PERENCO GAS (UK) LIMITED PICKERILL ALPHA (A) AND PICKERILL BRAVO (B) INSTALLATIONS DECOMMISSIONING PROGRAMME



Final Version





DOCUMENT CONTROL

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A. TABLE OF TERMS AND ABBREVIATIONS

Abbreviation	Explanation
A	Alpha
AIS	Automatic Identification System
AtoN	Aid to Navigation
AWMP	Active Waste Management Plan
В	Bravo
BP	Britoil Public Limited Company
CCS	Carbon Capture Storage
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
COMOPS	Combined Operations Notification
CONOCO	Conoco (U.K.) Limited
СОР	Cessation of Production
DP	Decommissioning Programme
EA	Environmental Appraisal
EC	European Commission
EEGR	East of England Energy Group
EL	Elevation
EMT	Environmental Management Team
EU	European Union
EUNIS	European Nature Information System
ESDV	Emergency Shutdown Valve
HAZMAT	Hazardous Materials
HCF	Hydrocarbon Free
HLV	Heavy Lift Vessel
HSE	Health and Safety Executive
JNCC	Joint Nature Conservation Committee
LAT	Lowest Astronomical Tide
LSA	Low Specific Activity
km	Kilometres
m	Metres
MAT	Master Application Template
MOD	Ministry of Defence



Abbreviation	Explanation
MOD DEA	Ministry of Defence Danger and Exercise Area
MARPOL	International Convention for the Prevention of Pollution from Ships
NFFO	National Federation of Fishermen's Organisations
NM	Nautical Miles
NMPi	National Marine Plan Interactive
NORM	Naturally Occurring Radioactive Material
NUI	Normally Unattended Installation
NEPTUNE	Neptune E&P UK Ltd
OGA	Oil & Gas Authority
OGUK	Oil & Gas 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
PERENCO	Perenco Gas (UK) Limited
P & A	Plug and Abandonment
PL	Pipeline
РОВ	Personnel on Board
PPM	Parts per million
PWA	Pipeline Works Authorisation
SAC	Special Area of Conservation
SAT	Subsidiary Application Template
SCAP	Supply Chain Action Plan
SLV	Sheer Leg Vessels
SNS	Southern North Sea
SEMS	Safety and Environment Management System
SMRU	Sea Mammal Research Unit
SOPEP	Shipboard Oil Pollution Emergency Plan
SPCS	Subsea Production Control System
TGT	Theddlethorpe Gas Terminal
Те	Tonne



Abbreviation	Explanation
TELECOM	Telecommunications
TFSW	Transfrontier Shipment of Waste
UKCS	UK Continental Shelf
UKHO	UK Hydrographic Office



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No appendices attached.



1. EXECUTIVE SUMMARY

1.1 <u>Decommissioning Programme</u>

This document is the Decommissioning Programme (DP) for the Pickerill gas field installations Pickerill Alpha (A) and Pickerill Bravo (B) in the Southern North Sea (SNS).

In accordance with Regulation 14 of the Pipeline Safety Regulations 1996, Perenco have notified the Health and Safety Executive (HSE) of the decommissioning of the pipelines and have submitted the required variations to the Pipeline Work Authorisations to carry out the flushing and disconnection activities.

Following public, stakeholder and regulatory consultation, the installation decommissioning programme is submitted without derogation and in full compliance with OPRED guidelines. The DP explains the principles of the removal activities and is supported by an Environmental Appraisal (EA).

1.2 <u>Requirement for Decommissioning Programme</u>

Installation: In accordance with the Petroleum Act 1998, the section 29 notice holders of the Pickerill Installations (see Table 1.2) are applying to the Offshore Petroleum Regulator for Environment & Decommissioning (OPRED) to obtain approval for decommissioning the installations detailed in Section 2.1 of this programme. See also Section 8 - Partner Letter 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 five-year decommissioning project commencing in late 2018.

This DP document contains reference to the approved Partial Pickerill A and B Installations Decommissioning Programme (the Partial DP) approved by OPRED on the 14 March 2019. The Partial DP covers the removal of potential dismantlement obstructions on the Pickerill A and Pickerill B during the Hydrocarbon Free (HCF) Campaign. These obstructions include:

- The telecommunications (telecom) tower and associated equipment
- Equipment and appurtenances located below the cellar deck
- Tertiary steelwork supporting the equipment located below the cellar deck

The remaining infrastructure and equipment on the Pickerill A and B installations which are on the Section 29 Notice are covered under this DP document.

Pipelines: There will be a separate document for the Decommissioning Programme for the pipelines (PL818, PL819 and PL816, PL817) associated with the Pickerill installations.

The pipelines are flushed during the hydrocarbon free (HCF) operation using seawater to <30ppm OIW. They are then isolated and physically air-gapped where they come onto the Pickerill platforms. Prior to the removal of the Pickerill platforms,



the pipelines will be cut at near seabed level at the base of the risers, outside the jackets and in proximity to the export riser flanged connections.

1.3 Introduction

The Pickerill gas field is located in the United Kingdom Continental Shelf (UKCS) Block 48/11 in the Southern North Sea, 65km offshore from the Theddlethorpe Gas Terminal (TGT). It was discovered by well 48/11b-4, drilled by Conoco (UK) Limited in 1984, and gas development commenced in 1992.

The field was unitised in 1989 to resolve the ownership issues across the four blocks: 48/11a, 48/11b, 48/12c and 48/17f (within production licences P460, P37, P461 and P463). In 2003, the Pickerill field operatorship was handed over from Britoil Public Limited Company (BP) to Perenco UK Ltd (94.78%). The remaining field equity partner is Marubeni Oil and Gas (U.K) Limited (5.22%).

Perenco have explored all avenues for continuing production as described in the Cessation of Production (COP) document and concluded that due to a reduction of gas production, and closure of the Theddlethorpe Gas Terminal, continued operations are uneconomical and therefore the COP date was planned for Q3 2018. In preparation for decommissioning the COP documentation was submitted to the OGA and approval was granted in July 2018. The production licences will therefore be relinquished.

The Pickerill Field comprises of two normally unmanned installations (NUI); Pickerill B (44/11A) and Pickerill A (48/11B) with a maximum personnel on board (POB) of 12. The design and layout of Pickerill B and Pickerill A are the same, except that the Pickerill B installation does not have a sub-cellar deck. Pickerill B lies to the east of Pickerill A platform. (See figure 1.2).

The two NUI platforms are connected via two pipelines; a 16" export gas pipeline (PL818) and the 3" Methanol pipeline (PL819). Pickerill A is connected to the Theddlethorpe Gas Terminal (TGT) via the 24" gas export pipeline (PL816) and the 3" Methanol pipeline (PL817).

The co-ordinates of the Pickerill A Platform are: Latitude: 53° 32' 59.81" N, Longitude: 01° 04' 37.99" E. The co-ordinates of the Pickerill B platform are: Latitude: 53° 31' 29.78" N, Longitude: 01° 09' 38.40" E.

The Juliet subsea development owned by Neptune E&P UK Ltd is located in Block 47/14B to the west of the Pickerill Field and comprises of two subsea (free flowing) wells tied into a subsea manifold, which is then connected to Pickerill A via a 12" pipeline (PL3121), 22km in length. Juliet gas was co-mingled with Pickerill gas at Pickerill A and then exported to TGT.

The Juliet subsea wells are controlled from Pickerill A via the Subsea Production Control System (SPCS). The SPCS subsea equipment is located at the manifold / trees and connected via an umbilical to the associated topsides control equipment located on Pickerill A.

The request for COP for the Juliet Field was approved by to OGA on 12th December 2018. Decommissioning of the Juliet subsea development is the responsibility of Neptune E&P UK Ltd and will be covered under a separate Juliet Field



Decommissioning Programme. However, in order to allow for the removal of the Pickerill A platform, the Juliet flowline and umbilical will be isolated during the Pickerill HCF campaign. The Juliet flowline will be flushed and physically air-gapped as it comes on to the platform.

Prior to the removal of the Pickerill A platform, the Juliet pipeline will be cut at near seabed level at the base of the riser, outside the jacket and in proximity to the export riser flanged connections. The Juliet umbilical will be cut at the base of the riser and the umbilical riser section will be removed. Neptune E&P UK Ltd will be responsible for all notices and permitting requirements for Juliet decommissioning activities including permits and consents for pipeline flushing and disconnection activities.

In order to accommodate the Juliet development, a sub-cellar deck structure was fabricated on Pickerill A in order to locate a temporary sphere launcher and the associated Juliet riser ESDV and associated pipework and appurtenances. The temporary sphere launcher has since been removed.

Under the Partial Pickerill A&B Installation DP that has been approved by OPRED, Perenco will remove the sub-cellar deck on Pickerill A during the HCF campaign to aid the removal of the topsides. In addition, the following equipment which is located below the cellar deck will be removed on Pickerill A and Pickerill B as they are potential removal obstructions:

- Caissons, associated tanks and lift pumps (i.e. Seawater, Drains, Diesel Overflow, Greywater)
- Supply hoses (i.e. fresh water and diesel)
- Pipeline riser ESDVs

The associated tertiary steelwork used to support the equipment listed above and all appurtenance, including pipework, hydraulic power units, cabling, signage, access ladders/steps, etc., will be removed.

The removal of the riser ESDVs will be subject to an approved PWA variation from the OGA.

The current plan is to remove the topsides and the jackets by the use of a Heavy Lift Vessel; however, other options for the removal of the topsides are also being considered. Once the final engineering solution has been agreed Perenco will liaise with OPRED. For all options being considered both the topsides and jackets will be removed.

The removal of the sub-cellar deck and the equipment listed above is required to allow for more stable and efficient removal of the topsides and to reduce the duration of the dismantlement phase; minimising the cost, safety and environmental implications associated with offshore works, and reducing maintenance requirements during Lighthouse Mode.

<u>Topsides</u>

The Pickerill A/B topsides is a conventional truss structure comprising of a cellar deck at EL +22.007 LAT, main deck at EL +30.500 LAT, and a helideck located above the



main deck at EL +38.497 LAT. Access between decks is provided by ladders and stairways.

The sub-cellar deck on Pickerill A only at EL +19.207 LAT will be removed during the HCF campaign.

The approximate size of the topsides is 31.6m x 21m x 8m high (including the helideck).

A vent boom is cantilevered off the north-east corner of the platform and ties into both the cellar and main decks. A deck crane is sited at the north-west corner of the main deck, with the boom rest at the north-east corner of the main deck.

The Pickerill A/B telecom tower (height = 65m, mass = 33 Te) located at the southeast corner of the main deck will be removed during the HCF campaign.

As detailed above, potential dismantlement obstructions (e.g. the telecom tower) will be removed during the HCF campaign in preparation for dismantlement. The topside weights that are detailed on Table 1.1a and 1.1b include the removed weights of the telecom tower on Pickerill B, and the telecom tower and sub-cellar deck on Pickerill A, as detailed in the Partial Pickerill A&B Installation DP.

The estimated topsides weight to be removed and transported onshore for Pickerill A is 1615 Te. This includes the weight of the equipment that is being removed in the HCF campaign of 196 Te.

The estimated topsides weight to be removed and transported onshore for Pickerill B is 1334 Te. This includes the weight of the equipment that is being removed in the HCF campaign of 67 Te.

<u>Jacket</u>

The Pickerill A/B jacket is a four-legged steel frame with the south face at a 1:10 batter. The centreline dimensions at the top of the jacket leg are $16m \times 20m$ at EL +10.5m above LAT.

An internal leg pile is driven through each leg via the leg node cans. Piles are 93m in total length and are driven to 58m penetration. Piles 3.0m below the mudline will be left in situ; therefore, 359 Te of the piles will remain in situ.

There are nine well slots on each platform; one slot was used to dock the jacket (over an existing wellhead) using a cone and sleeve type guide.

The estimated weight of the Pickerill A jacket to be removed and transported onshore is 1031 Te; this includes the steel frame (568 Te), the weight of the deck leg extension (106 Te), weight of piles to be removed including grout (248 Te), and marine growth (109 Te).

The estimated weight of the Pickerill B jacket to be removed and transported onshore is 1025 Te; this includes the steel frame (568 Te), the weight of the deck leg extension (106 Te), weight of piles to be removed including grout (242 Te), and marine growth (109 Te).



1.4 Overview of Installations Being Decommissioned

1.4.1 Installation – Pickerill A

Table 1.1a: Decommissioning Programme – Pickerill A				
Field:	Pickerill A	Production Type (Oil/Gas/Condensate) Gas		
Water Depth (m)	20.3	UKCS block	48/11B	
	Surface Installat	ion Pickerill A		
Number	Туре	Topsides Weight (t)	Jacket Weight (t)	
1	Fixed leg small steel NUI platform	1615**	1390*	
Sub	sea Installation	Number o	of Wells	
Sub: Number	sea Installation Type	Number of Platform	of Wells Subsea	
Subs Number 0	sea Installation Type N/A	Number of Platform	of Wells Subsea 0	
Subs Number 0 Dril	sea Installation Type N/A Il Cuttings pile	Number of Platform 8 Distance to median	of Wells Subsea 0 Distance from nearest UK coastline	
Subs Number 0 Dril Number of Piles	sea Installation Type N/A Il Cuttings pile Total Estimated volume (m ³)	Number of Platform 8 Distance to median Km	of Wells Subsea 0 Distance from nearest UK coastline Km	

*Jacket weight for Pickerill A = (steel frame of 568 Te) + (deck leg extension of 106 Te) + (marine growth of 109 Te) + (piles to be removed (incl. 2 Te of grout) of 248 Te) + (piles left in situ - 359 Te)

** Topside weight includes removed telecom tower of 33Te + Sub cellar deck tertiary steel work and equipment of 163 Te, i.e. total removed weight covered in the Partial DP of 196 Te



1.4.1 Installation – Pickerill B

Table 1.1b: Decommissioning Programme – Pickerill B				
Field:	Pickerill B	Production Type (Oil/Gas/Condensate)	Gas	
Water Depth (m)	19.3	UKCS block	48/11A	
Surface Installation Pickerill B				
Number	Туре	Topsides Weight (t)	Jacket Weight (t)	
1	Fixed leg small steel NUI platform	1334*	1384**	
Subsea Installation		Number of Wells		
Sub	sea Installation	Number o	of Wells	
Sub: Number	sea Installation Type	Number of Platform	of Wells Subsea	
Substitution Number 0	sea Installation Type N/A	Number of Platform	of Wells Subsea 0	
Subs Number 0 Dril	sea Installation Type N/A I Cuttings pile	Number of Platform 7 Distance to median	of Wells Subsea 0 Distance from nearest UK coastline	
Substitution Number 0 Dril Number of Piles	sea Installation Type N/A I Cuttings pile Total Estimated volume (m ³)	Number of Platform 7 Distance to median Km	of Wells Subsea 0 Distance from nearest UK coastline Km	

** Jacket weight for Pickerill B = (steel frame of 568 Te) + (deck leg extension of 106 Te) + (marine growth of 109 Te) + (piles to be removed (incl. 2 Te of grout) of 242 Te) + (piles left in situ - 359 Te)

* Topside weight includes removed telecom tower of 33Te which is covered in the Partial DP.

Table 1.2 Installation Section 29 Notice Holders Details				
Section 29 Notice Holder(s)	Registration Number	Equity Interest (%)		
Perenco Gas (UK) Limited	00715529	94.78		
Perenco UK Limited	04653066	0		
Marubeni Oil and Gas (U.K.) Limited	03947050	5.22		
Marubeni Oil & Gas (North Sea) Limited	SC238015	0		
Petro-Canada Energy North Sea Limited	03084447	0		
Britoil Limited	SC077750	0		
Noble Energy (Oilex) Limited	00797339	0		
Noble Energy (ISE) Limited	SC071090	0		
Apache Beryl I Limited	BR001327	0		
Arco British Limited, LLC	BR001713	0		



1.5 <u>Summary of Proposed Decommissioning Programme</u>

Table 1.3: Summary of Decommissioning Programme						
Selected Option	Reason for Selection	Proposed Decommissioning Solution				
1. Topsides						
Complete removal, re-use or disposal	Complies with OSPAR requirements and OPRED guidelines and maximises recycling of materials.	Topsides rendered HCF and removed either by (1) HLV, (2) Skidding or floating, (3) through a combination of crane vessel lift and piece small dismantling. Re-use followed by recycle and other recovery routes before disposal as a final option is considered.				
2. Jacket	•					
Complete removal, re-use or disposalLeaves clean seabed, removes a potential obstruction to fishing operations and maximises recycling of materials, to comply with OSPAR requirements.Jacket legs 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 -3.0m below the seabed. If any practical difficulties are encountered Perenco will consult OPREE						
3. Subsea Installations	•					
	None					
4. Pipelines, Flowlines & U	nbilical					
1	Not covered in this Decommissioning P	rogramme				
5. Wells						
Permanent well Plug and Abandonment (P&A).	Meets HSE regulatory requirements and is in accordance with OGUK and OGA guidelines.	Plug and abandoned to comply with the HSE regulation, i.e. "The Offshore Installations and Wells (design and construction etc.) Regulations 1996", and in accordance with OGUK Well Decommissioning Guidelines, Issue 6, June 2018				
6. Drill Cuttings						
No evidence of significant drilling cuttings in place.Cuttings pile is widely dispersed and fall below OSPAR 2006/5 thresholds.Any drill cuttings will remain in situ an may be disturbed during the decommissioning programme; howev will result in no significant environmer impact.						
7. Interdependences						
Whole of jacket can be removed; cuttings pile has little influence on jacket 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: Pickerill A and B location within Southern North Sea











Table 1.4: List of Adjacent Facilities						
Owner	Name	Туре	Distance/Direction	Information	Status	
Perenco UK Limited	Excalibur	Platform	From Pickerill A to Excalibur is 20.1km From Pickerill B to Excalibur is 13.9Km Excalibur is South of Pickerill B at 53 ° 27' 51.50" N 01 ° 20' 35.24" E	Adjacent Platform	Operational	
Perenco UK Limited	Malory	Platform	From Pickerill A to Malory is 11.1km From Pickerill B to Malory is 5.9km Malory is West of Pickerill B at 53° 32' 35.19" N 01° 14' 34.21" E	Adjacent Platform	Operational	
Perenco UK Limited	Galahad	Platform	From Pickerill A to Galahad is 18.8km From Pickerill B to Galahad is 13.5km Galahad is West of Pickerill B at 53° 32' 44.98" N 01° 21' 32.83" E	Adjacent platform	Operational	
Perenco UK Limited	Guinevere	Platform	From Pickerill A to Guinevere is 19.9km From Pickerill B to Guinevere is 14.4km Guinevere lies Southeast of Pickerill B 53° 24' 50.59"N 01° 16' 20.18" E	Adjacent platform	Non Producing (In Lighthouse Mode)	
Perenco UK Limited	Amethyst B1D	Platform	From Pickerill A to Amethyst is 13.2km From Pickerill B to Amethyst is 19.1km Amethyst is Southeast of Pickerill A at 53° 33' 39.64" N 00° 52' 38.19" E	Adjacent Platform	Operational	



Table 1.4: List of Adjacent Facilities						
Owner	Name	Туре	Distance/Direction	Information	Status	
Neptune E&P UK Ltd	Juliet Field	Subsea Development	From Pickerill A to Juliet is 21.3km From Pickerill B to Juliet is 27.1km Juliet is North of Pickerill A at 53° 33' 15" North. 00° 45' 20" East	Two well subsea completion tied back to Pickerill A	Non Producing	
Impacts of Decommissioning Proposals						

Decommissioning of Pickerill A and Pickerill B Platforms will have no impact on the adjacent facilities of Malory, Excalibur, Galahad, Guinevere and Amethyst B1D; as gas exported from these facilities goes to the Dimlington Terminal.

The Juliet subsea wells (owned by Neptune E&P UK Ltd) are tied back to the Pickerill A platform. The subsea pipeline will be flushed and air-gapped on the platform in conjunction with the HCF operation for Pickerill; however, the subsea well completion, the pipeline and umbilical, and subsea structures will be decommissioned separately. This decommissioning work will be covered under the Juliet Decommissioning Programme prepared by Neptune E&P UK Ltd.



Figure 1.3: Adjacent Facilities





1.7 Industrial Implications

The project includes the following key activities:

- Pre-decommissioning surveys: Environmental surveys are undertaken prior to commencement of the decommissioning programme.
- P&A and Hydrocarbon Free Campaign: The following activities are undertaken during the HCF campaign to render the installation hydrocarbon free:
 - Platform wells plugged and abandoned to Phase 2, as defined in the OGUK Well Decommissioning Guidelines
 - Flushing and flooding of connecting pipelines, in accordance with Regulation 14 of the Pipeline Safety Regulations 1996
 - Flushing and purging of topsides process equipment
 - Structural survey to ensure that the structural integrity of the installation will be maintained throughout the decommissioning programme.
- Preparation for Lighthouse Mode: The following activities will be carried out during the HCF campaign to prepare the platform for Lighthouse Mode:
 - Decommissioning of connecting pipelines, in accordance with Regulation 14 of the Pipeline Safety Regulations 1996
 - Decommissioning of topsides and safety equipment; decommissioned equipment may be recovered for re-use on another installation
 - Platform wells plugged and abandoned to 'Phase 3' as defined in the OGUK Well Decommissioning Guidelines Issue 6, June 2018
 - Solar powered self-contained AtoNs (Aids to Navigation) commissioned and tested prior to the departure of the jack-up barge
- Dismantlement Preparation: The following activities will be carried out during the HCF campaign to prepare the platform for future removal:
 - Full or partial removal of riser / caisson sections located between the Cellar Deck and Spider Deck (as detailed under the Partial DP)
 - Removal of the telecom tower on Pickerill A and B (as detailed under the Partial DP)
 - Removal of the sub-cellar deck on Pickerill A (as detailed under the Partial DP)
 - Preparation of structure for future removal of platform
- Lighthouse Mode: Depending on the Decommissioning Execution Strategy the following activity may be carried out in the Lighthouse Mode:
 - Pipeline risers cut subsea once the pipeline is rendered HCF and flooded with seawater, and removal of pipeline free spans in close proximity to the platform. (If a substantive section of the pipeline will need to be removed, the work will be carried out either under an approved Pipeline Decommissioning Programme or a separate Partial DP)



- Removal and Dismantlement Campaign: The following activities will be carried out in the Removal and Dismantlement Phases:
 - Removal of topsides and transport onshore to disposal yard
 - Removal of jacket and transport onshore to disposal yard
 - Onshore dismantlement of topsides and jacket at disposal yard, for reuse, recycling or disposal
- Seabed clearance and verification: A post decommissioning environmental survey will be undertaken following platform and jacket removal

The above activities are planned carefully to recognise synergies and efficiencies. Engineering and planning takes into account potential integration of various activities.

All contracts will be tendered according to Perenco procedures. Suppliers' offers will be assessed along many criterions, including: their technical ability and capacity to execute the work in a safe and efficient manner that minimises the impact on the environment; the commercial offer; and the experience of carrying out this type of operation in the UKCS.

Perenco have engaged with the OGA Supply Chain team, and it has been agreed that a Supply Chain Action Plan (SCAP) is required for the Pickerill A/B Installations DP. The SCAP has been submitted to OGA for review.

Perenco are active participants in various industry initiatives including:

- a. OGUK Supply Chain Forum
- b. OGUK Decommissioning Forum
- c. OGUK Wells Forum
- d. East of England Energy Group (EEGR)

Current operational contracts for items such as environmental permitting, potential vessel sharing and logistical support will be implemented to support decommissioning activities and wider business optimisation.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 Installations: Surface Facilities

Table 2.1: Surface Facilities Information								
			Topsides/Facilities		Jacket (if applicable)			
Name	Facility Type	Location WGS84 Format	Weight (Te)	No of modules	Weight (Te)	Number of Legs	Number of piles	Weight of piles (Te)
Pickerill A	Fixed steel jacket	53° 32' 59.81" N 01° 04' 37.99" E	1615	1	783*	4	4	248**
Pickerill B	Fixed steel jacket	53° 31' 29.78" N 01° 09' 38.40" E	1334	1	783*	4	4	242**

* The jacket weights include weight steel frame (568 Te), weight of deck leg extension (106 Te) and marine growth (109.2 Te).

** Weight of piles to be removed includes estimate of 2 Te of grout. Leaving 359 Te piles insitu).



2.2 Installations: Subsea including Stabilisation Features

N/A

2.3 <u>Wells</u>

Table 2.2a: Pickerill B Well Information					
Platform Wells – Pickerill B	Designation	Status	Category of Well *		
48/11a-B1	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 2-2-1		
48/11a-B2	Suspended (side tracked to B7)	Current status is Abandoned to Phase 1 To be Abandoned to Well Decommissioning Phase 3	PL 0-0-1		
48/11a-B3	Suspended (side-tracked to B3z)	Current status is Abandoned to Phase 1 To be Abandoned to Well Decommissioning Phase 3	PL 0-0-1		
48/11a-B3z	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 1-1-1		
48/11a-B4	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 2-2-1		
48/11a-B5	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 1-1-1		
48/11a-B6	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 1-1-1		
48/11a-B7	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 1-1-1		
48/11a-B8	Gas Production	Current status is completed shut-in To be Abandoned to Well Decommissioning Phase 3	PL 1-1-1		
Subsea Wells – Pickerill B					
None	N/A	N/A	N/A		



Table 2.2b: Pickerill A Well Information					
Platform Wells – Pickerill A	Designation	Status	Category of Well *		
48/11b-A1	Suspended (side-tracked to A1z)	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 0-0-1		
48/11b-A1z	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 1-1-1		
48/11b-A2	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 1-1-1		
48/11b-A3	Suspended (side-tracked to A3z)	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 0-1-1		
48/11b-A3z	Suspended (side-tracked to A3y)	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 2-1-1		
48/11b-A3y	Gas Production Current status is completed shut-in To be Abandoned to Phase 3		PL 2-1-1		
48/11b-A4	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 1-1-1		
48/11b-A5	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 1-1-1		
48/11b-A6	Suspended (side-tracked to A6z)	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 0-2-1		
48/11b-A6z	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 2-2-1		
48/11b-A7	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 1-1-1		
48/11b-A8	Suspended (side-tracked to A8z)	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 0-2-1		
48/11b-A8z	Suspended (side-tracked to A8y)	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 0-2-1		
48/11b-A8y	Gas Production	Current status is completed shut-in To be Abandoned to Phase 3	PL 2-2-1		
48/11b-A9	Suspended	Current status is Abandoned to Phase 1 To be Abandoned to Phase 3	PL 0-1-1		
Subsea Wells – Pickerill A					
None	N/A	N/A	N/A		

* Category of well as per OGUK Well Decommissioning Guidelines, Issue 6, June 2018.

2.4 Drill Cuttings

Environmental surveys have found no evidence of drill cuttings associated with the Pickerill A and B installations in the area.

Drill cuttings that were generated during drilling activity will have been distributed widely since



drilling due to the local currents. Any remaining drill cuttings may be disturbed during the decommissioning programme; however, this will result in no significant environmental impact.

2.5 Inventory Estimates

Figure 2.1a and Figure 2.1b show the estimated Topsides and Jacket Inventories to be decommissioned for Pickerill A and Pickerill B respectively. The inventories exclude the jacket piles to be left in situ, and include the equipment removed during the HCF campaign.

Reference the Pickerill A&B Installations Decommissioning Environmental Appraisal (Section 3) for more detailed information.



Figure 2.1a: Estimated Inventory: Pickerill A Installation



Figure 2.1b: Estimated Inventory: Pickerill B Installation

3. REMOVAL AND DISPOSAL METHODS

In line with the waste hierarchy, the re-use of an installation (or parts thereof) was first in the order of preferred decommissioning options for assessment.

Perenco assessed options for extending the producing life of the platform, utilising it as an infrastructure hub for third party tie backs and enhanced recovery programmes, but none proved commercially viable.

Perenco then assessed options for the relocation of the platform as a producing asset, but concluded that due to its ageing process technology and the high cost of maintaining the fabric and structural integrity of the platform, no technically viable reuse option was available.

Perenco have reviewed, and 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 forward. Perenco will continue to track reuse market trends in order to seize reuse opportunities at the appropriate time.



In the event that a Transfrontier Shipment of Waste (TFSW) permit is required, Perenco will liaise with the relevant Waste Authority and ensure that all relevant permits and consents are in place in accordance with the Transfrontier Shipment of Waste Regulations 2007 (as amended) or The International Waste Shipments (Amendment) (EU Exit) Regulations 2018, approved by UK parliament on 27 February 2019 and which would come into force the day the UK leaves the EU in the event that UK leave without a deal.

3.1 <u>Topsides</u>

3.1.1 Topsides Decommissioning Overview

Topsides Description:

The topsides is a conventional truss steel structure with two deck levels; a cellar deck at EL +22.007 LAT and main deck at EL +30.500 LAT. There is also a helideck located above the main deck at EL +38.497 LAT. There is a sub-cellar deck on Pickerill A only at EL +19.207 LAT.

The approximate size of the topside is 31.6m x 21m x 8m high (including helideck).

The estimated removal weight for Pickerill A topsides is 1615 Te and for Pickerill B topsides is 1334 Te.

Figure 3.1a: Diagram of Topsides Pickerill B







Figure 3.1b: Diagram of Topsides Pickerill A

Elevation looking East showing sub-cellar deck [N.B Elevations relevant to LAT as per Pickerill B platform - see figure above]







Preparation/Cleaning:

Table 3.1: Cleaning of Topsides for Removal					
Waste Type	Composition of Waste	Disposal Route			
On-board hydrocarbons	Process fluids, fuels and lubricants	Flushed and either injected into platform wells or drained to tote tanks for transport and appropriate disposal onshore.			
Other hazardous NORM and radioactive material	Transported ashore for re-use, recycling or disposal by appropriate methods.				
	instruments containing heavy metals, batteries	In the event that 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.			
Original paint coating	Lead-based paints	May give off toxic fumes/dust if flame-cutting or grinding/blasting is used so appropriate health safety measures will be taken.			
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
 HLV (semi-subm Mono-hull crane SLV ☑ Piece small ☑ Other ☑ 	ersible crane vessel) ⊠ vessel □
Method	Description
Single lift removal by SLV/HLV	Removal of topsides as complete unit and transportation to shore for re- use of selected equipment, recycling, break up and/or disposal. Single lift dependant on vessel availability.
Modular removal and re-use/recycle by HLV	Removal of parts/modules of topsides for transportation and reuse in alternate location(s) and/or recycling/disposal.
Skidding or floating	Removal of topsides as complete unit using alternative methodologies being developed by industry currently being assessed. Transportation to shore for re-use of selected equipment, recycling, break up and/or disposal.
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.
Proposed removal method and disposal	Topsides will be removed to shore and disposed of at a selected disposal yard to comply with relevant legislation and company policy.
route	The current plan is to remove the Topsides as a single lift using an SLV/HLV. However, we are assessing other removal options to establish the most efficient and cost effective method to remove the topsides module. A final decision on the removal method will be made following detailed engineering studies and OPRED will be informed of any change to the current plan.



3.2 Jacket

3.2.1 Jacket Decommissioning Overview

The jackets 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, oxyacetylene or high pressure abrasive water jet cutting.

The Pickerill A/B jacket is a four-legged steel frame with the south face at a 1:10 batter. The centreline dimensions at the top of the jacket leg are 16m x 20m at EL +10.5m above LAT. Each jacket leg has an internal pile, 1520 mm diameter, with penetrations into the seabed below mudline of 58m. Pile cut-off is at +10.5m LAT. The Pickerill A and B jackets are in 20.3m and 19.3m of water respectively (reference to LAT).

The estimated jacket weight for Pickerill A to be removed is 1031 Te; this includes the steel frame (568 Te), the weight of the deck leg extension (106 Te), weight of piles to be removed including (248 Te incl. grout), and marine growth (109 Te).

The estimated jacket weight for Pickerill B to be removed is 1025 Te; this includes the steel frame (568 Te), the weight of the deck leg extension (106 Te), weight of piles to be removed including grout (242 Te incl. grout), and marine growth (109 Te).

3.2.2 Jacket Removal Methods

	Table 3.3: Jacket Decommissioning Methods			
 HLV (semi-submersible crane vessel) ☑ Mono-hull crane vessel ☑ SLV ☑ Piece small □ Other - (describe briefly) ☑ 				
Method	Method Description			
Onshore disposal using HLV, Mono- hull crane vessel or SLV	Removal of the jacket in a single lift and transport ashore for break up and recycling of steel.			
Other	A pull on barge removal method based on a submersible barge which is submerged on one end to the seabed. The jacket will then be pulled on to the barge/vessel by winch and returned to shore for re- use/recycling.			
	Or alternatives methods being developed by industry and currently being assessed, e.g. floating the jacket to shore using flotation devices.			
Proposed removal method and disposal route	The jacket will be removed to shore and disposed of at selected disposal yard to comply with relevant legislation and company policy. The current plan is to remove the Jacket as a single lift using an SLV/HLV.			



3.3 <u>Wells</u>

Table 3.4: Well Plug and Abandonment

The wells which remain to be abandoned, as listed in Section 2.3 (Table 2.2a & 2.2b), will be plugged and abandoned in accordance with Oil and Gas UK Guidelines for the suspension and abandonment of wells.

A Master Application Template (MAT) and the supporting Subsidiary Application Template (SAT) application will be submitted in support of any such work that is to be carried out.

3.4 Drill Cuttings

Drill Cuttings Decommissioning Options:

Table 3.5: Drill Cuttings Decommissioning Options							
How many drill cutting piles	How many drill cutting piles are present? None						
Tick Options examined							
Remove and re-inject	Leave in	place	Cover				
Relocate on seabed	Remove and treat of	onshore	Remove and tre	eat offsho	ore		
Other	her Drill cutting piles widely dispersed						
Review of Pile Characteristics					Pile 2		
How has the cutting piles been screened (desktop exercise)							
Dates of Sampling							
Sampling to be included in pre-decommissioning survey							
Does it fall below both OSPAR thresholds?							
Will the drill cuttings pile have to be displaced in order to remove the jacket							
What quantity (m ³) will have to be displaced/removed							
Will the drill cuttings pile have to be removed in order to remove any pipelines							
What quantity (m ³) will have to be displaced/removed							
Have you carried out a Comp	Have you carried out a Comparative Assessment of options for the Cuttings Pile?						

Comparative Assessment Method

A comparative assessment is not required as no drill cuttings piles have been identified from the environmental surveys carried out.



3.5 <u>Waste Streams</u>

Table 3.6: Waste Stream Management Methods				
Waste Stream	Removal and Disposal method			
	Removed from vessels and pipework, and either injected into platform wells for disposal or discharged into tote tanks for transport and appropriate disposal onshore.			
Bulk liquids	Vessels, pipework and sumps will be drained prior to removal to shore and shipped in accordance with 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 of according to guidelines.			
NORM/LSA Scale	Tests for NORM/LSA will be undertaken offshore by the Radiation Protection Supervisor and any NORM encountered will be dealt with and disposed of in accordance with guidelines and company policies and under appropriate permit.			
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 survey for other hazardous wastes will be undertaken offshore and will be dealt with / disposed of according to guidelines and company policies.			
Onshore Dismantling sites	Appropriate licensed sites will be selected. The chosen facility must demonstrate proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver recycling options.			

3.6 Inventory Disposition

Table 3.7: Inventory Disposition					
Total InventoryPlanned tonnagePlanned tonnageTonnageto shoreleft in situ					
Pickerill A	3005	2646*	359 (piles from 3m below mudline)		
Pickerill B	2718	2359**	359 (piles from 3m below mudline)		

*This includes 196 Te that was removed under the Partial DP

**This includes 67 Te that was removed under the Partial DP



Table 3.8: Proposed Fate of Pickerill Infrastructure Materials			
Infrastructure Recommended decommissioning Destination			
Jacket	Complete removal [Piles 3.0m below seabed level to remain]	100% Recycling	
Topside	Complete removal	Re-use, recycling and disposal	



4 ENVIRONMENTAL APPRAISAL OVERVIEW

4.1 <u>Environmental Sensitivities (Summary)</u>

The Environmental Appraisal (EA) provides a review of the key features of the environment in the proposed Pickerill installation Decommissioning Programme Area in Block 48/11 in the southern North Sea.

Table 4.1: Environmental Sensitivities			
Environmental Receptor	Main Features		
Conservation interests	Annex I habitats Inner Dowsing, Race Bank and North Ridge SAC The Pickerill A and Pickerill B installations are both located 24 km north east of the Inner Dowsing, Race Bank and North Ridge SAC. The sandbanks typically have fields of sand waves associated with them. The Annex I biogenic reef habitats formed by Sabellaria spinulosa are also present in the SAC. North Norfolk Sandbanks and Saturn Reef SAC The Pickerill A & B installations are located 35 km and 32 km respectively, south west of the North Norfolk Sandbanks and Saturn Reef SAC. The sandbanks typically have fields of sand waves associated with them. The Annex I biogenic reef habitats formed by S. spinulosa are also present in the SAC. Annex II/IV species Harbour porpoise, white-beaked dolphin, and white sided-dolphin have all been recorded near UCKS Block 48/11 wherein the Pickerill field lies (Reid et al., 2003). Harbour porpoise are observed throughout the year in the SNS and were sighted near the Pickerill Field during February, and from June to October in low to moderate numbers. White-beaked dolphins were observed with less frequency, with low numbers recoded during January and October, whilst white-sided dolphins were only observed in August in very low numbers. Due to the mobile nature of the species, they are likely to move away and not be adversely affected by the proposed Pickerill decommissioning activities. Since the Pickerill installations are located approximately 59 km offshore, grey and harbour seals may be encountered from time to time but it is not likely that they use the area with any regularity or in great numbers. This is confirmed by the grey and harbour seal density maps published by the Sea Mamma		



	Seabed sediments
	The EUNIS habitats (JNCC, 2018) data indicates that the seabed surrounding the Pickerill infrastructure has a EUNIS classification of A5.1, described as: "Sublittoral coarse sediment (unstable cobbles and pebbles, gravels and coarse sands)" (Oil and Gas UK, 2017). There are no reefs in the immediate vicinity of the platforms.
	Benthic Fauna
Seabed	The Pickerill B benthic survey results show that the Pickerill survey area was highly species abundant with a total of 7515 individuals identified. Of the 198 species recorded, 168 species were infaunal and were dominated by annelids accounting for 45.81% of the community. The samples were also considered to be epifaunal rich, with a combined grouping of colonial and solitary epifauna accounting for 33 species of which bryozoan were the most well represented with 16 taxa observed. There appeared to be no distinct impact on community structure or clear geographical distribution from the Pickerill B infrastructure.
	Benthic fauna was characteristic for this region of the SNS. No EC Habitats Directive Annex I habitats or other protected habitats/ species were encountered during the survey. While sporadic individuals of <i>Sabellaria spinulosa</i> were evident from macrofaunal analysis of grab samples, no <i>Sabellaria</i> aggregations were evident on video footage or bathymetry data and as such there is no evidence for the potential presence of qualifying <i>Sabellaria</i> reef structures within the survey area.
	Phytoplankton
Plankton	Phytoplankton abundance within the Southern North Sea fluctuates less than in the central and northern North Sea, and winter levels also remain higher than further north. Monitoring between 1997 and 2007 has shown that whilst phytoplankton numbers increase in May, the spring peak in biomass is lower than that observed in central and northern areas of the North Sea. Large diatoms such as Thalassiosira spp. and Chaetoceros spp. are usually dominant in the spring bloom. (SAHFOS, 2015).
	Zooplankton
	The zooplankton communities are dominated in terms of biomass and productivity by copepods, particularly Calanus species such as C. finmarchicus and C. helgolandicus; with C. helgolandicus dominating warmer waters in more southerly regions. C. finmarchicus in the Southern North Sea remain relatively constant through the year with only a small increase in April (SAHFOS, 2015).
Fish and Shellfish	The Pickerill field is located in International Council for the Exploration of the Sea (ICES) rectangle 36F1, in an area of spawning and nursery grounds for several commercially important species; including anglerfish, Cod, Herring, mackerel, sole, Nephrops, plaice, Sandeels, Sprat, Spurdog, and Whiting. Spawning areas for most species are not rigidly fixed and fish may spawn either earlier or later from year to year.
	Cetacean species
Marina Mammala	Refer to Annex II/IV species (Conservation interests above)
warine wammais	Pinnipeds species
	Refer to Annex II/IV species (Conservation interests above)

Birds	 According to the density maps provided in Kober <i>et al.</i>, (2010), the following species have been recorded within the area of the Pickerill platforms A and B during the proposed period of operations: Northern fulmar, Sooty/Manx Sear water, Storm petrel, Northern Gannet, Cormorant, Shag, Pomarine/Arctic/Long-tailed/Great Skua, guillemot, razorbill, puffin, little auk; as well as numerous species of gull, and tern. In general, species can be found breeding at low densities from March to November, predominantly during the summer months (June, July and August). Seabird sensitivity in the region of UKCS Block 48/11 and in the vicinity of the Pickerill installations are considered overall medium (score of 3) between August and March. The seabird sensitivity can be considered low from May till July (score of 5). The decommissioning projects of the Pickerill platforms A and B are located approximately 58 km from the nearest UK coast and are remote from sensitive seabird breeding areas on the coast.
Onshore Communities	All waste produced from the Pickerill decommissioning activities will be transported to an onshore recovery/disposal facility. Perenco will ensure the chosen site(s) comply with all relevant permitting and legislative requirements. No onshore communities are expected to be affected by the decommissioning program.
	FishingThe Pickerill installations are located within International Council for the Exploration of the Sea (ICES) Rectangle 36F1. Landings associated with both ICES Rectangle 36F1 are dominated by shellfish species. Shellfish are predominantly targeted in this region by static fishing gear, such as pots and traps. Species targeted include: crabs, whelks, Nephrops and lobsters. Some demersal beam trawling targeting demersal finfish and flatfish takes place in the area; however, this is a minor contributor to the total value of the commercial fisheries which utilise the region. Fisheries landings in the Pickerill Field are low compared to other regions of the UK.Shipping
Other Users of the Sea	Shipping activity in the project area ranges from very low to high. Automatic Identification System (AIS) satellite vessel data for 2017 - 2018 (Anatec, 2018), focusing primarily on a six-month period comprising August – October 2017 and January – March 2018 indicates that there are a wide range of vessel types operating within 10NM.
	Several offshore platforms surround the Pickerill installations, these include: the Malory platform (6 km east of Pickerill B), the Amethyst B1D platform (13 km west of Pickerill A), and the Galahad platform (14 km east of Pickerill B).
	Offshore Wind Farms
	There are 14 windfarm sites within 65 km of the Pickerill field infrastructure; the closest of which is 12 km from Pickerill A. Ten of these are leased sites with the other four in the planning consent stage.
	Dredging and aggregate extractions



Atmosphere	Local atmospheric emissions will be influenced by vessel movements and associated activities during the proposed decommissioning operations. It is expected that these emissions will be localised to the area of interest.
	 Dudgeon extension (26 - 31 km south east); Race Bank Array (approximately 30 km south west); and Triton Knoll (11.5 – 15 km west).
	There are three cabled areas that are within the vicinity of the Pickerill installations:
	Telecommunications
	 Umpire submarine (approximately 35 km south); and Vortigern Destroyer (approximately 40 km south).
	are two shipwrecks located to the south of the Pickerill installations:
	Wrecks
	The Pickerill infrastructure is located in Block 48/11 and as such, it is not located within an MOD Danger and Exercise Area (DEA).
	Military Activity
	release of hypersaline water in the production of salt caverns may have some localised effects (Scottish Government, 2017).
	Agreement to lease has been granted for the Endurance Carbon capture storage (CCS), 71 km North of the Pickerill area. The use of existing storage facilities and associated infrastructure is unlikely to have a significant environmental impact, although the
	storage, such as the ENI Deborah field located in Block 48/29 in the southern North Sea, 67 km southeast of the Pickerill B platform.
	Carbon Capture and Storage Projects
	B.
	There are 11 aggregate production areas located within 85 km of the Pickerill installations; the closest of which is 4.5 km from Pickerill



4.2 <u>Potential Environmental Impacts and their Management</u>

The Pickerill Alpha (A) & Bravo (B) Installations Decommissioning Programme (Removal Phase) Environmental Appraisal - SN-CX-XX-AT-XS-000001 (the EA) provides a review of the key features of the environment in the Pickerill Decommissioning Programme Removal Phase.

A key consideration when planning and finalising the decommissioning of the Pickerill installations is a clear understanding of the surrounding environment. In order to understand the potential for the project to interact with the environment, so that appropriate controls can be adopted to mitigate negative impacts, the physical, biological and socio-economic environments will be assessed.

Environmental Appraisal Assessment Summary:

The potential environmental impacts associated with the proposed decommissioning activities have been assessed as part of the EA which will accompany the Pickerill A & B Installations DP.

The EA assesses potential environmental impacts by identifying interactions between the proposed decommissioning activities and the associated environmental receptors. Impacts associated with the proposed decommissioning (removal phase) activities have been grouped within the EA under the following headings:

- Seabed Impacts (section 6.1)
- Accidental events (Section 6.2)
- Other users of the sea (6.3)

Any cumulative and transboundary impacts have been assessed within these sections.

The EA also describes the proposed mitigation measures designed to avoid or reduce the identified potential environmental impacts and how these will be managed in accordance with the Perenco Safety and Environmental Management System (SEMS) while considering responses from stakeholders.

EA conclusions:

The topsides of both facilities will be completely removed and as the substructures fall below the OSPAR 98/3 decision thresholds for consideration for derogation, the jacket will be recovered to shore leaving a clear seabed.

As required by the Petroleum Act, 1998 and OSPAR Decision 98/3, Perenco have undertaken an environmental and societal risk assessment, to identify and rank the potential hazards due to the Pickerill installation decommissioning activities. The risk assessment concluded that, post-mitigation, there is one 'high' risk decommissioning activity and several 'medium' risks.

These risks are:

- Seabed impacts;
- Accidental Events
- Risk to other users of the sea

Following further assessment, and implementation of additional control and mitigation measures, the level of impact from these aspects was reduced to 'low' and therefore not significant. These control and mitigation measures are an essential component of the decommissioning project Environmental Management Plan, (Ref. Table 4.2 below).



Environmental Appraisal Management Summary:

Table 4.2: Environmental Appraisal Management Summary			
Activity	Main Impacts	Management	
Atmospheric emissions Vessels will be audited a Work programmes will b All generators and engin maximum efficiency. Fuel consumption will be generators and other co Vessels will use ultra-low All mitigation measures Machinery and equipme The number of vessels u Perenco will minimise ris industry guidance. Cutting and lifting operativity guidance. Internal cutting will be us adjacent to the Pickerill i The requirements for exarce area of excavation. All anchors (where they operations.) Vessel orientation will be allowing for the safe loca essential scopes of work any vessel related disch Licensed contractors will An Active Waste Manag decommissioning activiti appropriately managed,	Atmospheric emissions	 Vessels will be audited as part of selection and pre-mobilisation. Work programmes will be planned to optimise vessel time in the field. All generators and engines will be maintained and operated to the manufacturers' standards to ensure maximum efficiency. Fuel consumption will be minimised by operational practices and power management systems for engines, generators and other combustion plan and maintenance systems. Vessels will use ultra-low Sulphur fuel in line with MARPOL requirements. All mitigation measures will be incorporated into contractual documents of subcontractors. 	
	 Machinery and equipment will be in good working order and well-maintained. The number of vessels utilising dynamic positioning will be minimised. Perenco will minimise risk to marine mammals from underwater noise throughout operations in-line with industry guidance. 		
	Seabed impacts	 Cutting and lifting operations of subsea equipment will be controlled and any impact on seabed sediment will be minimised. Internal cutting will be used preferentially where access is available to avoid interaction with the sediment adjacent to the Pickerill installations. The requirements for excavation will be assessed on a case-by-case basis, with the aim of minimising the area of excavation. All anchors (where they are used) will be completely removed from the seabed following decommissioning operations. Vessel orientation will be reviewed and selected to minimise the requirements for rock placement whilst allowing for the safe locating of the accommodation work vessel and access, i.e. crane reach to undertake essential scopes of work. Site specific assessment will be completed to assess suitable locations. 	
	Discharges to sea	 Cutting and lifting operations will be controlled and managed to ensure accurate placement of cutting and lifting equipment and minimise any impact on seabed sediment which may lead to the release of contaminated sediment via sediment resuspension. Any vessel related discharges will be managed in line with MARPOL requirements. 	
	Solid waste	 Licensed contractors will be used at licensed sites for all waste related management. An Active Waste Management Plan (AWMP) will be developed and put into place before the decommissioning activities commence. This plan will ensure that individual waste streams are appropriately managed, staff / crew are aware of waste management requirements and waste storage, 	



	 transfer and final disposal / recovery is compliant with relevant legislation. Opportunities where materials destined for landfill can be reduced, or otherwise recycled or reused, will be actively sought out.
Other users of the sea	 Perenco have undertaken a site-specific shipping assessment prior to the Pickerill decommissioning operations. Prior to commencement of operations, the appropriate notifications and maritime notices will be made. All vessel activities will be in accordance with national and international regulations. Appropriate navigation aids will be used in accordance with the consent to locate conditions to ensure other users of the sea are made aware of the presence of vessels. The number of vessels standing by at Pickerill will be kept to a minimum. A mandatory 500 m safety zone will remain around the Pickerill infrastructures during the decommissioning activities. On-going consultation with fisheries representatives. Post-decommissioning seabed clearance. Overtrawl survey (or equivalent) to be completed after removal of infrastructure. Materials left in situ will be mapped, the UK Hydrographic Office (UKHO) and Kingfisher informed and legacy management / survey requirements to the agreed with OPRED.
Accidental spills	 The Oil Pollution Emergency Plan (OPEP) has been produced in accordance with the Merchant Shipping (Oil Pollution Preparedness, Response & Co-operation Convention) Regulations 1998 and the Offshore Installations (Emergency Pollution Control) Regulations 2002. This OPEP will be updated in line with operational stages as required throughout the preparation and decommissioning lifecycle. Perenco have specialist oil spill response services provided by OSRL and are members of the OPOL. Any spill originating from the HL vessel during the removal operations will be controlled under the installation OPEP. Any accidental spill to sea out-with the 500 m safety zone will be managed by individual vessel Shipboard Oil Pollution Emergency Plans (SOPEP). Perenco will conduct all operations in a controlled manor with trained personnel using suitable equipment. All vessels will have suitable spill containment kits and an efficient spill response process is in place. Perenco routinely swap out perishable equipment such as hoses, and a management programme is implemented in order to ensure their integrity. Prior to the transfer of materials, visual checks and pre-bunkering checklists are undertaken by trained personnel in communication with the standby vessel. Observed leaks are reported and dealt with immediately by competent personnel and reported to the appropriate authorities.
Dropped object(s)	 Adhere to lifting and handling procedures and use of certified equipment for lifting. Post-decommissioning surveys will be undertaken to assess the presence and potential recoverability of any lost objects.



Jacket Removal	Atmospheric emissions	 Vessels will be audited as part of selection and pre-mobilisation. Work programmes will be planned to optimise vessel time in the field. All generators and engines will be maintained and operated to the manufacturers' standards to ensure maximum efficiency. Fuel consumption will be minimised by operational practices and power management systems for engines, generators and other combustion plan and maintenance systems. Vessels will use ultra-low Sulphur fuel in line with MARPOL requirements. All mitigation measures will be incorporated into contractual documents of subcontractors.
	Underwater noise	 Machinery and equipment will be in good working order and well-maintained. The number of vessels utilising dynamic positioning will be minimised. Perenco will minimise risk to marine mammals from underwater noise throughout operations in-line with industry guidance.
	Seabed impacts	 Cutting and lifting operations of subsea equipment will be controlled and any impact on seabed sediment will be minimised. Internal cutting will be used preferentially where access is available to avoid interaction with the sediment adjacent to the Pickerill installations. The requirements for excavation will be assessed on a case-by-case basis, with the aim of minimising the area of excavation. All anchors (where they are used) will be completely removed from the seabed following decommissioning operations. Vessel orientation will be reviewed and selected to minimise the requirements for rock placement whilst allowing for the safe locating of the accommodation work vessel and access, i.e. crane reach to undertake essential scopes of work. Site specific assessment will be completed to assess suitable locations. Post-removal surveys of the seabed will be carried out to identify significant anomalies and dropped objects.
	Discharges to sea	 Cutting and lifting operations will be controlled and managed to ensure accurate placement of cutting and lifting equipment and minimise any impact on seabed sediment which may lead to the release of contaminated sediment via sediment resuspension. Any vessel related discharges will be managed in line with MARPOL requirements.
	Other users of the sea	 Cutting and lifting operations will occur within the Pickerill platform 500 m exclusion zone. Perenco have undertaken a site-specific shipping assessment prior to the Pickerill decommissioning operations. Prior to commencement of operations, the appropriate notifications will be made, and maritime notices posted. All vessel activities will be in accordance with national and international regulations. Appropriate navigation aids will be used in accordance with the consent to locate conditions to ensure other users of the sea are made aware of the presence of vessels.



	 The number of vessels standing by at Pickerill will be kept to a minimum. A mandatory 500 m safety zone will remain around the Pickerill infrastructures during the decommissioning activities. On-going consultation with fisheries representatives. Post-decommissioning seabed clearance.
Damage or loss of fishing gear	 Overtrawl survey (or equivalent) to be completed after removal of infrastructure. Materials left in situ will be mapped, the UK Hydrographic Office (UKHO) and Kingfisher informed and legacy management / survey requirements to the agreed with OPRED.
Solid waste	 Licensed contractors will be used at licensed sites for all waste related management. An AWMP will be developed and put into place before the decommissioning activities commence. This plan will ensure that individual waste streams are appropriately managed, staff / crew are aware of waste management requirements and waste storage, transfer and final disposal / recovery is compliant with relevant legislation. Opportunities where materials destined for landfill can be reduced, or otherwise recycled or reused, will be actively sought out.
Accidental spills	 The Oil Pollution Emergency Plan (OPEP) has been produced in accordance with the Merchant Shipping (Oil Pollution Preparedness, Response & Co-operation Convention) Regulations 1998 and the Offshore Installations (Emergency Pollution Control) Regulations 2002. This OPEP will be updated in line with operational stages as required throughout the preparation and decommissioning lifecycle. Perenco have specialist oil spill response services provided by OSRL and are members of the OPOL. Any spill originating from the Heavy Lift vessel during the removal operations will be controlled under the installation OPEP. Any accidental spill to sea out-with the 500 m safety zone will be managed by individual vessel Shipboard Oil Pollution Emergency Plans (SOPEP). Perenco will conduct all operations in a controlled manor with trained personnel using suitable equipment. All vessels will have suitable spill containment kits and an efficient spill response process is in place. Perenco routinely swap out perishable equipment such as hoses, and a management programme is implemented in order to ensure their integrity. Prior to the transfer of materials, visual checks and pre-bunkering checklists are undertaken by trained personnel in communication with the standby vessel. Observed leaks are reported and dealt with immediately by competent personnel and reported to the appropriate authorities.
Dropped object(s)	 Adhere to lifting and handling procedures and use of certified equipment for lifting. Items recovered will be secured in a bunded area to ensure that any spills containing residual hydrocarbon traces are captured, preventing loss to sea. Post-decommissioning surveys will be undertaken to assess the presence and potential recoverability of any lost objects.



Subsea Installations Removal	Not applicable	Not applicable.	
Decommissioning Drill Cuttings	Not applicable	Not applicable.	
	Atmospheric emissions		
	Underwater noise		
Decommissioning	Seabed impacts		
Pipelines (left in situ)	Marine discharges	Not included in this Decommissioning Programme.	
	Other users of the sea		
	Damage or loss of fishing gear		
	Accidental hydrocarbon release		
	Dropped object(s)		
Decommissioning Pipeline Stabilisation Features	Potential snagging hazards to other users of the sea.	Not included in this Decommissioning Programme.	
	Long term degradation of pipeline & release of degraded material to the environment		



5 INTERESTED PARTY CONSULTATIONS

Consultations Summary:

Table 5.1: Summary of Consultee Comments			
Who	Comment	Response	
INFORMAL CONSULTATIONS			
OGA	OGA were provided an outline of the decommissioning programme as part of the COP notification. In addition, they are provided regular updates on the decommissioning programme.	The comments with respect to the pipeline decommissioning will be addressed in the Pickerill Pipeline Decommissioning Programme document, associated Environmental Appraisal document, and future permit applications.	
	OGA requested updates on P&A costs for Pickerill B Hydrocarbon Free campaign and made comments specific to the pipeline flushing operations.	Updates on costs will be made via the formal OPRED quarterly reporting mechanism as appropriate.	
	Comments received from JNCC with respect to pipeline decommissioning, leaving drill cuttings in situ, and the removal of marine growth in situ.	The comments with respect to the pipeline decommissioning will be addressed in the Pickerill Pipeline Decommissioning Programme document, associated Environmental Appraisal document, and future permit applications.	
	Comments on the EA with respect to the Seabed Oil Sensitivity Index and requirement for information on the impacts of P&A activities on the seabed in the initial EA scoping letter sent to them.	DP has been updated to reflect the drill cuttings will remain in situ may be disturbed during decommissioning; however, will result in no significant environmental impact.	
JNCC		There is no intention to remove marine growth in situ prior to the jacket removal.	
		Perenco will take into account the comments relating to the Seabed Oil Sensitivity Index and information to be included in the EA scoping letter in the development of future Decommissioning Programme documents and also related PETs applications.	
		With respect to the impact of P&A activities on the seabed, rock placement was not required for stabilisation purposed for the jack-up barge for the Pickerill A and Pickerill B Hydrocarbon Free Campaigns.	
OPRED EMT	No comments received during consultation process.	N/A	
HSE	HSE to review and accept: Combined Operation Notifications (COMOPS), Lighthouse Safety Case, Dismantlement Safety Case, and Schedule 9 notifications.	N/A	
	No comments received during the consultation process.		
Environment Agency	No comments received during the consultation process.	N/A	



Table 5.1: Summary of Consultee Comments				
Who	Comment	Response		
INFORMAL C	INFORMAL CONSULTATIONS			
MOD	No comments received during the consultation process.	N/A		
CEFAS	No comments received during the consultation process.	N/A		
NFFO	No comments received during the consultation process.	N/A		
STATUTORY	CONSULTATIONS			
NFFO	During the Consultation Phase for the Draft Decommissioning Programme the views of the NFFO were solicited. No comments were received.	N/A		
Global Marine Systems	During the Consultation Phase for the Draft Decommissioning Programme the views of the NFFO were solicited. No comments were received.	N/A		
Public	During the Consultation Phase for the Draft Decommissioning Programme a press notice was placed in a local newspaper and national journal (ref. Section 9) and draft copies of the Decommissioning Programme were made available at the Perenco Norwich office. An email address for responses to the press notices was also provided. No responses were received.	N/A		

6 **PROGRAMME MANAGEMENT**

6.1 <u>Project Management and Verification</u>

A Perenco Project Management team will be appointed to manage suitable sub-contractors for the removal of the Pickerill installation. Perenco standard procedures for operational control and hazard identification and management will be used. Where possible the work will be coordinated with other operations in the SNS. Perenco will monitor and track the progress of consents and the consultations required as part of this process. Any major changes to the decommissioning programme will be discussed and agreed with OPRED.

6.2 Post-Decommissioning Debris Clearance and Verification

A post decommissioning site survey will be carried out in 500m radius of the Pickerill installation site. Oil and gas seabed debris will be recovered for onshore disposal or recycling in line with existing guidelines and regulatory requirements. Independent verification of seabed



state will be obtained by carrying out an overtrawl survey for the platform area. This will be followed by a statement of clearance to all relevant governmental departments and non-governmental organisations.

6.3 <u>Schedule</u>

Project Plan:

Decommissioning is undertaken in the following stages, as described below:

 Hydrocarbon Free (HCF) Campaign: Pre-decommissioning surveys are undertaken prior to commencement of the campaign. A jack-up barge interfaces with the platform and carries out well plugging and abandonment, removing all hydrocarbons from topside pipework / vessels, flushing pipelines and pipeline severance, and removal of obstructions in preparation for the platform dismantlement.

Prior to the departure of the jack-up barge, self-contained solar powered AtoNs are installed and commissioned. The AtoNs provide marine coverage for the duration of the lighthouse mode (i.e. for a period of up to 3 years) and are monitored remotely from the Bacton Gas Terminal by Perenco Operators to ensure the navaids remain functional.

- 2. Removal and Dismantlement Phase: Successful tenderer(s) remove the topsides, followed by the removal of the jacket. Onshore dismantlement of topsides and jacket at disposal yard, for reuse, recycling or disposal
- 3. Seabed clearance and verification: Post-decommissioning environmental surveys undertaken following platform removal.

The schedule presented below in Figure 6.1 indicates the earliest and latest dates the dismantlement of the topsides and jackets is estimated to take place.

The completion dates for the project are driven by the availability of vessels, favourable weather windows, and market opportunities.



Figure 6.1: Gantt Chart of Project Plan

Year	2018			2019					20	20			20	21		2022				2023				
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Installation Decommissioning Programme & EA																								
Develop Decom programme & EA																								
Decom programme consultation																								
Approval of DP/EA																								
HCF - Pickerill B																								
Pre-engineering/planning																								
Pre-decommissioning surveys																								
Pipeline flushing																								
Well P&A																								
Purge topside and leave platform black																								
Verify HCF																								
HCF - Pickerill A					-		-		-	-			-	-	-			-						-
Pre-engineering/planning																								
Pre-decommissioning surveys																								
Pipeline flushing																								
Well P&A																								
Purge topside and leave platform black																								
Verify HCF																								



Year	2018				20)19			20	20			20	21		2022				2023				
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Dismantling – Pickerill B												-	-	-	-	-								
Pre-engineering/planning																								
Topside removal																								
Jacket removal																								
Site clearance																								
Dismantling – Pickerill A																								
Pre-engineering/planning																								
Topside removal																								
Jacket removal																								
Site clearance																								
Close-out																								
Post-decommissioning surveys																								
Close out Report Approval																								

Legend



Earliest date task could be completed





6.4 <u>Costs</u>

Table 6.1: Provisional Decommissioning Programme costs							
ltem	Estimated Cost (£m)						
Platform /Jacket - Preparation / Removal and Disposal	Costs provided to OPRED						
Well Abandonment	Cost provided to OPRED						
Continuing Liability – Future Pipeline and Environmental Survey Requirements	Costs provided to OPRED						
TOTAL	Costs provided to OPRED						

6.5 <u>Close Out</u>

In accordance with the OPRED Guidelines, a Close Out report will be submitted to OPRED (normally within 12 months of the completion of the offshore decommissioning scope). The Close Out Report will explain any variations from the Decommissioning Programme and will also include the debris removal, the independent verification of seabed clearance, and the post-decommissioning environmental survey.

In the Close Out report, the company responsible for the subsequent management of on-going residual liabilities for any infrastructure left in-situ will be detailed. That company will also be the contact point for any third party claims arising from damage caused by any remains from the Pickerill decommissioning programme.

6.6 <u>Post-Decommissioning Monitoring and Evaluation</u>

Post-decommissioning environmental seabed surveys will be carried out around the 500m Safety Zone of the Pickerill installations. The surveys will focus on chemical and physical disturbances of the decommissioning area and be compared with the pre-decommissioning surveys, which will have been carried out before decommissioning commences. Results of this survey will be forwarded to OPRED. After the survey results have been sent to OPRED and reviewed, the post-decommissioning monitoring regime will be discussed and agreed with OPRED.



7 SUPPORTING DOCUMENTS

Table 7.1: Supporting Documents							
Document Number	Title						
SN-CX-XX-AT-XS-000001	Pickerill Alpha (A) & Bravo (B) Installations Decommissioning Programme (Removal Phase) Environmental Appraisal						



8 PARTNER LETTER OF SUPPORT

Marubeni Oil & Gas (U.K.) Attention: Debbie Taylor Senior Decommissioning Manager **OPRED - BEIS** AB1 Building Crimon Place Aberdeen, AB10 1BJ 6th September 2019 Dear Ms Taylor PETROLEUM ACT 1998 DECOMMISSIONING PROGRAMME - PICKERILL A&B INSTALLATIONS We, Marubeni Oil and Gas (U.K.) Limited, confirm our support of the proposals detailed in the Decommissioning Programme for the Pickerill A&B Installations dated 5th September 2019 (the "Decommissioning Programme"). We also authorise Perenco Gas (UK) Limited to submit the Decommissioning Programme to the Secretary of State for approval under section 29 of the Petroleum Act 1998. Yours sincerely Contra For and on behalf of Marubeni Oil & Gas (U.K.) Limited Gary Nienow Director Marubeni Oil & Gas (U.K) Limited Business Trading & Registered Office: 1st Floor, Burdett House 15/16 Buckingham Street London WC2N 6DU Switchboard: +44 (0) 20 7766 3636 Facsimile: +44 (0) 20 7766 3620 Email: marubeni.oil.gas@mog.uk.com Registered No. 3947050 A subsidiary of Marubeni Corporation, Japan



9 PUBLIC NOTIFICATIONS

In accordance with the Petroleum Act 1998, Perenco UK Ltd announced the decommissioning proposal for the Pickerill Installation by placing a public notice in the Eastern Daily Press and the London Gazette (see below) on the 1 July 2019. In addition, details of where copies of the draft Decommissioning Programme could be found were placed on the company website.

Pipe-Lines | The Gazette

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Notice details	Pipe-Lines
Type: Planning > Pipe-Lines	Perenco Gas (UK) Limited PUBLIC NOTICE
Publication date: 1 July 2019, 12:00 Edition:	THE PETROLEUM ACT 1998 PICKERILL GAS FIELD (LICENSE BLOCK 48/11) INSTALLATION DECOMMISSIONING PROGRAMME
The London Gazette Notice ID: 3320053 Notice code: 1608	Perenco Gas (UK) Limited has submitted, for the consideration of the Sec of State for Business, Energy and Industrial Strategy, a draft Decommissi Programme for the Pickerill Alpha (A) and Pickerill Bravo (B) Normally Unattended Installations (NUIs) in accordance with the provisions of the Petroleum Act 1998. It is a requirement of the Act that interested parties to consulted on such decommissioning proposals.
Issue number: 62699	The items/facilities covered by the Decommissioning Programme for both A and Pickerill B are:
Page number:	 Topside - a conventional carbon steel structure, which includes a cellar main deck, and helideck (and vent boom tied into both the cellar and mair
	 Jacket - a conventional four-legged carbon steel structure; centreline dimensions at the top of the jacket leg 16m x 20m at EL +10.5m above L4 internal leg pile is driven through each leg via the leg node cans. Nine we all of which have been drilled. (One slot used to dock the jacket over an e wellhead).
	The Pickerill field is located in the Southern Basin of the United Kingdom Continental Shelf (UKCS), in license block 48/11, approximately 65km off from the Theddlethorpe Gas Terminal (TGT) on the Lincolnshire coast. Th ordinates of the Installations are:
	Pickerill A (48/11b) Installation: Latitude 53° 32' 57.0875" N; Longitude: I 33.3425" E
	Pickerill B (48/11a) Installation: Latitude 53° 31' 26.9642" N; Longitude C 33.2561" E
	Perenco Gas (UK) Limited hereby gives notice that a hard copy of the Pic Alpha (A) and Pickerill Bravo (B) Installations Decommissioning Program be inspected during office hours (by appointment only) at the location det below. Appointments can be made by sending an email to Decom- Consultation@uk.perenco.com or a letter to the address below.
	Decommissioning Team

Pipe-Lines | The Gazette



Page 2 of 2

Perenco UK Limited

3 Central Avenue

St Andrews Business Park

Norwich

Norfolk, NR7 0HR

Representations regarding the Pickerill Alpha (A) and Pickerill Bravo (B) Installations Decommissioning Programme should be submitted via email Decom-Consultation@uk.perenco.com. Representations should be receiv Monday, 29 July 2019 and should state the grounds upon which any representations are being made.

Date: 1 July 2019

Decommissioning Team

Perenco UK Limited

3 Central Avenue

St Andrews Business Park

Norwich

Norfolk, NR7 0HR

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06/08/2019



