 3 (permanently abandoned)
BGT	Bacton Gas Terminal
CA	Comparative Assessment
DP	Decommissioning Programme
EA	Environmental Appraisal
HSEx	Health and Safety Executive
JUB	Jack-up Barge
km	Kilometre
LSA	Low Specific Activity
m	Metre
MARPOL	International Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency
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
OEUK	Offshore Energies UK
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
P&A	Plug & Abandon
Perenco	Perenco UK Limited
PL	Pipeline
PLONOR	Pose Little or No Risk (to the environment)
PLU	Pipeline Umbilical



Abbreviation	Explanation
ROV	Remotely Operated Vehicle
S29	Section 29
SAC	Special Area of Conservation
SE	Southeast
SFF	The Scottish Fishermen's Federation
SNS	Southern North Sea
SOSI	Seabird Oil Sensitivity Index
SPA	Special Protection Area
SW	Southwest
Te	Tonne
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
UKHO	UK Hydrographic Office
WGS	World Geodetic System
WHPS	Wellhead Protection Structure
Xmas tree	Subsea Christmas tree



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1. EXECUTIVE SUMMARY

1.1 Decommissioning Programme

This document contains two Decommissioning Programmes (DPs) for the Leman Southwest (SW) 53/02a-15Y subsea installation and pipelines, including:

- The 53/02a-15Y wellhead, subsea Christmas tree (Xmas tree) and the associated wellhead protection structure (WHPS).
- Removal of sections up to 16m in length in total from pipeline (PL) PL3731 at 53/02a-15Y and the adjacent Leman Southeast (SE) 53/02a-14A subsea installation, and up to 10m of pipeline umbilical (PLU) PLU3732 from 53/02a-15Y.

It also includes subsea installation and pipeline stabilisation features that are necessary to remove to ensure unimpeded decommissioning activities at the subsea installation location.

The DP does not contain a programme for the remaining lengths of PL3731 and PLU3732; these will be covered in a separate DP. It also does not include the decommissioning of 53/02a-14A, nor its associated pipelines (PL3027 and PLU3028) and stabilisation features. These will be covered in separate DPs.

1.2 Requirement for Decommissioning Programme

Installations: In accordance with the Petroleum Act 1998, the Section 29 (S29) notice holders of the Leman SW subsea 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 - Section 29 Notice Holders Letters of Support).

Pipelines: In accordance with the Petroleum Act 1998, the Section 29 notice holders of the PL3731 and PLU3732 pipelines (see Table 1.4) are applying to OPRED to obtain approval for decommissioning the pipelines detailed in Section 2.2 of this programme. (See also Section 8 – Section 29 Notice Holders Letters of Support).

In conjunction with stakeholder and regulatory consultation, this DP is submitted without derogation and in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for a 4-year decommissioning plan due to begin in Q2 2026.

1.3 Introduction

The Leman South field, discovered in 1968, is located to the south of the Leman field, approximately 60km northeast of the Bacton Gas Terminal (BGT) in the Southern North Sea (SNS). It lies in licence P25, Block 53/02a. Perenco UK Limited (Perenco) developed the Leman SW prospect with two subsea wells: Leman SE 53/02a-14A and Leman SW 53/02a-15Y. 53/02a-15Y was drilled and tied-back to Leman SE well 53/02a-14A via 6-inch (") pipeline PL3731 and 4" control umbilical PLU3732. The flow from the subsea wells is tied into the Leman 49/27A production platform on the Leman field. From there, the flow travels via a 30" pipeline (PL23) to the BGT.



Well 53/02a-15Y was completed in October 2014 and the well started producing in February 2015. 53/02a-15Y was shut-in in August 2021 and will be plugged and abandoned (P&A'd) to abandonment phase 3 (AB3) during the planned decommissioning campaign in 2026. Perenco assessed options for extending the production life of the subsea installation, but none proved commercially viable. However, Perenco plans to recover the subsea control module, instrumentation and interface plates from the Xmas tree for re-use.

The subsea components that will be removed are the 53/02a-15Y wellhead, Xmas tree and WHPS. The well conductor will be cut -3m below the seabed, and the top section will also be removed. Up to five fronded mattresses that protect 53/02a-15Y will be removed from the seabed.

PL3731 and PLU3732 will be cut and air-gapped at both the 53/02a-15Y and 53/02a-14A installations. Up to 5m of PL3731 will be removed at 53/02a-15Y and up to 11m will be removed at 53/02a-14A. Up to 10m of PLU3732 will be removed at 53/02a-15Y. No length of PLU3732 will be removed at 53/02a-14A; it will only be disconnected and plugged. Any exposed pipeline ends of PL3731 and PLU3732 will be re-covered by shifting existing mattresses along the pipeline route. Up to five protective mattresses resting on the pipeline and umbilical at each subsea allocation will also be removed to allow pipeline/umbilical cutting and air-gapping operations to be completed.

Significant technical constraints related to the wells, combined with the current pipeline status and configuration, will prevent the flushing of PL3731 prior to cutting. The pipeline isolation arrangement, consisting of double block and bleed valves between PL3731 and Leman SE pipeline PL3027, will be closed by divers. Following valve isolation, the PL3731 spool will be disconnected from PL3027, and a blind flange will be installed on the valve face to achieve positive isolation.

Following the completion of the wellhead, Xmas tree and WHPS removal, site remediation and removal of snagging hazards (including an umbilical ramp at 53/02a-15Y) will be conducted as soon as practicable. In the intervening period, an isolated danger mark buoy will be installed at the Leman SW site to warn mariners of the potential snagging hazards. Perenco also plans to update Hydrographic Office charts, Admiralty notices to mariners, radio navigation warnings, and Kingfisher Bulletin and conduct a HIRA to identify any additional control measures that can be put in place to reduce the snagging risk to ALARP. The buoy is anticipated to be installed for no more than one year until a remediation campaign can be completed.

Leman SW is located within the boundary of the Southern North Sea Special Area of Conservation (SAC), which is designated for the harbour porpoise.

1.4 Overview of Installations Being Decommissioned

1.4.1 Installations

Table 1.1: Installations Being Decommissioned			
Field	Leman South	Production Type (Oil/Gas/Condensate)	Gas
Water Depth (m)	37.2	UKCS Block	53/02a

Distance to median (km)	56	Distance from nearest UK coastline (km)	50
Surface Installations			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)
N/A	N/A	N/A	N/A
Subsea Installations		Number of Wells	
Number	Type	Platform	Subsea
1	WHPS	N/A	1
Drill Cuttings Piles			
Number of Piles	N/A	Total Estimated Volume (m ³)	N/A

Table 1.2: Installation Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest (%)
Perenco UK Limited	04653066	78.26
RockRose UKCS 10 Limited	04105025	21.74
RockRose UKCS15 Limited	SC375371	0
SSE PLC	SC117119	0

Table 1.3: Pipelines Being Decommissioned	
Number and total length (m) of Pipeline / umbilical	Up to 16m of PL3731
	Up to 10m of PLU3732

Table 1.4: Pipelines Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest (%)
Perenco UK Limited	04653066	78.26
RockRose UKCS 10 Limited	04105025	21.74
RockRose UKCS15 Limited	SC375371	0
SSE PLC	SC117119	0

1.5 Summary of Proposed Decommissioning Programme

Table 1.5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	Reason for Selection
Subsea installations	
<p>The subsea wellhead, Xmas tree and WHPS frame will be removed to shore for reuse, recycling, or disposal.</p> <p>Its legs are not expected to require cutting as the WHPS is resting on the seabed.</p>	<p>To comply with the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) requirements and OPRED guidelines to maximise recycling of materials and full removal.</p>
Subsea installation stabilisation features	
<p>Up to five fronded concrete mattresses that surround 53/02a-15Y will be removed to shore for reuse, recycling, or disposal.</p>	<p>To provide access for a remotely operated vehicle (ROV) to access the subsea installation.</p> <p>To comply with OSPAR and OPRED guidelines to maximise recycling of materials.</p>
Pipeline and related infrastructure stabilisation features	
<p>PL3731 will be air gapped, with up to 5m to be removed at 53/02a-15Y and up to 11m to be removed at 53/02a-14A.</p> <p>Up to 5 protective pipeline mattresses at each location will be recovered from the seabed for reuse, recycling, or disposal.</p> <p>PLU3732 will be air gapped at 53/02a-15Y, with up to 10m to be removed at the subsea installation. No length of PLU3732 will be removed at 53/02a-14A; it will only be disconnected and plugged. An umbilical ramp will be recovered from the seabed at 53/02a-15Y for reuse, recycling, or disposal.</p> <p>There are estimated to be approximately 50 grout bags supporting PL3731 at 53/02a-15Y. These are planned to be left in situ untouched; however, they may need to be removed if they hinder decommissioning activities.</p>	<p>To ensure the safe and unhindered removal of the subsea wellhead, Xmas tree and WHPS.</p> <p>To comply with OSPAR and OPRED guidelines to maximise recycling of materials.</p> <p>The cut ends of the umbilical and pipeline will be covered with existing mattresses on the pipeline to mitigate the snagging hazard.</p>
Wells	
<p>Permanent abandonment of the Leman SW 53/02a-15Y well. The conductor will be cut at -3m below the seabed and retrieved to achieve AB3 well abandonment status.</p>	<p>Meets Health and Safety Executive (HSE) regulatory requirements and is in accordance with Offshore Energies United Kingdom (OEUK) and North Sea Transition Authority (NSTA) guidelines.</p>



Table 1.5: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	Reason for Selection
Interdependencies	
<p>The 53/02a-15Y subsea installation is connected to the 53/02a-14A subsea installation via PL3731 and PLU3732. The 53/02a-14A well will remain operational and is not covered under this DP. Before decommissioning 53/02a-15Y, PL3731 and PLU3732 will be cut and disconnected respectively at 53/02a-14A.</p> <p>An isolated danger mark buoy will be installed ahead of a remediation campaign after subsea installation removal to warn other marine users of any potential snagging hazards.</p>	



1.6 Field Location Including Field Layout and Adjacent Facilities

Figure 1.1: Field Location in UKCS

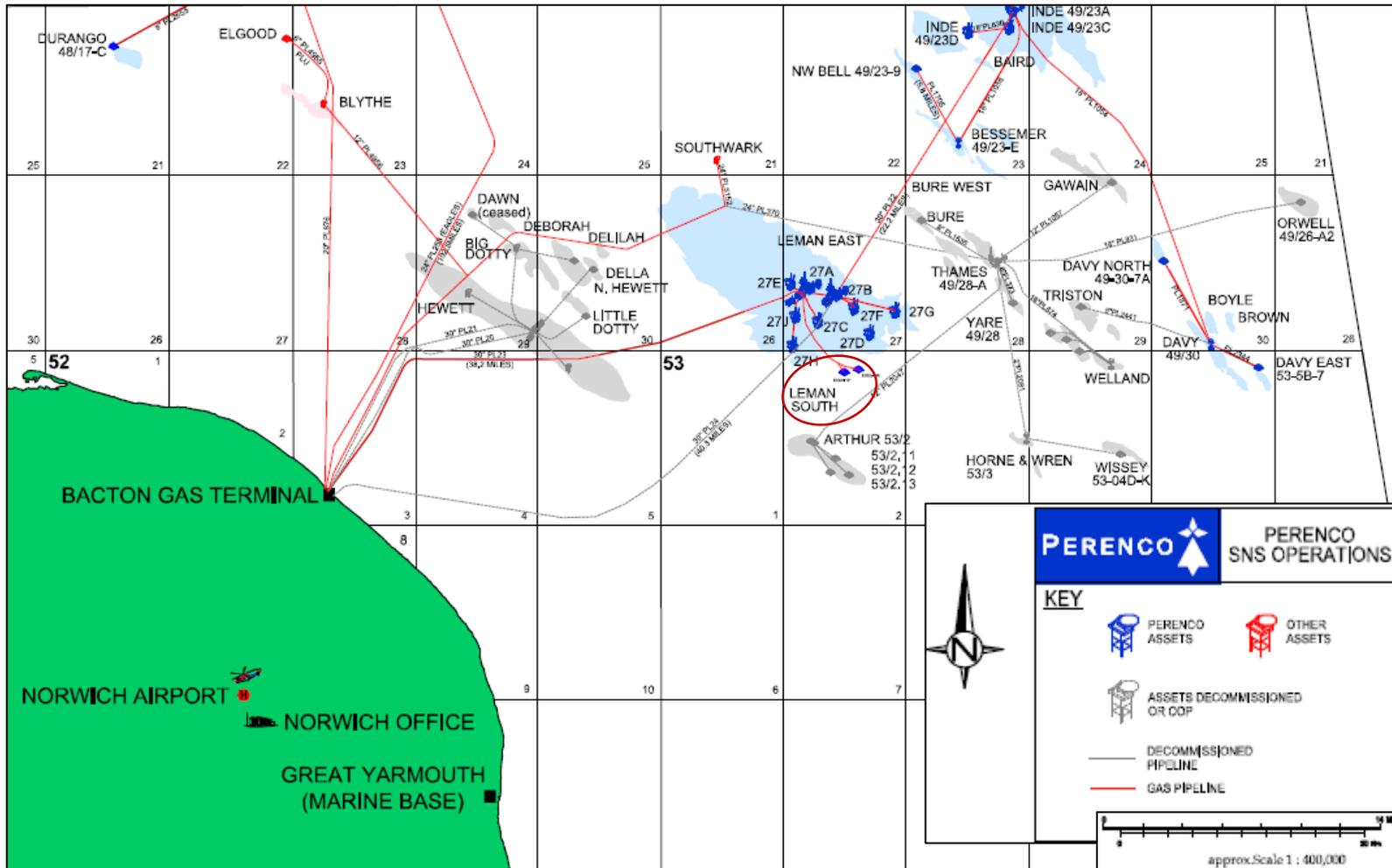


Figure 1.2: Leman South Field Layout

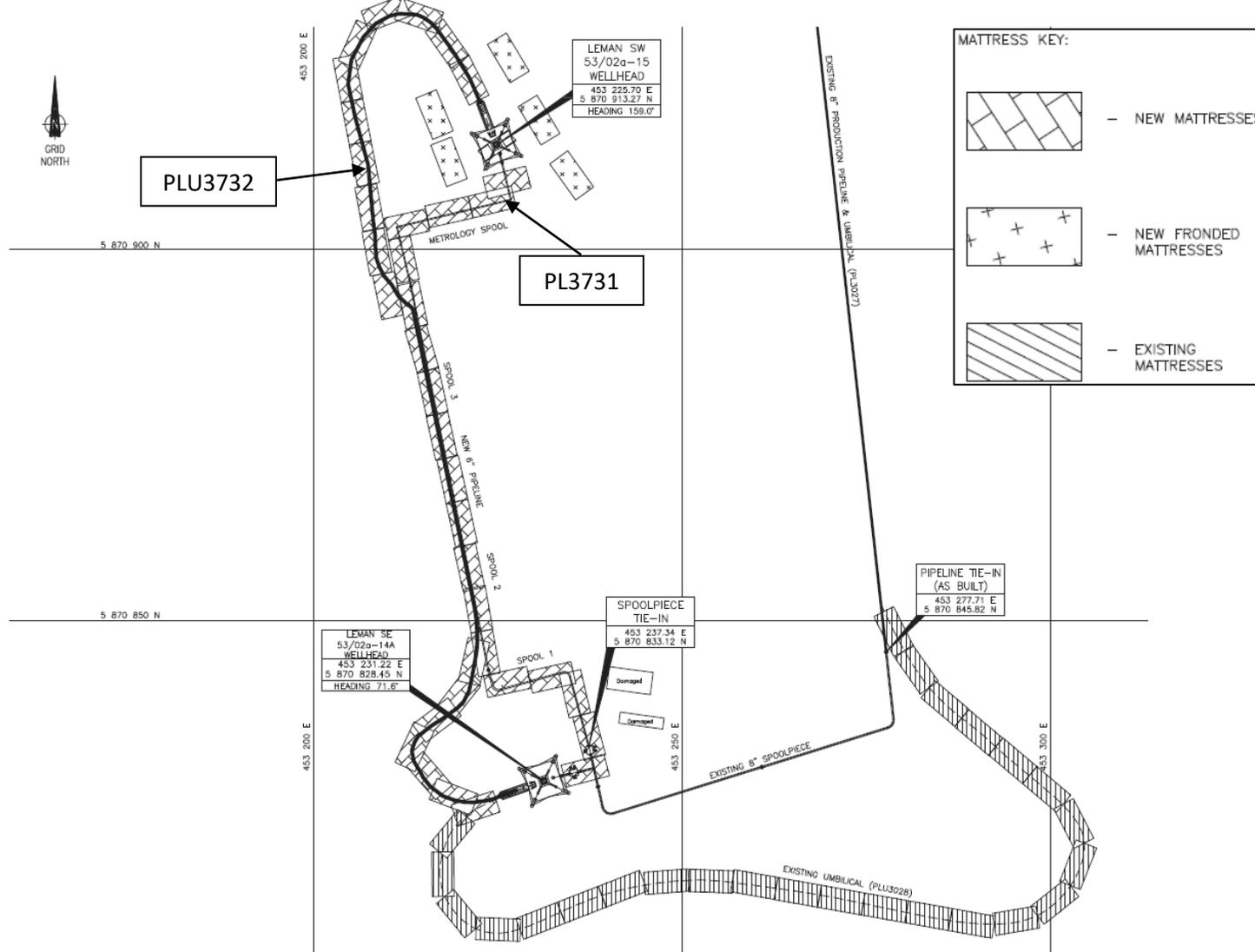




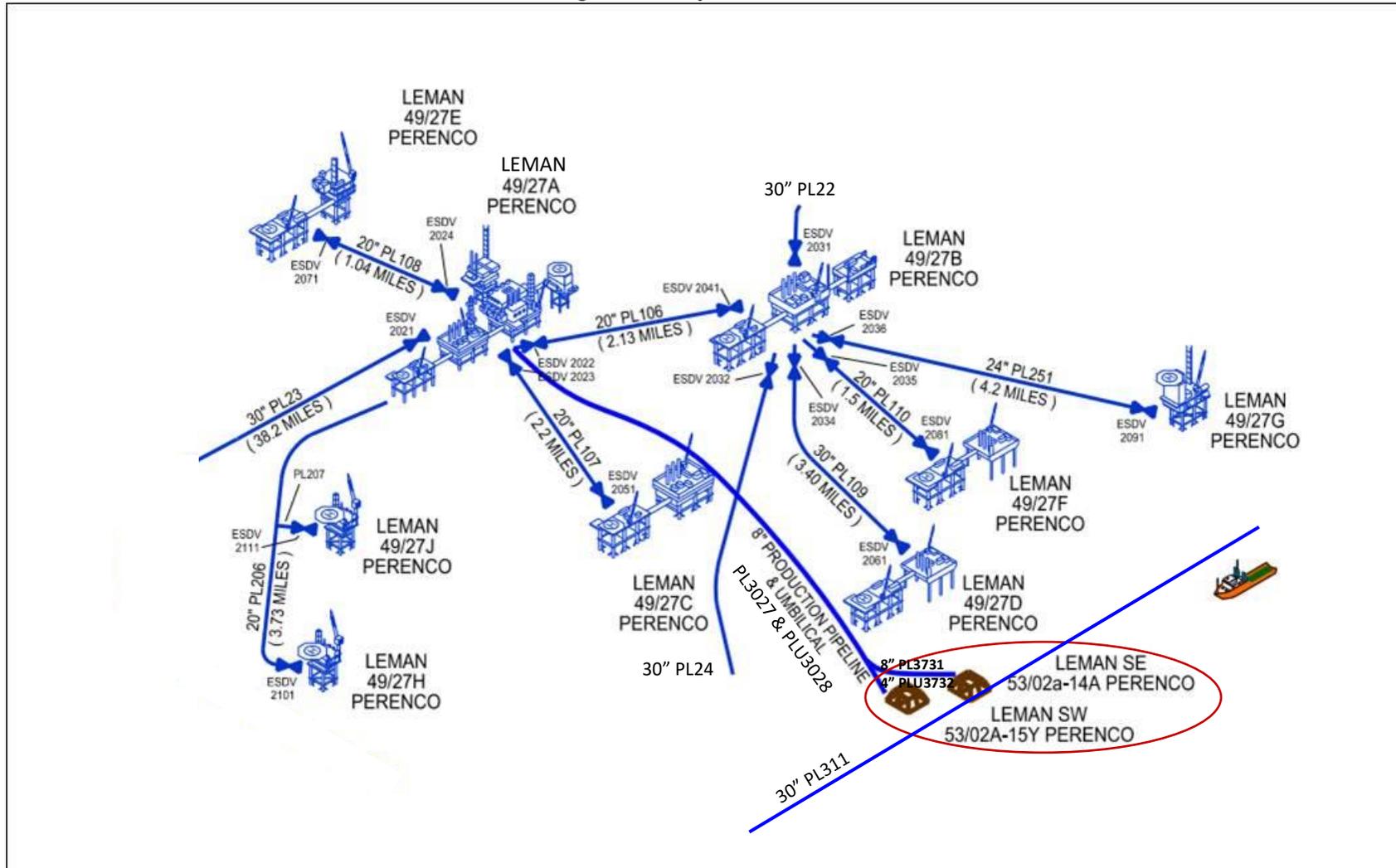
Table 1.6: List of Adjacent Facilities					
Owner/ Operator	Name	Type	Distance/ Direction	Information	Status
Perenco UK Limited	Leman 27A	Platform	9km northwest	Adjacent platform complex	Operational
Perenco UK Limited	Leman 27B	Platform	7.5km north	Adjacent platform complex	Operational
Perenco UK Limited	Leman 27C	Platform	5.6km northwest	Adjacent platform complex	Operational
Perenco UK Limited	Leman 27D	Platform	4.4km northeast	Adjacent platform complex	Operational
Perenco UK Limited	Leman 27E	Platform	10.5km northwest	Adjacent platform complex	Operational
Perenco UK Limited	Leman 27F	Platform	6.3km north	Adjacent platform complex	Operational
Perenco UK Limited	Leman 27G	Platform	7.9km northeast	Adjacent platform	Operational
Perenco UK Limited	Leman 27H	Platform	6.4km west	Adjacent platform	Non-operational
Perenco UK Limited	Leman 27J	Platform	7.8km northwest	Adjacent platform	Non-operational
Perenco UK Limited	PL22	Pipeline	7.5km north	30" gas pipeline	Operational
Perenco UK Limited	PL23	Pipeline	9km northwest	30" gas pipeline	Operational
Perenco UK Limited	PL24	Pipeline	5.3km northwest	30" gas pipeline	Temporarily out of use
Perenco UK Limited	PL106	Pipeline	7.5km north	20" gas pipeline	Operational
Perenco UK Limited	PL107	Pipeline	5.6km northwest	20" gas pipeline	Operational
Perenco UK Limited	PL108	Pipeline	9km northwest	20" gas pipeline	Operational
Perenco UK Limited	PL109	Pipeline	4.4km northeast	30" gas pipeline	Operational
Perenco UK Limited	PL110	Pipeline	6.3km north	20" gas pipeline	Operational



Table 1.6: List of Adjacent Facilities					
Perenco UK Limited	PL206	Pipeline	6.4km west	20" gas pipeline	Non-operational
Perenco UK Limited	PL207	Pipeline	7.8km northwest	16" gas pipeline	Non-operational
Perenco UK Limited	PL251	Pipeline	7.9km northeast	24" gas pipeline	Operational
ONE-Dyas UK Limited	PL311	Pipeline	0.4km southeast	30" gas pipeline	Out of use
Perenco UK Limited	PL3027	Pipeline	40m east	8" gas pipeline	Operational
Perenco UK Limited	PLU3028	Pipeline	40m east	4" control umbilical	Operational
Perenco UK Limited	PL3731	Pipeline	0km	6" gas pipeline	Out of use
Perenco UK Limited	PLU3732	Pipeline	0km	4" control umbilical	Out of use
Impacts of Decommissioning Proposals					
Decommissioning of the Lemans SW 53/02a-15Y subsea installation is not expected to have an impact on adjacent facilities.					



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 Leman SW 53/02a subsea installation is 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: Subsea Installations including Stabilisation Features

Table 2.1: Subsea Installations and Stabilisation Features				
Subsea Installation including stabilisation features	Number	Size/ Weight Tonnes (Te)	Location (WGS84)	Comments/Status
Xmas tree	1	17.56	52° 59' 01.9097" N 02° 18' 06.8461" E [52.98386355N 02.30190169E]	The well will be suspended and will undergo P&A. Removal of the wellhead, Xmas tree, and WHPS will follow. The conductor will be cut -3m below the seabed, and the top section will also be removed. The WHPS is hanging on the conductor.
Wellhead*	1	18.8		
WHPS	1	24.11		
Froned mattresses	Up to 5	5m x 3m / 10 Te each (estimated)		Froned mattresses placed around the Xmas tree/WHPS. The mattresses will aim to be removed so that an ROV can gain access the subsea installation. The mattresses may have self-buried; in which case they will be left in situ.

*Includes 4.2 Te of conductor

2.2 Pipelines Including Stabilisation Features

Table 2.2: Pipeline/Umbilical Information							
Pipeline Number	Description	Length (m)	Product Conveyed	From – To Location Points	Burial Status	Pipeline Status	Current Content
PL3731*	Interfield gas line	Up to 16m	Gas	From wellhead 53/02a-15Y up to 5m downstream. From wellhead 53/02a-14A up to 11m upstream.	Laid on seabed	Out of use	Hydrocarbons
PL3732*	Control umbilical	Up to 10m	Hydraulic fluid	From wellhead 53/02a-15Y up to 10m downstream.	Laid on seabed	Out of use	Hydraulic fluid

*Pipeline sections only, to be removed for air-gapping from wellheads.

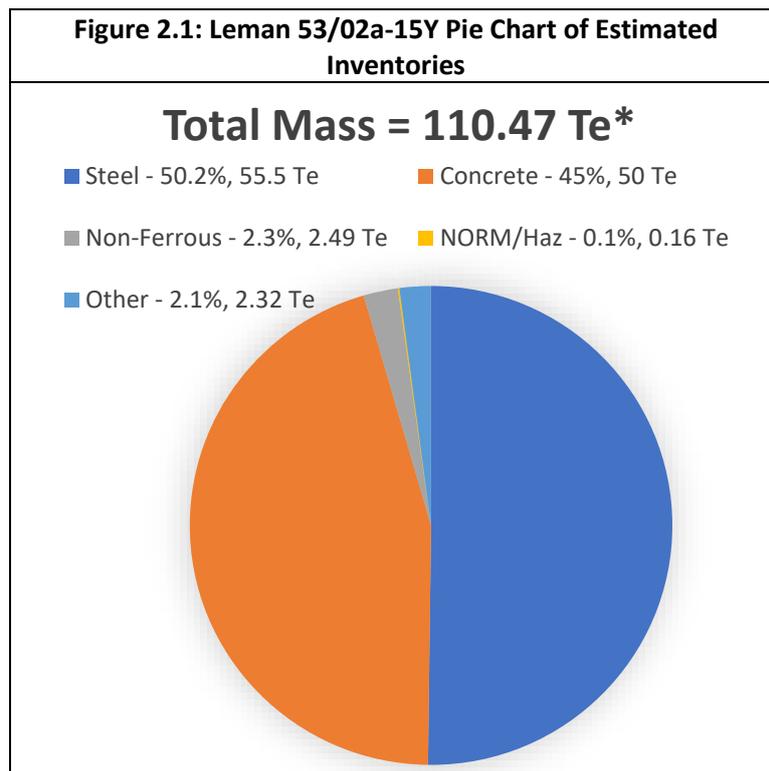
Table 2.3: Subsea Pipeline Stabilisation Features				
Stabilisation Feature	Number	Size/ Weight (Te)	Location (WGS84)	Exposed/Buried/Condition
Concrete mattresses	Up to 10*	6m x 3m / 12 Te each (estimated)	At Leman SW: 52° 59' 01.9097" N 02° 18' 06.8461" E [52.98386355N, 02.30190169E] At Leman SE: 52° 58' 59.1418" N 02° 18' 07.2339" E [52.98309449N, 02.30200941E]	Exposed
Umbilical ramp	1	0.25 Te (estimated)	At Leman SW: 52° 59' 01.9097" N 02° 18' 06.8461" E [52.98386355N, 02.30190169E]	Exposed
Grout bags	50 (estimated)	20kg each (estimated)	At Leman SW: 52° 59' 01.9097" N 02° 18' 06.8461" E [52.98386355N, 02.30190169E]	Exposed (under mattresses)

*Up to 5 mattresses at 53/02a-15Y and up to 5 mattresses at 53/02a-14A.

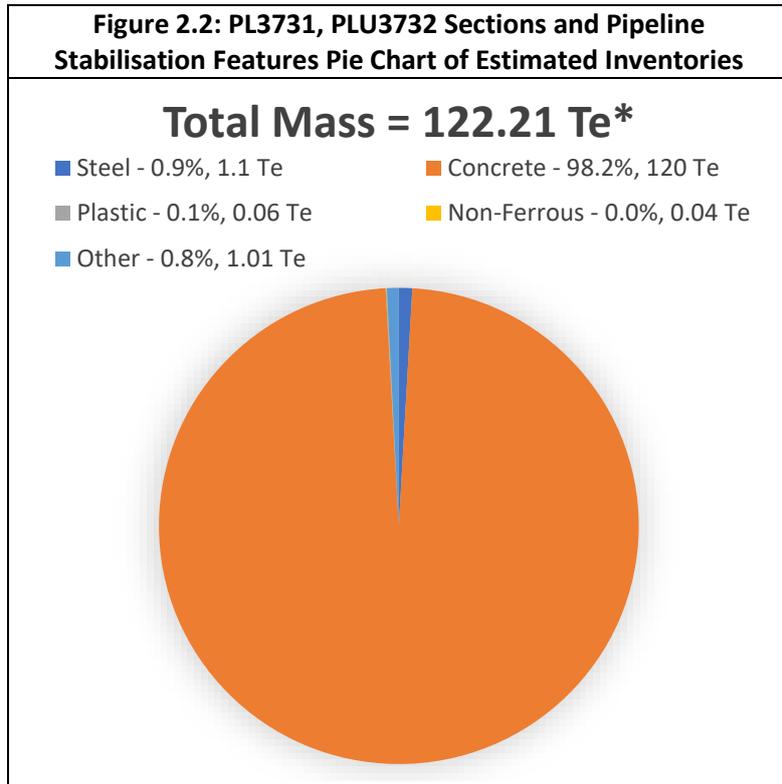
2.3 Wells

Table 2.4: Subsea Well Information			
Subsea Wells	Designation	Status	Category of Well
53/02a-15Y	Gas Production	Shut-in	SS-3-3-3

2.4 Inventory Estimates



**Includes Xmas tree, wellhead, WHPS and five fronded mattresses*



**Includes PL3731, PLU3732 sections, ten protective mattresses, 50 grout bags and an umbilical ramp.*



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.

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

3.1 Subsea Installation and Stabilisation Features

The subsea Xmas tree, wellhead and associated WHPS frame will be removed from its current location. This will be achieved by cutting PL3731 and PLU3732 in two locations at 53/02a-15Y: once to disconnect from the Xmas tree and another to remove potential snagging associated with the pipeline ends. Once free from PL3731 and PLU3732, the 53/02a-15Y subsea Xmas tree, wellhead and WHPS will be lifted from the seabed and recovered to deck for transport onshore. For an ROV to gain access to the well, up to five fronded mattresses surrounding the installation will also be removed. If any practical difficulties are encountered, Perenco will consult OPRED.

Table 3.1: Subsea Installation and Stabilisation Features Decommissioning Options			
Subsea Installations and Stabilisation Features	Number	Option	Disposal Route
Xmas tree	1	Remove	Transport ashore for reuse, recycling, or disposal
Wellhead	1	Remove	Transport ashore for reuse, recycling, or disposal
WHPS	1	Remove	Transport ashore for reuse, recycling, or disposal
FronDED mattresses	Up to 5	Remove	Transport ashore for reuse, recycling, or disposal

3.2 Pipelines

Decommissioning Options: A comparative assessment (CA) is not required as lengths of pipeline will be removed as necessary to create an airgap between the pipeline ends and the wellheads.

Table 3.2: Pipeline Decommissioning Options			
Pipeline (as per PWA)	Condition of line	Whole or part of pipeline	Decommissioning options considered
PL3731	Surface laid	Part of pipeline – up to 5m at 53/02a-15Y and up to 11m at 53/02a-14A*.	A CA is not required; necessary sections will be removed during a cutting and air gapping operation.



PLU3732	Surface laid	Part of pipeline – up to 10m at 53/02a-15Y.	
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*At 53/02a-14A, PL3731 will be cut at the spoolpiece tie-in and spool 1 (see Figure 1.2).

3.3 Pipeline Stabilisation Features

To airgap PL3731 and PLU3732, pipeline stabilisation features will need to be removed. This includes the umbilical ramp on the north side of the 53/02a-15Y installation, up to 50 grout bags at 53/02a-15Y and up to five concrete mattresses at each installation. If any practical difficulties are encountered Perenco will consult OPRED.

Table 3.3: Pipeline Stabilisation Features Decommissioning Options			
Stabilisation Features	Number	Option	Disposal Route
Concrete mattresses	Up to 10*	Remove	Transport ashore for reuse, recycling, or disposal
Umbilical ramp (PLU3732)	1	Remove	Transport ashore for reuse, recycling, or disposal
Grout bags	Up to 50** (estimated)	Remove	Transport ashore for reuse, recycling, or disposal

*Up to 5 mattresses at 53/02a-15Y and up to 5 mattresses at 53/02a-14A.

**The plan is to leave the grout bags in situ, but they may be removed as necessary to complete the decommissioning scope.

3.4 Wells

Table 3.4: Well Plug and Abandonment
The subsea well will be plugged and abandoned to AB3. The well casings/conductor will be cut at -3m below the seabed. The well, as listed in Section 2.2 (Table 2.2), will be P&A'd in accordance with OEUK Guidelines for the Suspension and Abandonment of Wells.

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 and disposal according to guidelines.
Naturally Occurring Radioactive Material (NORM)/ Low Specific Activity (LSA) Scale	Tests for NORM/LSA will occur offshore and will be dealt with/ disposed of according to guidelines and company policies.



Asbestos	N/A
Other hazardous wastes	N/A
Onshore dismantling sites	An appropriate licensed site will be selected. The 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
Leman 53/02a-15Y, pipeline sections and stabilisation features	232.68	Up to 232.68*	0*

**It is likely that some stabilisation features listed in the DP will remain in situ for safety/practical reasons.*



4. ENVIRONMENTAL APPRAISAL OVERVIEW

4.1 Environmental Sensitivities (Summary)

Table 4.1 summarises the environmental receptors assessed within the Leman South field.

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Features
Conservation interests	<p>Leman SW is located:</p> <ul style="list-style-type: none"> • within the Southern North Sea SAC (Summer Area), a designated site for the harbour porpoise (<i>Phocoena phocoena</i>). • 0.4km south and east of the North Norfolk Sandbanks and Saturn Reef SAC, a designated site for Annex I Reefs and Annex I Sandbanks which are slightly covered by seawater all of the time. • 9.5km northeast of the Haisborough, Hammond and Winterton SAC, a designated site for Annex I Reefs and Annex I Sandbanks which are slightly covered by seawater all of the time. • 10.8km northeast of the Southern North Sea SAC (Winter area) • 38km northeast of the Greater Wash Special Protection Area (SPA), designated for six Annex I Species - (non-breeding season for the red-throated diver (<i>Gavia stellata</i>), little gull (<i>Hydrocoloeus minutus</i>) and common scoter (<i>Melanitta nigra</i>), and in the breeding season the sandwich tern (<i>Thalasseus sandvicensis</i>), Little tern (<i>Sternula albifrons</i>) and common tern (<i>Sterna hirundo</i>). • 39.4km north of the Outer Thames Estuary SPA, designated for the Annex I species red-throated diver, common tern, and little tern.
Seabed	<p>The EUSeaMap 2023 predicted the seabed around the Leman SW to be A5.27: Deep circalittoral sand (as per the EUNIS seabed classification system).</p> <p>Leman SW is located 0.4km south and east of the North Norfolk Sandbanks and Saturn Reef SAC, which is designated for the seabed features of sandbank and reefs. There is a protected Sandbank approximately 1.7km east of the Leman SW, within the North Norfolk Sandbanks and Saturn Reef SAC.</p> <p>There are no Annex I biogenic reefs present within a 10km radius of the Leman SW.</p>



Fish	<p>Cod (<i>Gadus morhua</i>), lemon sole (<i>Microstomus kitt</i>), plaice (<i>Pleuronectes platessa</i>), sole (<i>Solea solea</i>), sprat (<i>Sprattus sprattus</i>), tope shark (<i>Galeorhinus galeus</i>), and whiting (<i>Merlangius merlangus</i>) have spawning grounds in the area of the North Sea in which Leman SW is located.</p> <p>In the same area, cod, herring (<i>Clupea harengus</i>), lemon sole, mackerel (<i>Scomber scombrus</i>), sandeels, sprat, tope shark, and whiting have nursery grounds.</p>
Fisheries	<p>For the period of 2019 to 2023, no fish were reported as landed or caught by UK fisheries from ICES Rectangle 34F2, where Leman SW is located.</p>
Marine Mammals	<p>The SNS generally has a relatively low density of marine mammals. While over ten species of cetaceans have been recorded in the SNS, the harbour porpoise is the only species within the vicinity of Leman SW that can be considered as regularly occurring throughout the year.</p> <p>Leman SW is located inside the Southern North Sea SAC, which is a designated area for the harbour porpoise.</p> <p>The seas around Leman SW are not important feeding grounds for harbour seals (<i>Phoca vitulina</i>). Leman SW is located towards the outer extent of the feeding grounds for grey seals (<i>Halichoerus grypus</i>), which has breeding/haul out grounds at The Wash, approximately 81km west of Leman SW.</p>
Birds	<p>Leman SW is not located within a seabird ‘hotspot area’ and is not located in an area of high seabird density at sea.</p> <p>The Seabird Oil Sensitivity Index (SOSI) for Block 53/2 (where Leman SW is located) generally ranges from 5 (low sensitivity) to 4 (medium sensitivity) in summer and autumn. In winter and spring, the SOSI generally ranges from 3 (High) to 1 (Extremely High) for Block 53/2.</p>
Onshore Communities	<p>A number of Blue Flag beaches are located along the North Norfolk and East Suffolk coastlines including Cromer, Sheringham, East Runton, West Runton, Felixstowe and Southwold.</p> <p>Mablethorpe and Skegness are coastal towns located in Lincolnshire, which are important areas for tourism.</p>



<p>Other Users of the Sea</p>	<p>The density of marine traffic within Block 53/2 is classified as ‘High’. This is attributed to the high density of oil and gas infrastructure in the vicinity and other shipping activity, predominantly cargo ships and offshore support vessels.</p> <p>While there is significant surface and subsurface infrastructure in the UKCS Blocks around 53/2, the majority lies several kilometres north in 49/27.</p> <p>There is one subsea telecommunications cable which passes in close proximity to the Leman SW installation, namely the active TAMPNET cable 6.4km east.</p> <p>There are no licenced marine aggregate areas within a 40km radius of Block 53/2.</p> <p>There are no military Airforce Danger Areas within a 40km radius of Leman SW.</p> <p>The closest wind farm site to Leman SW is the consented Norfolk Vanguard West windfarm approximately 4.9km southeast.</p> <p>There are no protected wrecks recorded within 5km of Leman SW. There are 12 non-protected shipwrecks located within 10km of the Leman SW. The closest shipwreck is located approximately 2km northeast of the installation.</p> <p>The Leman SW is located within ‘SNS Area 4’, which is a carbon capture storage area currently offered for application.</p> <p>The installation of an isolated danger mark buoy will be in place ahead of a remediation campaign at the location to warn other marine users of any potential snagging hazards.</p>
<p>Atmosphere</p>	<p>The offshore decommissioning activities will produce atmospheric emissions, primarily through fuel combustion.</p> <p>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:

Following a detailed review of the proposed Leman SW decommissioning activities, the environmental sensitivities present in the area, and the potential impacts on the environment, it has been determined that the decommissioning of the Leman SW subsea well and removal of the wellhead, Xmas tree and WHPS present one potentially significant impact: seabed disturbance from the positioning of the jack-up barge (JUB) and removal of subsea infrastructure. The impacts associated with the decommissioning activities are well understood and managed through the implementation of established mitigation measures stated in Table 4.2.

Other potential environmental impacts will likely result from the physical presence of the subsea infrastructure, operational discharges to sea, underwater noise from vessel use and underwater cutting, waste generation, atmospheric emissions from vessel use, and accidental release to sea of hydrocarbons. Following further assessment, the potential impacts of these have been determined to be not significant following the implementation of the mitigation measures stated in Table 4.2.

Overall, the Leman SW decommissioning campaign is determined as not having a significant impact on environmental or societal receptors within the UKCS or internationally.

Overview:

Table 4.2: Environmental Impact Management		
Activity	Main Impacts	Management
Potential significant impacts scoped in for detailed assessment		
Subsea installation,	Seabed disturbance from the positioning of the JUB and cutting and removal of subsea infrastructure	<ul style="list-style-type: none"> • A site-specific benthic habitat and chemical survey has not been carried out. It is therefore, at this stage, too early to undertake a comprehensive impact assessment. A benthic habitat and chemical survey of the site is recommended. • Outlined below is a summary of the general considerations for positioning of the JUB: <ul style="list-style-type: none"> ○ The re-suspension of sediments resulting from the JUB positioning and the removal of the subsea well infrastructure 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 is potential for benthic abrasion and smothering by anchors and spud cans during the JUB rig move and positioning. However, disturbance is limited to the approach, anchoring and leg positioning of the supporting jack-up rigs and barges. ○ Rig move procedures will be developed utilising information from subsea surveys/site specific



Xmas tree and wellhead removal	Noise generated through use of downhole explosives	<p>assessments.</p> <ul style="list-style-type: none"> Leman SW subsea well is located in the Southern North Sea SAC (Summer) which is designated for the harbour porpoise. Typically, downhole explosions that are deeper than 100m below the mudline are considered to not have significant impact on marine mammals. The P&A programme is currently not available. If explosions are planned for shallower than 100m below the mudline, extra precautions will be required, such as noise modelling and marine mammal observers may be required.
	Physical presence of subsea infrastructure and impacts on other sea users (fishing vessels, cargo vessels, ferries)	<ul style="list-style-type: none"> A 500m safety zone is not in place at Leman SW. The following standard mitigations will be established: <ul style="list-style-type: none"> A Vessel Traffic Survey and Collision Risk Assessment will be prepared to determine the current collision risk. A Consent to Locate will be obtained prior to the deployment of the JUB. Regular vessels will be informed of the planned deployment for the JUB, and the activity will be reported to Kingfisher Bulletin. An Aids to Navigation will be active on the JUB, and the emergency response and rescue vessel present on site will monitor vessel movements. Vessels will ensure adherence to International Regulations for the Prevention of Collisions at Sea to prevent potential collisions.
Potential non-significant impacts scoped out of detailed assessment		
Subsea installation, Xmas tree and wellhead removal	Operational discharges to sea (JUB deck drainage waters, well P&A activities, subsea well infrastructure, pipeline and umbilical cutting)	<ul style="list-style-type: none"> Any potential residual hydrocarbon and chemical discharges that may escape to sea during the decommissioning activities or from the JUB and supply vessels are expected to be minimal and will be considered under the individual permit consent applications for the decommissioning activities: <ul style="list-style-type: none"> Deck waters discharged will have an Oil Discharge Permit and Chemical Permit issued by OPRED in place prior to operations. Bilge oily water and sewage discharges from the JUB and supply vessels are controlled under MARPOL rules. Chemicals utilised for the P&A of the well will be permitted under a Chemical Permit issued by OPRED. Pipeline cutting – the maximum volume of residual condensate in PL3731 is 0.0725m³. Following cutting/disconnection this volume will gradually disperse to sea over a long period of time because the



		<p>hydrostatic head acting on the open-ended pipeline exceeds the pressure within the open-ended pipeline. PLU3732 contains 0.14m³ of MEG and 0.06m³ of Aqualink HT804FV2. Again, this will gradually disperse to sea once the umbilical is disconnected. The risk the discharges pose is considered PLONOR. Cutting operations will be permitted under Chemical Permit, Oil Discharge Permit and Marine Licence applications.</p>
	Underwater noise from vessel use and underwater cutting	<ul style="list-style-type: none"> • Effective operational planning will minimise vessel time in the area. • Underwater cutting is not considered a risk to marine mammals.
	Waste generation from vessels and decommissioning activities	<ul style="list-style-type: none"> • All waste generated from decommissioning activities will be limited to the subsea infrastructure and vessel derived waste from the JUB. • The generated waste will be handled and recovered or disposed of in line with existing waste management legislation following the principles of the waste hierarchy. • Raw materials will be returned to shore with the expectation to recycle most of the returned non-hazardous material. Other non-hazardous waste which cannot be reused or recycled will be disposed of as energy from waste and/or at a landfill site. • Hazardous waste will be disposed of in accordance with established waste legislation. • Only licensed contractors will be used for waste handling and treatment/disposal.
	Atmospheric emissions from vessel use	<ul style="list-style-type: none"> • The emissions generated from the Leman SW decommissioning campaign 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: <ul style="list-style-type: none"> ○ Optimising the logistical planning of vessels; and ○ Operating effective environmental management systems to minimise emissions.
	Accidental release to sea of hydrocarbons	<ul style="list-style-type: none"> • There are two identified potential sources of an accidental release of hydrocarbons to sea, namely a loss of well control during the P&A activity and a spill during bunkering. Due to the low volumes of hydrocarbons that could be released from either scenario, there is no potential for a Major Environmental Incident to occur. • A Temporary Operations Oil Discharge Emergency Plan will be prepared and approved by OPRED before the commencement of the decommissioning activity. • The Wells Programme will follow best practice to prevent a blowout occurring. • Perenco has the capabilities to drill a relief well within 100 days, should a well control issue occur and require a relief well.



		<ul style="list-style-type: none">• A bunkering procedure will be in place to control the process to limit the potential for diesel release during bunkering.
	Installation of isolated danger mark buoy	<ul style="list-style-type: none">• The isolated danger mark buoy will be moored to the seabed with a clump weight connected to a chain. The area affected will be approximately 2m². The re-suspension of sediments will be minor. The impact is considered non-significant.



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		
NSTA	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 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 process of consents and the consultations required as part of this process.

6.2 Post-Decommissioning Debris Clearance and Seabed Clearance Verification

During a visual inspection of the 53/02a-15Y installation by remotely operated vehicle in January 2025, no debris was observed [Ref 1]. A pre-decommissioning debris and environmental seabed survey will be carried out prior to offshore decommissioning activities.

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. Following the completion of the wellhead, Xmas tree and WHPS removal, an as-left survey will be completed. Site remediation and removal of snagging hazards (including the umbilical ramp at 53/02a-15Y) will be conducted as soon as practicable following subsea installation removal. In the intervening period, an isolated danger mark buoy will be installed at the Lemman SW site directly after the as-left survey to warn mariners of the potential snagging hazards. Perenco also plans to update Hydrographic Office charts, Admiralty notices to mariners, radio navigation warnings, and Kingfisher Bulletin and conduct a HIRA to identify any additional control measures that can be put in place to reduce the snagging risk to ALARP. The buoy is anticipated to be installed for no more than one year until a remediation campaign can be completed. Verification of seabed clearance of snagging hazards will be provided to OPRED.

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

Year	2025				2026				2027				2028				2029				2030			
Quarter	Q1	Q2	Q3	Q4																				
Decommissioning Programme																								
Submission of DP																								
Consultation																								
Approval of DP																								
P&A and Installation Removal Campaign																								
PL3731 & PLU3732 pipeline sections removal																								
Leman SW 53/02a-15Y P&A																								
Leman SW 53/02a-15Y WHPS installation removal																								
Post Decommissioning Activities and Surveys																								
As-left survey																								
Isolated danger mark buoy installed on site*																								
Remediation																								
Post Decommissioning Surveys																								
Close Out report																								

LEGEND	
	Earliest date 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

*The buoy is anticipated to be installed for no more than one year until a remediation campaign can be completed.



6.4 Costs

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

6.5 Close Out

A Close Out Report for the 53/02a-15Y subsea installation will be submitted to OPRED within 12 months of the completion of the offshore decommissioning scope (including debris/seabed clearance, and the first post-decommissioning survey). It will also explain any variations from the DP.

6.6 Post-Decommissioning Monitoring and Evaluation

A post-decommissioning environmental seabed survey centred around the site of the Leman SW 53/02a-15Y subsea installation will be conducted. The survey will focus on chemical and physical disturbances of the decommissioning and compare with the pre-decommissioning survey. Results of this survey will be available once the work is complete, with a copy forwarded to OPRED.



7. SUPPORTING DOCUMENTS

Table 7.1: Supporting Documents	
Document Number	Title
1	Perenco, Leman SW_53-02a-15Y Tree Inspection 21.01.2025 (2025)



8. SECTION 29 NOTICE HOLDERS' LETTERS OF SUPPORT

9. APPENDICES

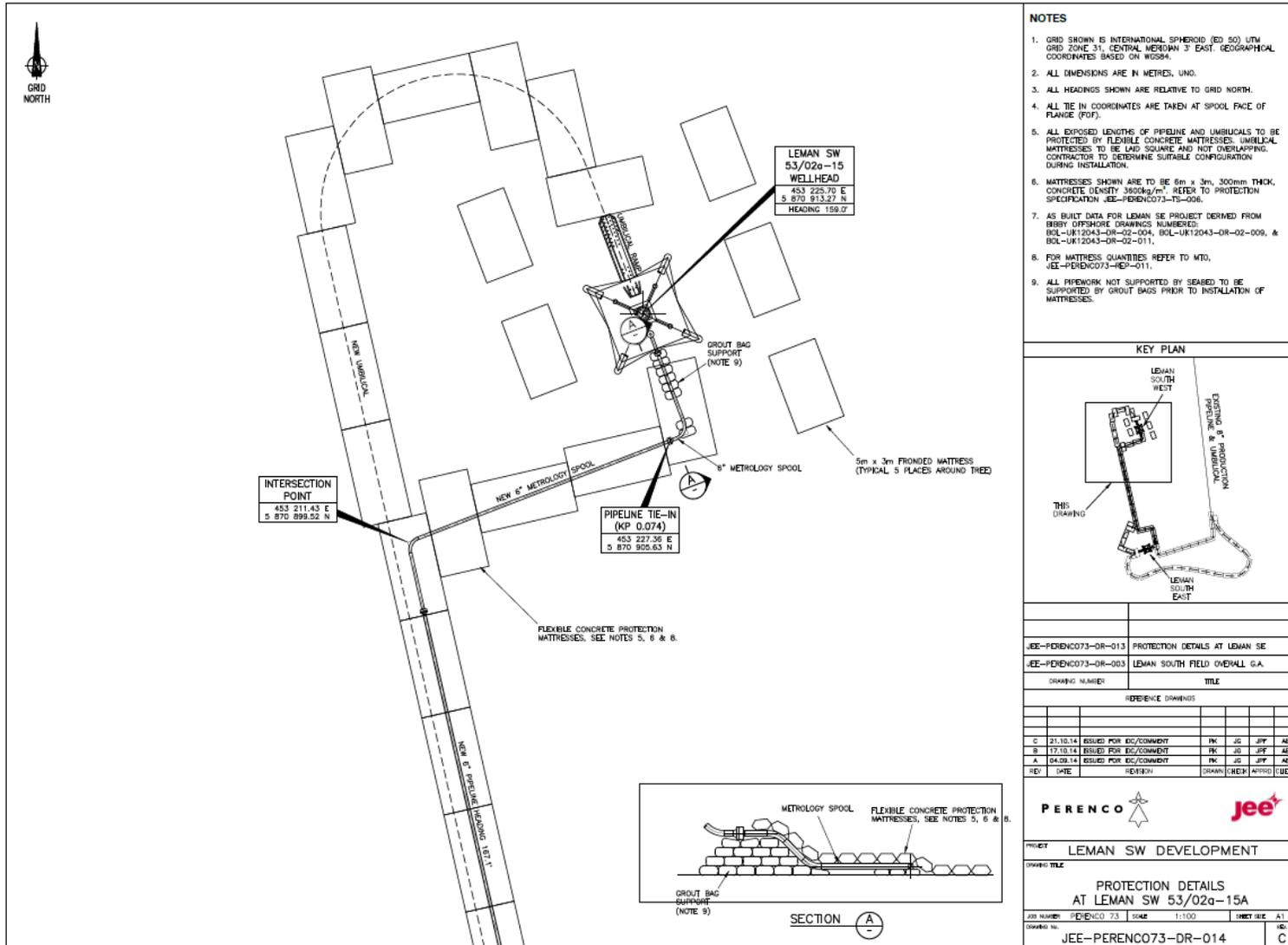
Appendix A: General Visual Inspection of Leman SW 53/02a-15Y, January 2025

GVI Overall Condition	Good condition. No obvious defects or recent marine growth removal Soft MG Anemones 90% 20mm thick. Hard MG Acorn barnacles 10% 20mm thick. No corrosion
Damage / Structural Failure	No evidence of damage or structural failure
Leaks:	No hydrocarbon leaks or discharges
Debris:	No debris seen
Anode Range and contact CP readings	Anodes 0 to 5% depleted and CP reading west face upper tubular -1011mV
	<p>Subsea Satellite Wellhead Tree Leman_SW_53/02a-15Y and SW_53/02a-14A</p> <p>The Leman South West satellite trees are located approximately 9 km south of the Leman platform.</p> <p>The wellheads are connected to the platform by an 8-inch pipeline and a control umbilical</p>
	
<p>Overview of trash-cap from east side</p>	<p>SE corner Leg Upper Telescopic Leg joint of 53/02a-15Y</p>
	
<p>West face control cables and underslung sacrificial anode</p>	<p>Accumulator bottles within interior of north face 53/02a-15Y</p>

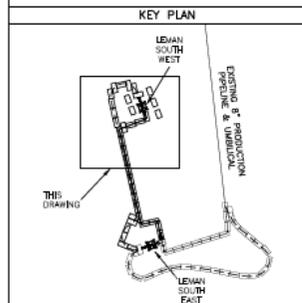
**LEMAN SOUTHWEST 53/02a-15Y WHPS AND PL3731 & PLU3732
PIPELINE SECTIONS DECOMMISSIONING PROGRAMMES
DECOM-2025-LEMS-DP-Q-001 CONSULTATION VERSION**



Appendix B: Drawing – Protection Details at Leman SW 53/02a



- NOTES**
- GRID SHOWN IS INTERNATIONAL SPHEROID (ED 50) UTM GRID ZONE 31, CENTRAL MERIDIAN 3° EAST. GEOGRAPHICAL COORDINATES BASED ON WGS84.
 - ALL DIMENSIONS ARE IN METRES, UNO.
 - ALL HEADINGS SHOWN ARE RELATIVE TO GRID NORTH.
 - ALL TIE IN COORDINATES ARE TAKEN AT SPOOL FACE OF FLANGE (PDF).
 - ALL EXPOSED LENGTHS OF PIPELINE AND UMBILICALS TO BE PROTECTED BY FLEXIBLE CONCRETE MATRESSES. UMBILICAL MATRESSES TO BE LAD SQUARE AND NOT OVERLAPPING. CONTRACTOR TO DETERMINE SUITABLE CONFIGURATION DURING INSTALLATION.
 - MATRESSES SHOWN ARE TO BE 6m x 3m, 300mm THICK, CONCRETE DENSITY 3600kg/m³. REFER TO PROTECTION SPECIFICATION JEE-PERENCO73-TS-006.
 - AS BUILT DATA FOR LEMAN SE PROJECT DERIVED FROM BEST OFFSHORE DRAWINGS NUMBERED: BOL-UK12043-OR-02-004, BOL-UK12043-OR-02-009, & BOL-UK12043-OR-02-011.
 - FOR MATRESS QUANTITIES REFER TO MTO, JEE-PERENCO73-MC-011.
 - ALL RIFENWORK NOT SUPPORTED BY SEALED TO BE SUPPORTED BY GROUT BAGS PRIOR TO INSTALLATION OF MATRESSES.



JEE-PERENCO73-OR-013	PROTECTION DETAILS AT LEMAN SE					
JEE-PERENCO73-OR-003	LEMAN SOUTH FIELD OVERALL G.A.					
DRAWING NUMBER	TITLE					
REFERENCE DRAWINGS						
C	21.10.14	ISSUED FOR IFC/COMMENT	PK	JS	JYF	AB
B	17.10.14	ISSUED FOR IFC/COMMENT	PK	JS	JYF	AB
A	04.09.14	ISSUED FOR IFC/COMMENT	PK	JS	JYF	AB
REV	DATE	REVISION	DRAWN	CHECK	APPROV	CUSTOMER

PERENCO **Jee+**

PROJECT: LEMAN SW DEVELOPMENT

DRAWING TITLE: PROTECTION DETAILS AT LEMAN SW 53/02a-15A

JOB NUMBER: PERENCO 73	SCALE: 1:100	HEET NO: A1	NO:
DRAWING NO: JEE-PERENCO73-DR-014			C