

PERENCO UK LIMITED

Amethyst Jackets and Helvellyn Riser Section

Decommissioning Programmes

February 2025

Consultation Version

**AMETHYST FIELD
 JACKETS DECOMMISSIONING PROGRAMMES
 DECOM-2025-AMET-DP-Q-022 CONSULTATION VERSION**

Document Control

Approvals

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Terms and Abbreviations

Abbreviation	Explanation
"	Inch
%	Percentage
A1D	Amethyst A1D
A2D	Amethyst A2D
AtoN	Aids to Navigation
AIS	Automatic Identification System
B1D	Amethyst B1D
BP	BP Exploration Operating Company Limited
C1D	Amethyst C1D
CA	Comparative Assessment
CEFAS	Centre of Environment Fisheries and Aquaculture Science
COP	Cessation of Production
DESNZ	Department for Energy Security and Net Zero formerly OPRED
DGT	Dimlington Gas Terminal
DP	Decommissioning Programme
EA	Environmental Appraisal
EGT	Easington Gas Terminal
EUNIS	European Nature Information System
HCS	Hydrocarbon Safe
HLV	Heavy Lift Vessel
ICES	International Council for the Exploration of the Seas
JNCC	Joint Nature Conservation Committee
JUB	Jack up Barge
Km	Kilometre
km ²	Square Kilometre
LSA	Low Specific Activity
M	Metre
m ³	Cubic Metre
MCZ	Marine Conservation Zone
MOD	Ministry of Defence

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Abbreviation	Explanation
MPA	Marine Protected Area
N/A	Not Applicable
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Ireland Fish Producers' Organisation
NORM	Naturally Occurring Radioactive Material
NRA	Navigational Risk Assessment
NSTA	North Sea Transition Authority
NUI	Normally Unattended Installation
OEUK	Offshore Energies UK
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo and Paris Conventions
Perenco	Perenco UK Limited
PL	Pipeline
PWA	Pipeline Work Authority
RAT	Rope Access Technician
ROV	Remotely Operated Vehicle
S29	Section 29 Notice holder
SAC	Special Area of Conservation
SCANS	Small Cetacean Abundance of the North Sea
SFF	The Scottish Fishermen's Federation
SLV	Single Lift Vessel
SNS	Southern North Sea
SPA	Special Protected Area
Spirit	Spirit Energy Resources Limited
SZ	Safety Zone
Te	Tonnes
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
Waldorf	Waldorf Petroleum Resources Limited (Formerly Alpha Petroleum)
WSA	West Sole Alpha
WSB	West Sole Bravo
WSC	West Sole Charlie

1. EXECUTIVE SUMMARY

1.1 Combined Decommissioning Programmes

This document contains two Decommissioning Programmes (DP) for the Amethyst A1D (A1D), Amethyst A2D (A2D), Amethyst B1D (B1D) and Amethyst C1D (C1D) jackets and the Helvellyn pipeline riser, spool piece, and umbilical (PL1956 and PLU1957) sections that are attached to the A2D jacket.

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

This DP does not include the Topsides of the A1D, A2D, B1D and C1D, nor the Rose riser and umbilical (PL3872 and PLU1988). They have already been decommissioned under the Amethyst Topside DP, which was approved by The Department for Energy Security and Net Zero (DESNZ) on 1st July 2020.

A separate decommissioning programme for the Easington Gas Terminal (EGT) to A1D, A2D, B1D and C1D pipelines (PL) and power cables (PL6399, PL6400, PL6401 and PL4997), except for the riser sections, will be covered under a separate pipeline DP.

1.2 Requirement for Decommissioning Programme

Installations:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Amethyst (A1D, A2D, B1D, C1D) jackets (see Table 1.5) are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the jackets detailed in Section 2.1 of these programmes. (See also Section 8 - Section 29 Notice Holders Letter(s) of Support).

Pipelines:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Helvellyn Riser, spool piece and Umbilical pipelines (see Table 1.7 and 1.8) are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the pipelines detailed in Section 2.2 of these programmes. (See also Section 8 – Section 29 Notice Holders Letter(s) of Support). This does not include the decommissioning of the Easington Gas Terminal (EGT) to A1D, A2D, B1D and C1D pipelines (PL) and power cables (PL6399, PL6400, PL6401 and PL4997), which will be covered under a separate pipeline DP.

In conjunction with public, stakeholder and regulatory consultation, these decommissioning programmes are submitted without derogation and in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for a 5-year decommissioning project plan due to begin in Q3 2025.

1.3 Introduction

The Amethyst gas field is located in the United Kingdom Continental Shelf (UKCS) centred on Block 47/14a, extending into Blocks 47/13a, 47/8a, 47/9a and 47/15a in the Southern North Sea (SNS), approximately 40 kilometres (km) due east of the Humber Estuary and the Easington Gas Terminal (EGT) on the Yorkshire coast. The field consists of several separate gas accumulations; Amethyst East

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(East) covers the 'A' / 'B' areas and Amethyst West (West) covers the 'C' area. Discovered by the Britoil PLC in 1970 (West) and 1972 (East), East and West have been producing gas since 1990.

In 2012 the field operatorship was handed over from BP Exploration Operating Company Limited (BP) to Perenco. Perenco has explored all avenues for continuing production and concluded that due to high operational costs and a reduction of gas production, continued operations were uneconomical.

The Cessation of Production (COP) documentation was submitted to the North Sea Transition Authority (NSTA) in February 2020. Approval for COP was gained in June 2020.

As shown in Figure 1.2, the C1D was connected to A1D through the infield export gas pipeline PL776. This pipeline facilitated the transportation of produced fluids from C1D to A1D, where they co-mingled with fluids produced from A1D before entering the 30-inch (") Amethyst Export pipeline PL649 to EGT. Similarly produced fluids from B1D were conveyed via PL775 to A2D. Each of the pipelines is accompanied by a piggyback 3" pipeline for supplying methanol to the platforms, or an umbilical for delivering chemicals, hydraulic power, and supply to the subsea wellheads.

Furthermore, the production from the Rose field (block 47/15), via a subsea well, and the Helvellyn field (block 47/10a), via a subsea well, were respectively transported to A2D through the PL1987 and PL1956 pipelines. At A2D, all received fluids were mixed with those produced from A2D before entering the 30" Amethyst Export pipeline PL649. Subsequently, all fluids entering the 30" Amethyst Export line were sent onshore to EGT and then to Dimlington Gas Terminal (DGT) for processing.

The Rose subsea well (47/15b-6W), owned by Spirit Energy Resources Limited (Spirit) has ceased production and both the subsea structure and pipelines were subsequently decommissioned in 2015. The riser section of PL1987 was re-assigned PL3872 as a new pipeline number. The entire riser section together with the umbilical section inside the J-tube at A2D had been fully removed. Therefore, no considerations to the Rose risers will be made in this DP.

The Helvellyn development is located in block 47/10a. Waldorf Petroleum Resources Limited (Waldorf) has owned this development since 2001. It consists of a single subsea well, the Wellhead Protection Structure (WHPS), pipeline (PL1956) from the WHPS to and not including the A2D Riser Flange, and the umbilical (PLU1957) from the WHPS to, but not including the A2D J-Tube bellmouth. Perenco owns PL1956 from and including the A2D Riser Flange to A2D jacket, and PLU1957 from and including the AD2 J-Tube bellmouth to A2D jacket.

Decommissioning of the Helvellyn subsea installation, pipeline and umbilical has already been approved in the Helvellyn DP in January 2024. However, Perenco has spoken to Waldorf about the timelines of the Helvellyn DP schedule and determined that the removal of the Amethyst jackets and Helvellyn riser section would be before the Waldorf schedule. Therefore, as part of this DP, Perenco plans to perform cuts to airgap this pipeline and umbilical from the A2D jacket. The first cut will be at the bottom of the PL1956 riser within the Perenco section of the pipeline. The second cut will be after the A2D spool piece owned by Waldorf. This will remove a 10m section of Waldorf owned pipeline. The PLU1957 umbilical cuts will be after the J-Tube bellmouth, removing 10m of the PLU1957 umbilical owned by Waldorf.

1.4 Overview of Installations Being Decommissioned

1.4.1 Installations

A1D Jacket

Table 1-1: A1D Jacket Being Decommissioned			
Field(s)	Amethyst West	Production Type (Oil/Gas/Condensate)	Gas
Water Depth (m)	27	UKCS block	47/14a
Distance to median (km)	150	Distance from nearest UK coastline (km)	37
Surface Installation(s)			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)
1	Fixed Leg Steel	N/A	2285*
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
0	N/A	5	0
Drill Cuttings pile(s)			
Number of Piles	N/A	Total Estimated volume (m ³)	N/A

*Includes the weight of the piles and marine growth.

A2D Jacket

Table 1-2: A2D Jacket Being Decommissioned			
Field(s)	Amethyst East	Production Type (Oil/Gas/Condensate)	Gas
Water Depth (m)	22	UKCS block	47/14a
Distance to median (km)	143	Distance from nearest UK coastline (km)	42
Surface Installation(s)			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)
1	Fixed Leg Steel	N/A	2098.67*
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea

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0	N/A	6	0
Drill Cuttings pile(s)			
Number of Piles	N/A	Total Estimated volume (m ³)	N/A

**Includes the weight of the piles, Helvellyn riser section and spool piece, Umbilical within J-Tub, and marine growth.*

B1D Jacket

Table 1-3: B1D Jacket Being Decommissioned			
Field(s)	Amethyst East	Production Type (Oil/Gas/Condensate)	Gas
Water Depth (m)	18	UKCS block	47/15a
Distance to median (km)	140	Distance from nearest UK coastline (km)	48
Surface Installation(s)			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)
1	Fixed Leg Steel	N/A	1711*
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
0	N/A	6	0
Drill Cuttings pile(s)			
Number of Piles	N/A	Total Estimated volume (m ³)	N/A

**Includes the weight of the piles and marine growth.*

C1D Jacket

Table 1-4: C1D Jacket Being Decommissioned			
Field(s)	Amethyst West	Production Type (Oil/Gas/Condensate)	Gas
Water Depth (m)	18	UKCS block	47/15a
Distance to median (km)	155	Distance from nearest UK coastline (km)	31
Surface Installation(s)			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)

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1	Fixed Leg Steel	N/A	1938*
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
0	N/A	7	0
Drill Cuttings pile(s)			
Number of Piles	N/A	Total Estimated volume (m ³)	N/A

*Includes the weight of the piles and marine growth.

Table 1-5: Installations Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest Percentage (%)
Perenco UK Limited	04653066	100
Arco British Limited, LLC	BR001713	0
BP Exploration Operating Company Limited	00305943	0
Britoil Limited	SC077750	0
Murphy Petroleum Limited	00811102	0
Spirit Energy Resources Limited	02855151	0

1.4.2 Pipelines

Table 1-6: Pipeline(s) Being Decommissioned	
Number and total length (km) of Pipeline(s) / umbilical(s)	1 X Helvellyn riser (PL1956) = 0.0425km
	1X Helvellyn umbilical (PLU1957) = 0.0425km

Table 1-7: A2D Riser and Umbilical Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest Percentage (%)
Perenco UK Limited	04653066	100

The S29 holders have already provided their Letters of Support to remove the Waldorf A2D riser spool piece for the approved Helvellyn DP.

1.5 Summary of Proposed Decommissioning Programme

Table 1-8: Summary of the Decommissioning Programme	
Proposed Decommissioning Solution	Reason for Selection
Substructures (Jackets)	
<p>The leg piles will be cut to a target depth of at least -3m below the mean seabed level. As the seabed around the Amethyst field is expected to vary significantly over time, Perenco will investigate the opportunities to perform deeper internal cuts of the piles, subject to surveys to verify the piles are free of internal blockages.</p> <p>Cutting of the piles is anticipated to be executed by internal cutting equipment. However, if this proves unfeasible it would be necessary to excavate the seabed around the piles to enable external cutting. Where required, cleaning will be carried out at the dismantling site for recycling, as appropriate. Perenco will assess alternative options for removal based on structural integrity, project efficiency and vessel capability.</p>	<p>To comply with the Oslo and Paris Conventions (OSPAR) requirement to leave a clear seabed removes a potential obstruction to fishing operations and maximises the potential for recycling of materials</p>
Pipelines, Flowlines, Umbilical's & Riser Sections	
<p>All pipelines and umbilical currently attached to respective Amethyst jackets will be cut subsea, near the base of the jackets to separate the riser section from the rest of the pipeline/ umbilical systems. This will facilitate the removal of the jackets from the seabed. A summary of the subsea cutting operations for respective pipelines and umbilical is presented below:</p> <ul style="list-style-type: none"> • PL776 and PL778: will be cut subsea near the base of C1D and A1D jackets. • PL775 and PL777: will be cut subsea near the base of B1D and A2D jackets. • The Helvellyn riser section, spool piece and umbilical (PL1956 and PLU1957): will be cut subsea near the base of the A2D jacket. • PL649 and PL650: will be cut subsea near the base of A1D and A2D jackets. Pipeline abandonment plugs will be inserted into the cut ends of the pipelines at both jacket locations. The plugs are required on these two pipelines to preserve the chemicals within. 	<p>To comply with the Oslo and Paris Conventions (OSPAR) requirement to leave a clear seabed, removes a potential obstruction to fishing operations and maximises the potential for recycling of materials</p>
Drill Cuttings	
<p>No drill cuttings were identified on the seabed adjacent to the jacket.</p>	<p>The cuttings pile would have been widely dispersed and therefore falls below OSPAR 2006/5 thresholds.</p>

Table 1-8: Summary of the Decommissioning Programme	
Proposed Decommissioning Solution	Reason for Selection
Interdependencies	
Decommissioning of the pipeline section within the Rose and Helvellyn 500m safety zone (SZ) is excluded from this DP and is covered in separate DPs by Spirit and Waldorf respectively. Removal of the Helvellyn riser and umbilical sections will not prejudice decommissioning solutions for the remaining pipelines.	

1.6 Field Location Including Field Layout and Adjacent Facilities

Figure 1-1: Field Location in UKCS

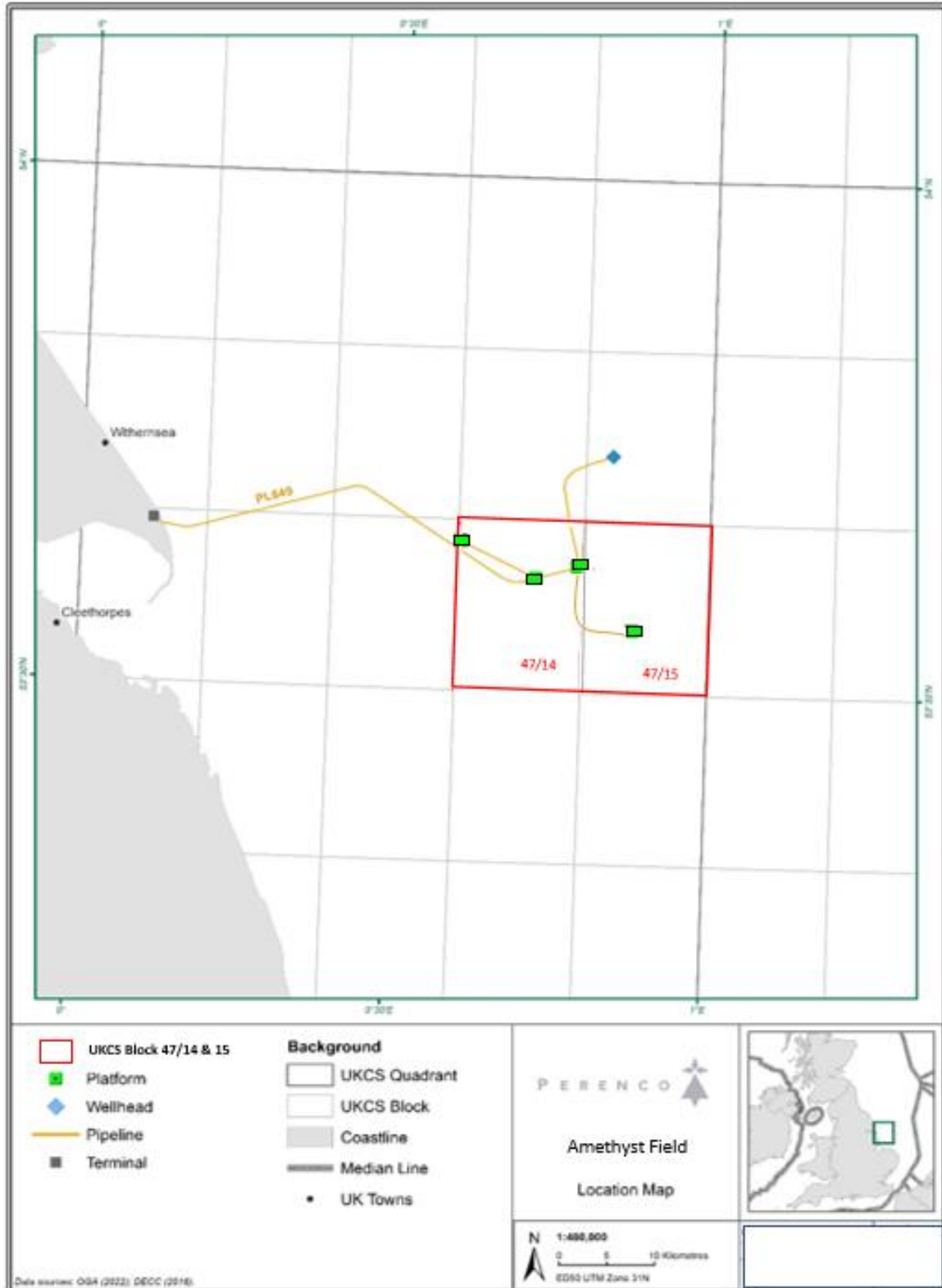
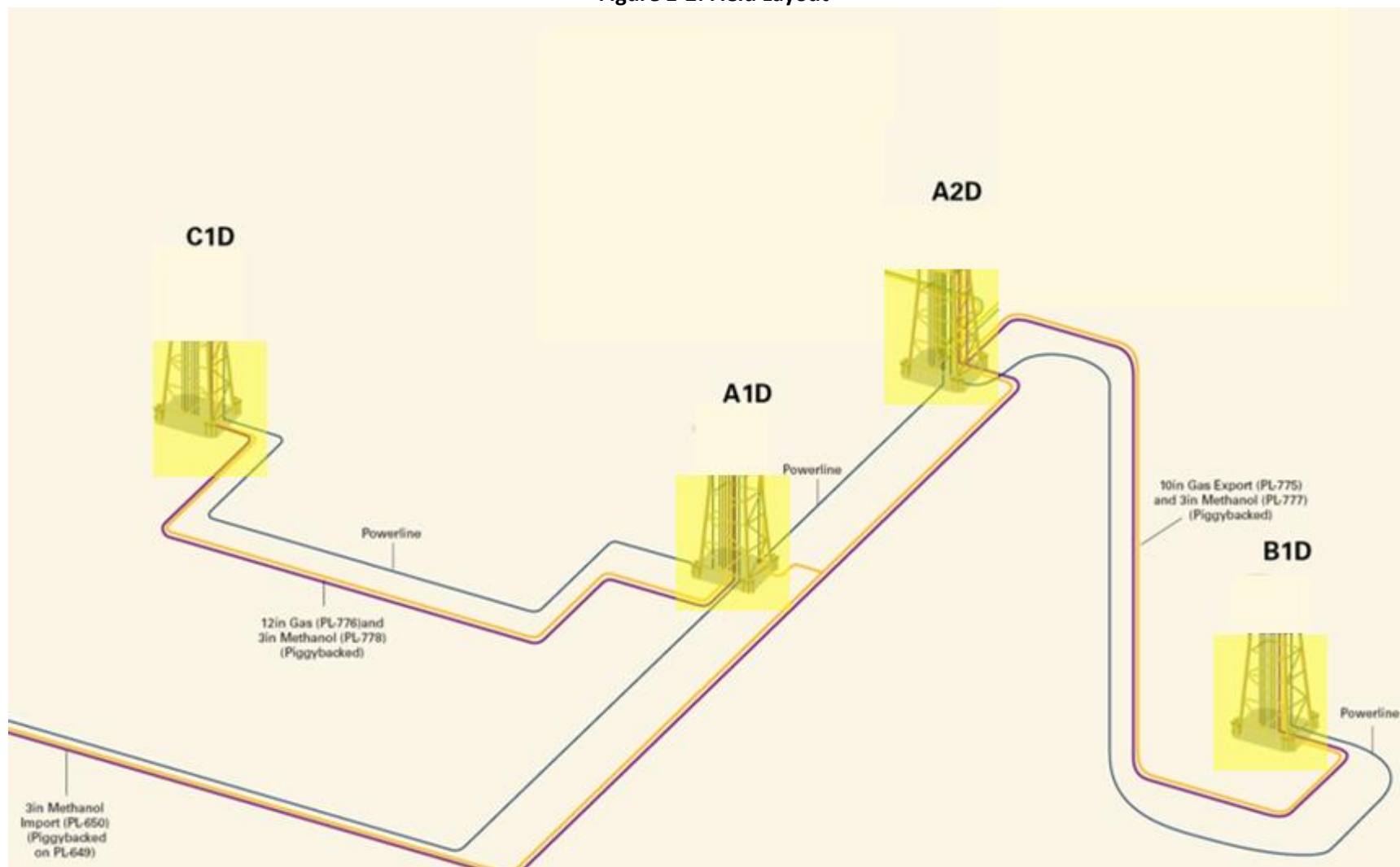


Figure 1-2: Field Layout




Key:  Jackets included in this Jacket DP

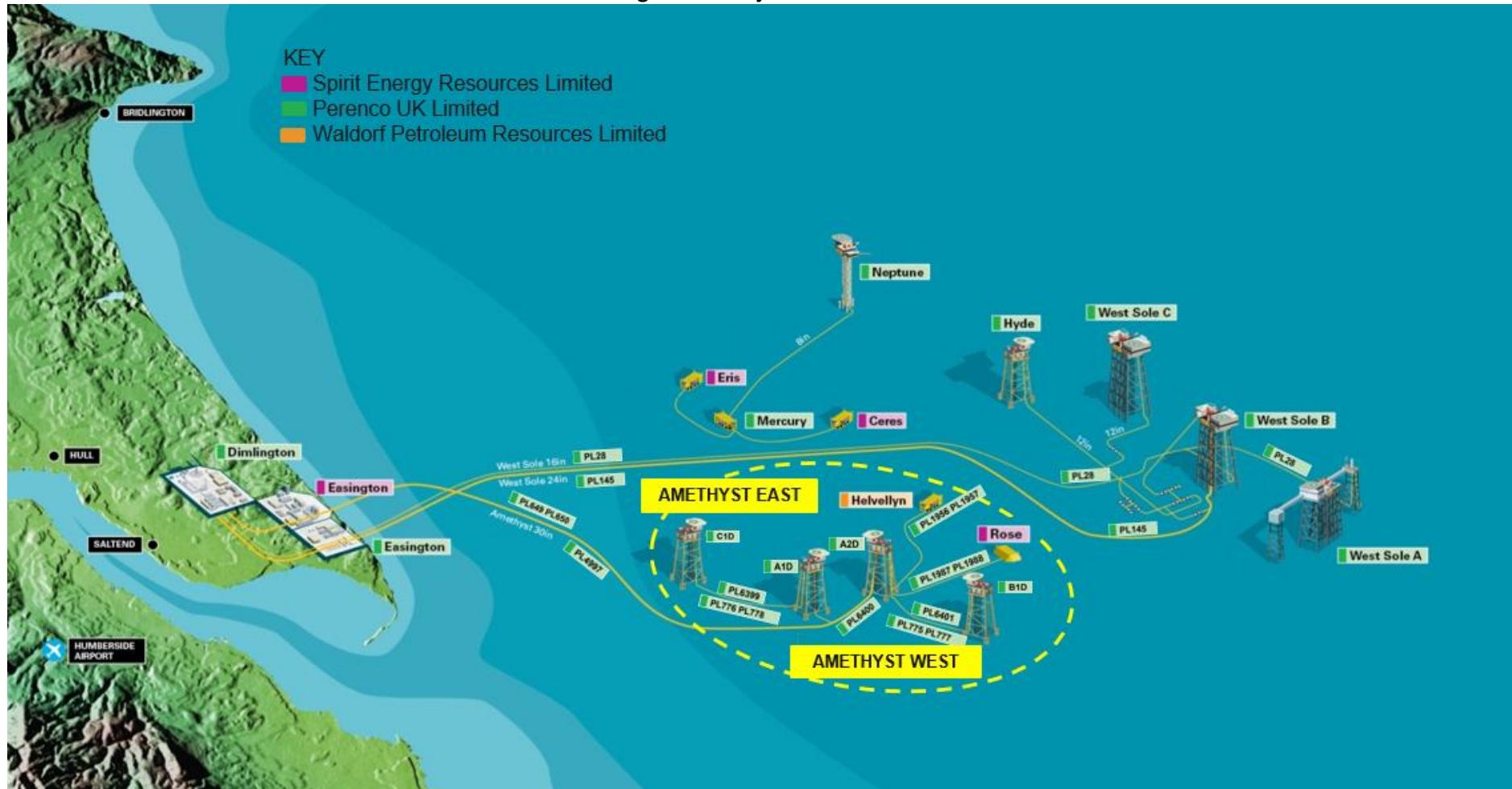


Table 1-9: Adjacent Facilities								
Operator	Name	Type	Distance/Direction				Information	Status
			A1D	A2D	B1D	C1D		
Perenco UK Limited	Neptune	Platform	42km Northeast	40km North	47km North	40km Northeast	Adjacent Platform	Operational
Perenco UK Limited	Mercury	Subsea Development	18km North	19km Northwest	28km Northwest	13km North	Two subsea wells	Operational
Spirit Energy North Sea Limited	Eris	Subsea Development	25km Northwest	26km Northwest	35km Northwest	20km Northwest	One subsea well	Operational
Spirit Energy North Sea Limited	Ceres	Subsea Development	19km Northeast	18km North	27km North	17km Northeast	One subsea well	Operational
Perenco UK Limited	Hyde	Platform	29km Northeast	25km Northeast	29km Northeast	33km Northeast	Adjacent Platform	Operational
Perenco UK Limited	West Sole Alpha (WSA)	Platform	30km Northeast	25km Northeast	24km Northeast	37km Northeast	Adjacent Platform	Operational
Perenco UK Limited	West Sole Bravo (WSB)	Platform	29km Northeast	24km Northeast	24km Northeast	35km Northeast	Adjacent Platform	Operational
Perenco UK Limited	West Sole Charlie (WSC)	Platform	29km Northeast	24km Northeast	25km Northeast	34km Northeast	Adjacent Platform	Operational
Perenco UK Limited	Pipeline From Easington to WSA (PL28)	Pipeline	15.5km Northwest	15km Northeast	20km Northeast	10km Northwest	Adjacent Pipeline	Operational
Perenco UK Limited	Pipeline From Easington to WSB (PL145)	Pipeline	16km Northwest	15.5km Northeast	20.5km Northeast	10.5km Northwest	Adjacent Pipeline	Operational



Table 1-9: Adjacent Facilities								
Operator	Name	Type	Distance/Direction				Information	Status
Waldorf Petroleum Resources Limited	Helvellyn	Subsea Development	16km Northeast	13km North	1 km Northeast	19km North	One subsea well	Non-Operational
Waldorf Petroleum Resources Limited	Pipeline From A2D to Helvellyn (PL1956 & PLU1957)	Pipelines	5km East	0km North	10km Northwest	11.5km East	Adjacent Pipelines	Non-Operational
Perenco UK Limited	Power Cable from EGT Amethyst Field (PL4997)	Power Cable	0km	0km	10km Northwest	1km Southwest	Amethyst Power Cable	Non-Operational
Perenco UK Limited	Pipelines from EGT to A2D with a spur connection to A1D (PL649 & PL650)	Pipelines	0km	0km	10km Northwest	1km Southwest	Amethyst Pipelines	Non-Operational
Impacts of Decommissioning Proposals								
Decommissioning of the Amethyst field Jackets and the risers will have no impact on the adjacent facilities. Similarly, the decommissioning programmes of the Rose and Helvellyn well tiebacks do not impact the Amethyst jackets and risers.								

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 Amethyst Jacket DP is managed by Perenco to ensure safe, efficient, and legally compliant delivery of the various elements of the decommissioning scope. The intention is to make efficient use of the supply chain to generate value through the application of knowledge, innovation, and technology, explore collaboration opportunities and employ best practices in 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(s): Surface Facilities (Topsides/Jacket(s)/FPSO etc.)

Table 2-1: Surface Facilities Information							
Name	Facility Type	Location		Jacket			
		WGS84 decimal	WGS84 decimal of a minute	Weight (Te)	No. of Legs	No. of Piles	Weight of Piles (Te)
A1D	Fixed Leg Steel Jacket	349431.20E, 5942828.80N	53° 36' 38.4406"N 00° 43' 21.3858"E	2285*	4	4	635
A2D	Fixed Leg Steel Jacket	353868.94E, 5944005.76N	53° 37' 21.0228"N 00° 47' 20.6881"E	2098.67*	4	4	563
PL1956	Riser	353871.00E, 5944008.00N	53° 37' 21.10"N 00° 47' 20.80"E	3.50	N/A	N/A	N/A
PLU1957	Umbilical within J-Tube			0.17	N/A	N/A	N/A
B1D	Fixed Leg Steel Jacket	359497.00E, 5936988.00N	53° 33' 39.6424"N 00° 52' 38.1894"E	1711*	4	8	169
C1D	Fixed Leg Steel Jacket	341601.50E, 5946900.80N	53° 38' 41.7738"N 00° 36' 08.2471"E	1938*	4	4	407

* Jacket weights shown are inclusive of Pile weights.

2.2 Pipelines Including Stabilisation Features

Table 2-2: Pipeline/Flowline/Umbilical Information							
Pipeline Number	Description ¹ (Include diameter)	Length (km)	Product Conveyed ²	From – To Location Points	Burial Status ³	Pipeline Status ⁴	Current Content ⁵
PL1956	8" Export Pipeline	0.0425*	Gas	From the Riser open cut-end near the top of the A2D Jacket. To the upstream of the Amethyst A2D spool piece flange.	Trenched and buried**	Out of Use	Flushed clean and filled with seawater
PLU1957	5" Service and Control Umbilical	0.0425*	Chemicals	From the Umbilical open cut-end near the top of the A2D Jacket. To the downstream of the Umbilical J-tube Bellmouth.	Trenched and buried**	Out of Use	Flushed clean and filled with seawater

*The length shown is the maximum length to be removed as part of this DP; PL1956 42.5m = 32.5m of riser section + 10m of A2D spool piece and PLU1957 42.5m = 32.5m of umbilical riser section + 10m of umbilical

** No stabilisation material will be introduced or removed from the seabed as part of this DP.

2.3 Wells

Table 2-3: Well Information			
Platform Wells	Designation ¹	Status	Category of Well
47/14a-J1	Development	AB2	PL-0-1-1
47/14a-J2	Development	AB3	PL-0-0-0
47/14a-J3	Development	AB3	PL-0-0-0
47/14a-J4	Development	AB3	PL-0-0-0
47/14a-J5Z	Development	AB3	PL-0-0-0
47/14a-K1	Development	AB3	PL-0-0-0
47/14a-K2	Development	AB3	PL-0-0-0
47/14a-K3	Development	AB3	PL-0-0-0
47/14a-K4	Development	AB3	PL-0-0-0
47/14a-K5	Development	AB3	PL-0-0-0



47/14a-K6	Development	AB3	PL-0-0-0
47/14a-M1Z	Development	AB3	PL-0-0-0
47/14a-M2	Development	AB3	PL-0-0-0
47/14a-M3	Development	AB3	PL-0-0-0
47/14a-M4	Development	AB3	PL-0-0-0
47/14a-M5Z	Development	AB3	PL-0-0-0
47/14a-M6	Development	AB3	PL-0-0-0
47/14a-M7Y	Development	AB3	PL-0-0-0
47/15a-L1	Development	AB2	PL-0-0-0
47/15a-L2	Development	AB3	PL-0-0-0
47/15a-L3	Development	AB3	PL-0-0-0
47/15a-L4	Development	AB3	PL-0-0-0
47/15a-L5Y	Development	AB3	PL-0-0-0
47/15a-L6	Development	AB3	PL-0-0-0
Subsea Wells	Development		
N/A			
E & A Wells²			
47/09a- 7	Exploration	AB3	
47/09a- 8Z	Appraisal	AB3	
47/09a- 8Z	Exploration	AB3	
47/13a- 3	Appraisal	AB3	
47/14a- 2	Appraisal	AB3	
47/14a- 3	Appraisal	AB3	
47/14a- 4	Appraisal	AB3	
47/14a- 5	Appraisal	AB3	
47/14a- 6	Appraisal	AB3	
47/14a- 8	Appraisal	AB3	
47/14a- 9	Appraisal	AB3	
47/15- 2	Exploration	AB3	
47/15a- 3Z	Appraisal	AB3	
47/15a- 7	Exploration	AB3	
47/14a-1	Exploration	AB3	

2.4 Drill Cuttings

Table 2-4: Drill Cuttings Pile(s) Information		
Location of Pile Centre (Latitude/Longitude)	Seabed Area (m ²)	Estimated volume of cuttings (m ³)
N/A	N/A	N/A

2.5 Inventory Estimates

Figure 2-1: A1D Pie Chart of Estimated Inventories (Jacket)

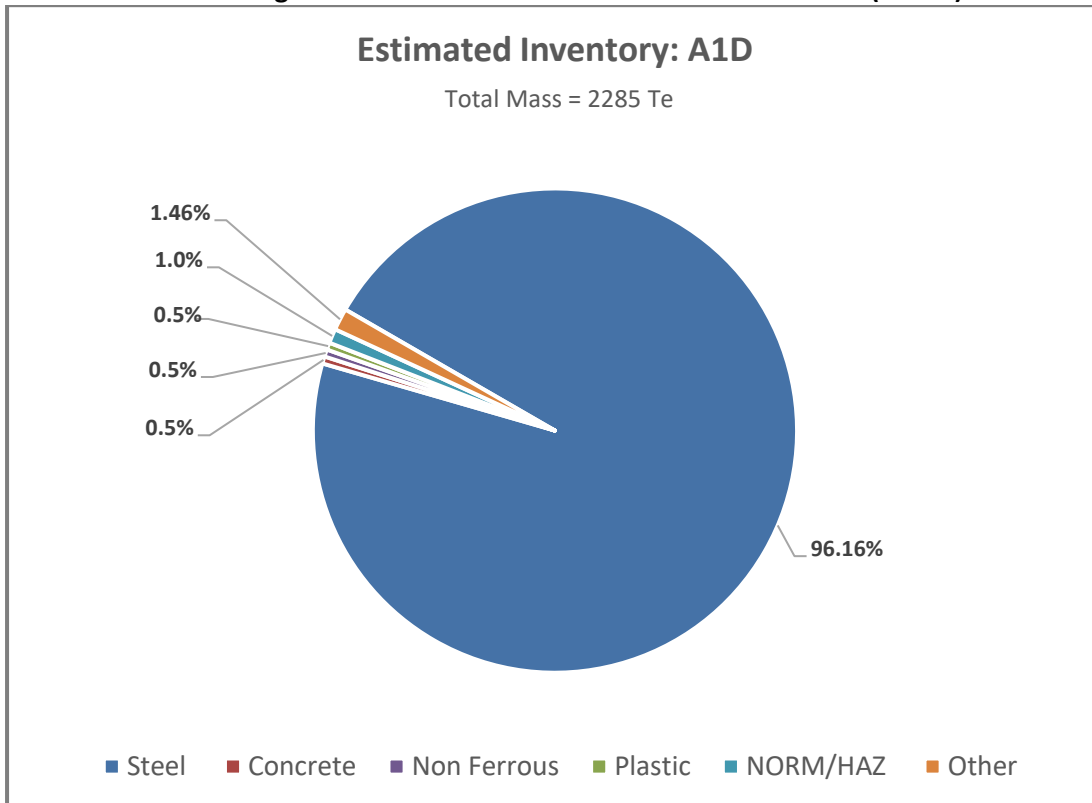


Figure 2-2: A2D Pie Chart of Estimated Inventories (Jacket incl. Helvellyn Riser)

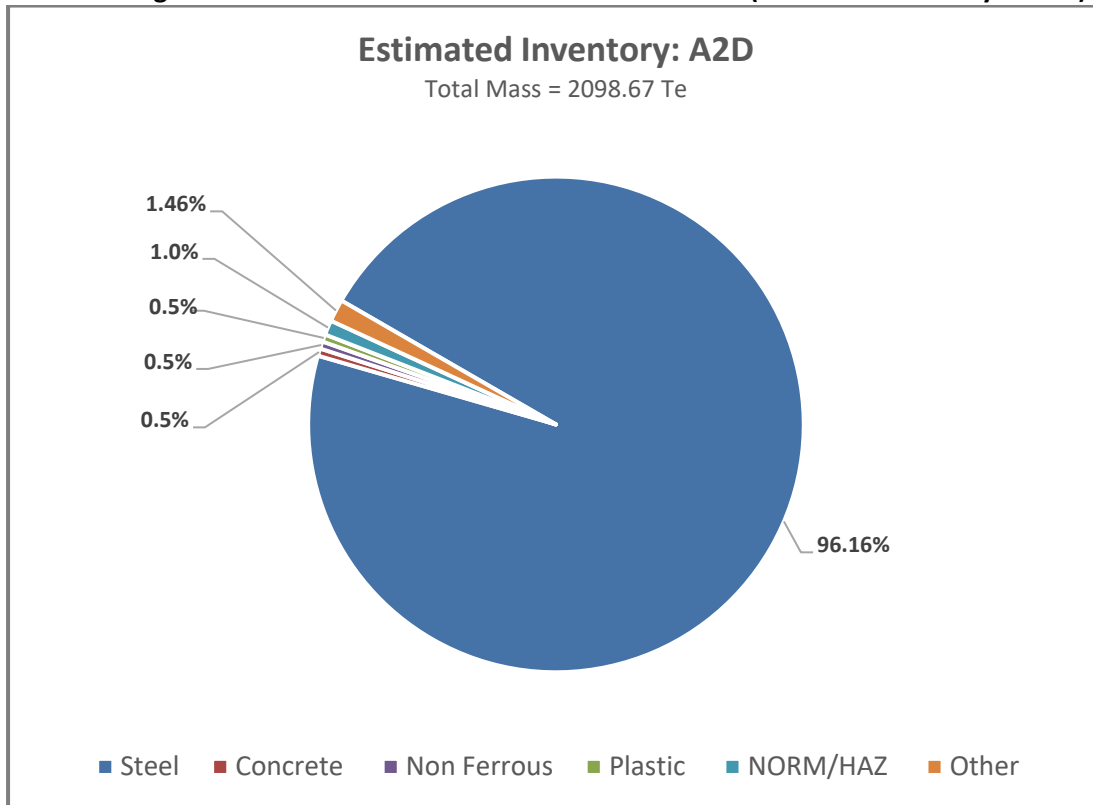


Figure 2-3: B1D Pie Chart of Estimated Inventories (Jacket)

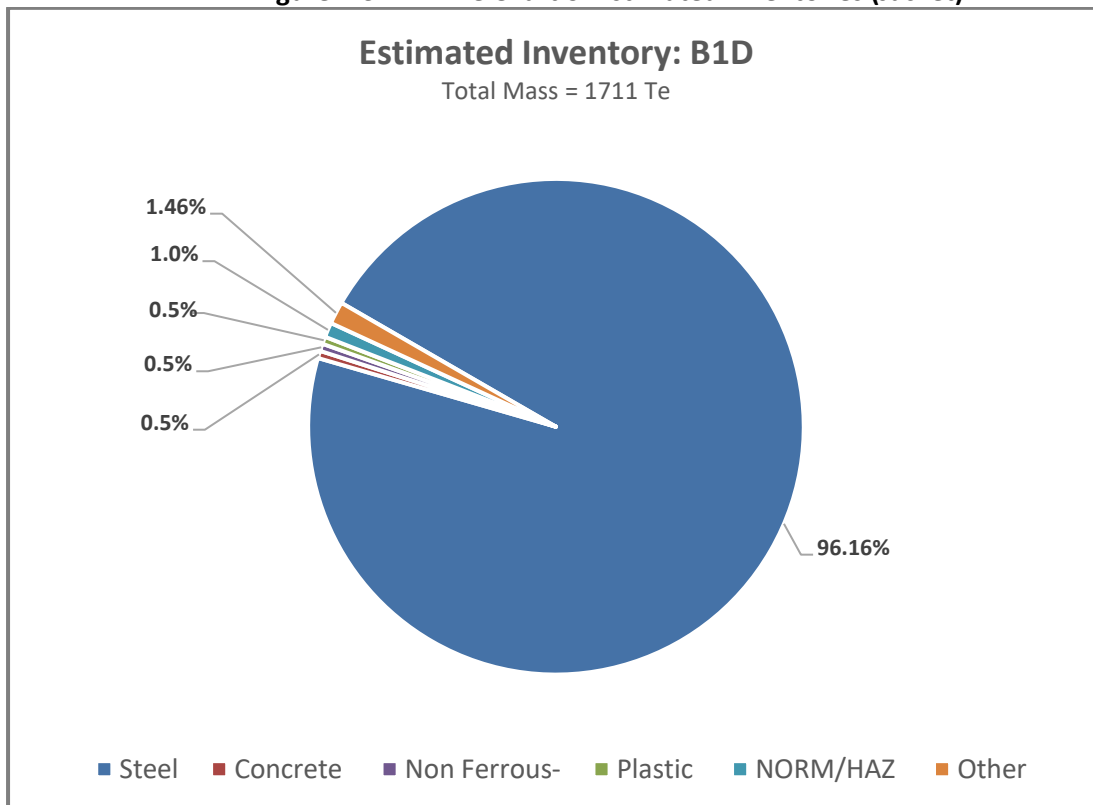
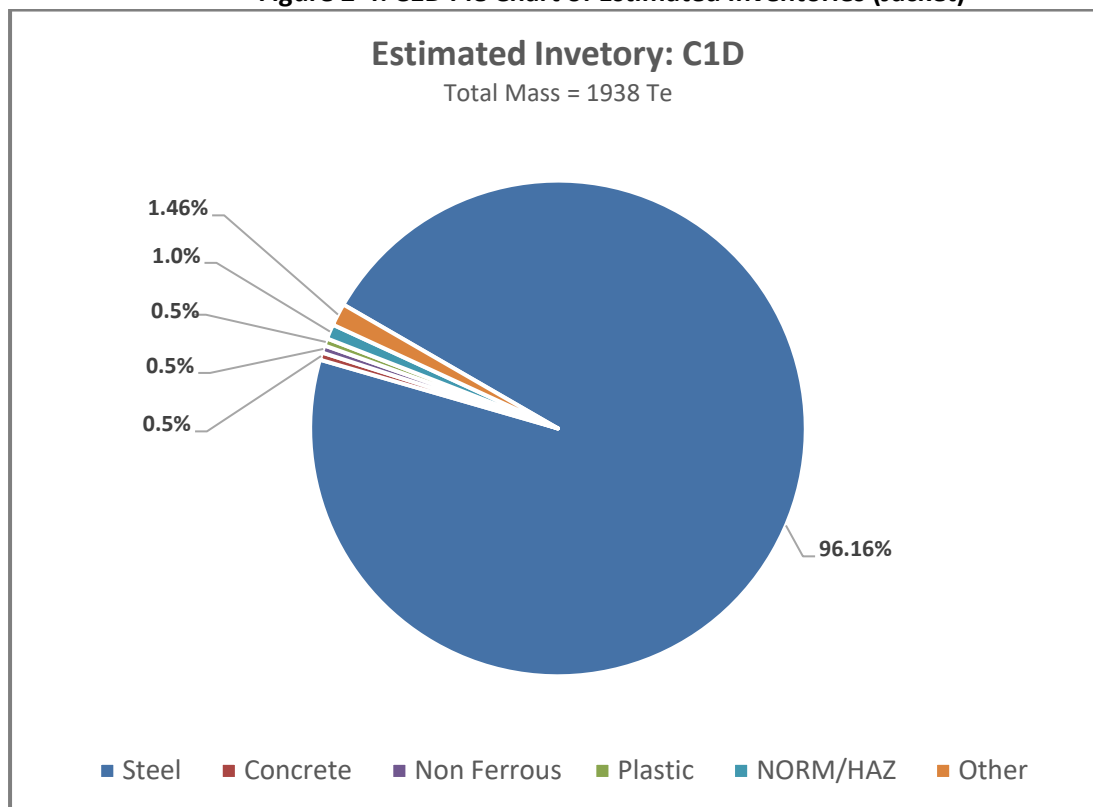


Figure 2-4: C1D Pie Chart of Estimated Inventories (Jacket)



3. REMOVAL AND DISPOSAL METHODS

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

At the current time a suitable relocation or reuse as a whole for the Jacket has not been identified; therefore, at present dismantling of the Jacket at an onshore disposal facility is considered the most likely disposal option. Those materials deemed suitable for recycling are to be recovered at an appropriate recycling facility.

3.1 Jackets

3.1.1 Jacket Decommissioning Overview

A single lift removal option using a suitable Heavy Lift Barge (HLB) and transportation ashore for cleaning, break up and recycling is considered the most likely removal methodology currently. A high-level description of this removal option is presented below along with Figure 3.1 illustrating the preferred removal options although the exact cutting points and removal method are subject to detailed engineering and commercial tendering.

The Helvellyn riser (including the 10m spool piece) and umbilical sections will be removed with the A2D Jacket. The pile cuts will be made -3m below the seabed level to ensure that any remains are



unlikely to become uncovered. The means of cutting will be an industry standard technique such as diamond wire, oxyacetylene, or high-pressure abrasive water jet cutting. No mattresses will be removed from the seabed; however, a couple of mattresses are planned to be moved to gain access to cutting PL1956 and PLU1957. The mattresses will be moved back to their original location once the cutting operation is complete.

The steps presented below provide a high-level chronological summary of the key stages of the Amethyst Jackets dismantling using a single lift/ heavy lift vessel. This process will be for all the Jackets (A1D, A2D, C1D and B1D).

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

Figure 3-1: Anticipated Jacket Removal Method

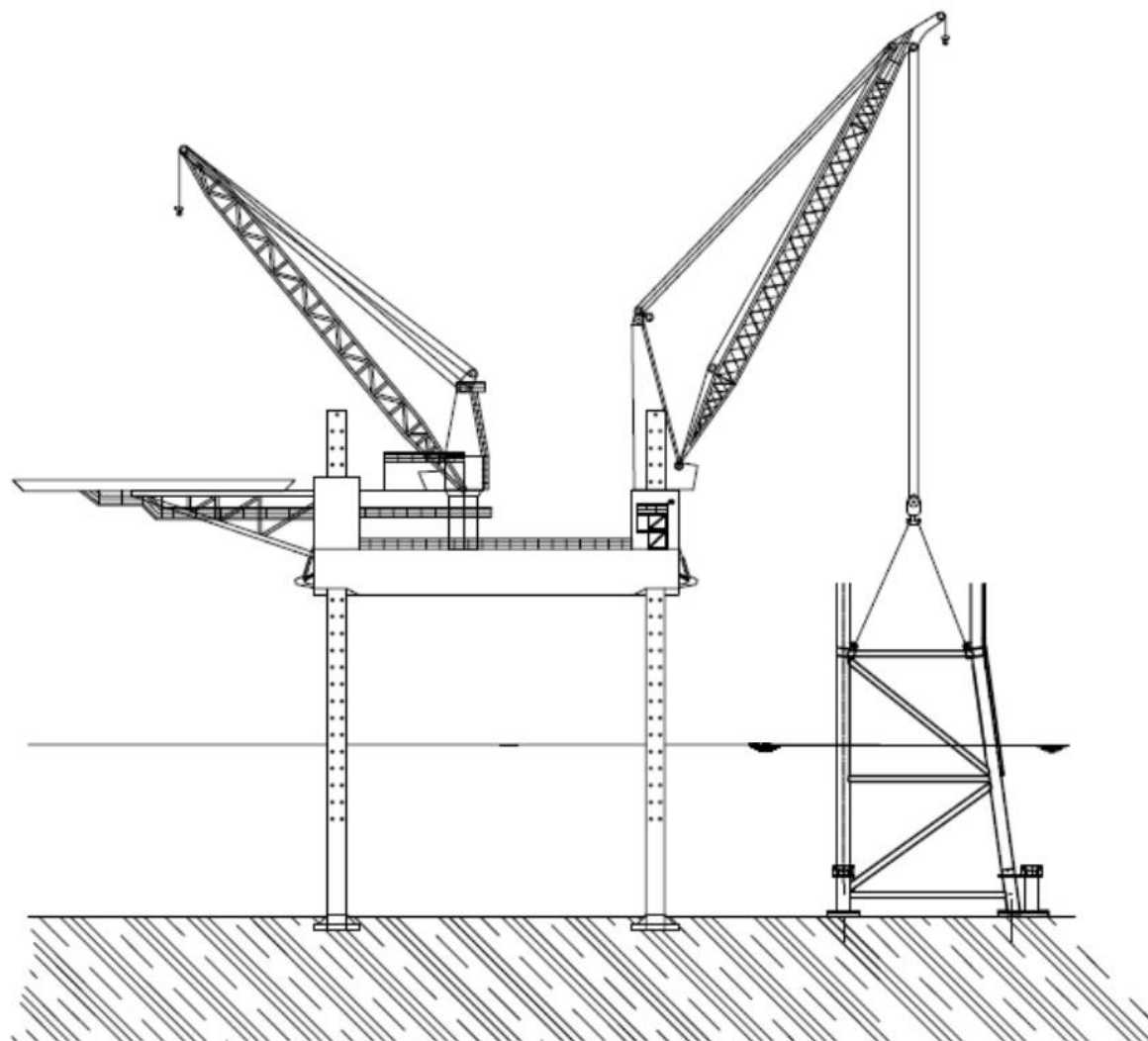




Figure 3-2: A1D Jacket Frame A and B

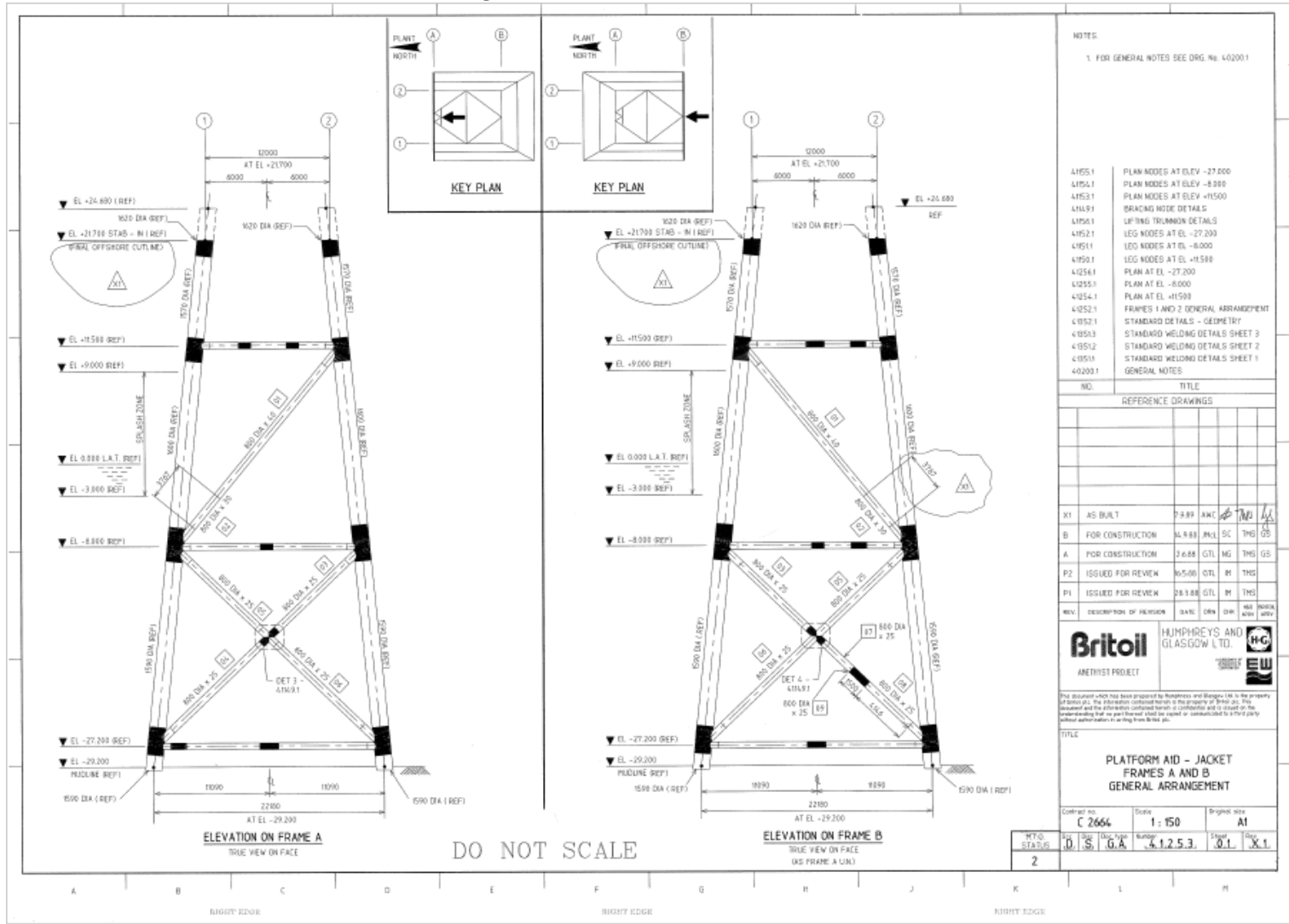




Figure 3-3: A2D Jacket Frame A and B

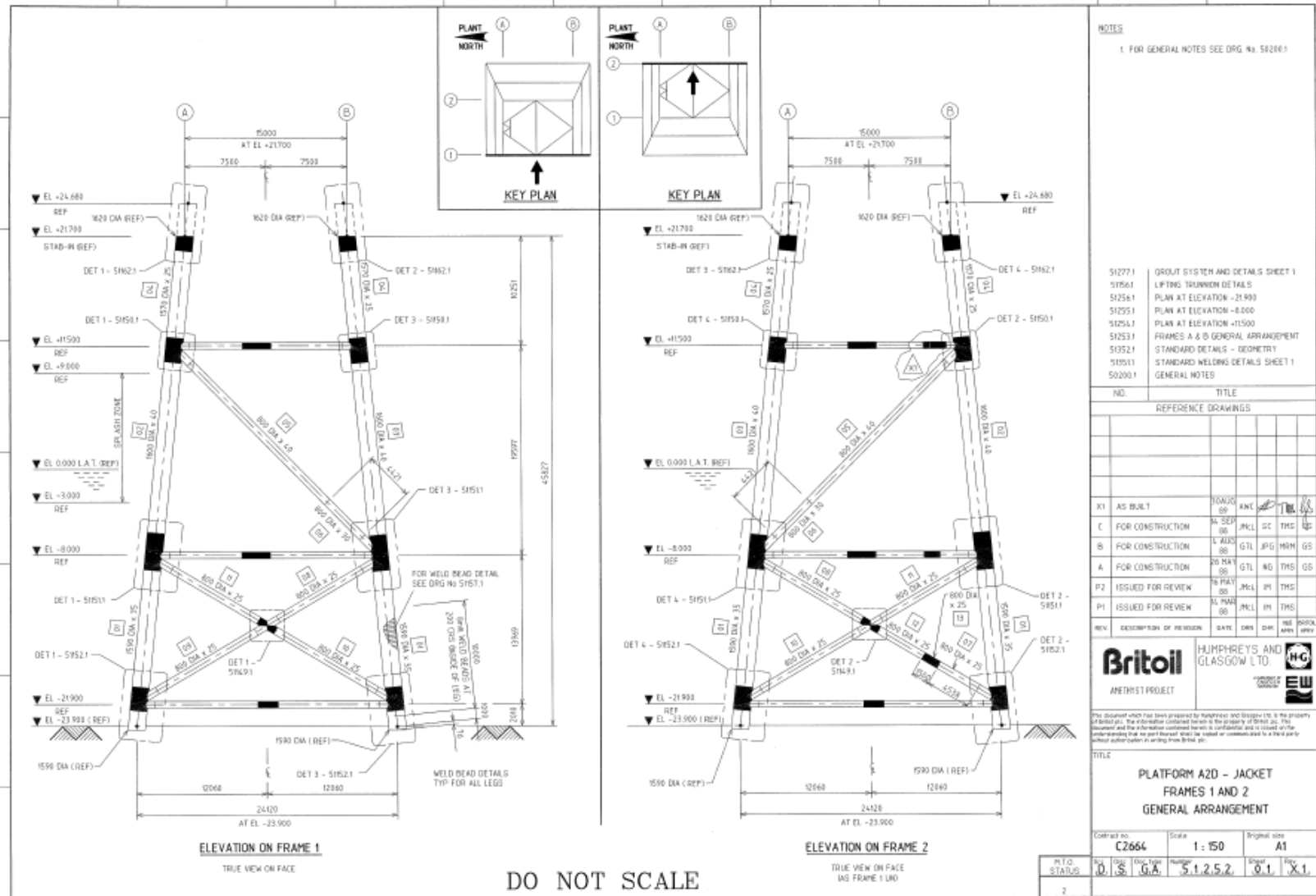




Figure 3-4: B1D Jacket Frame A and B

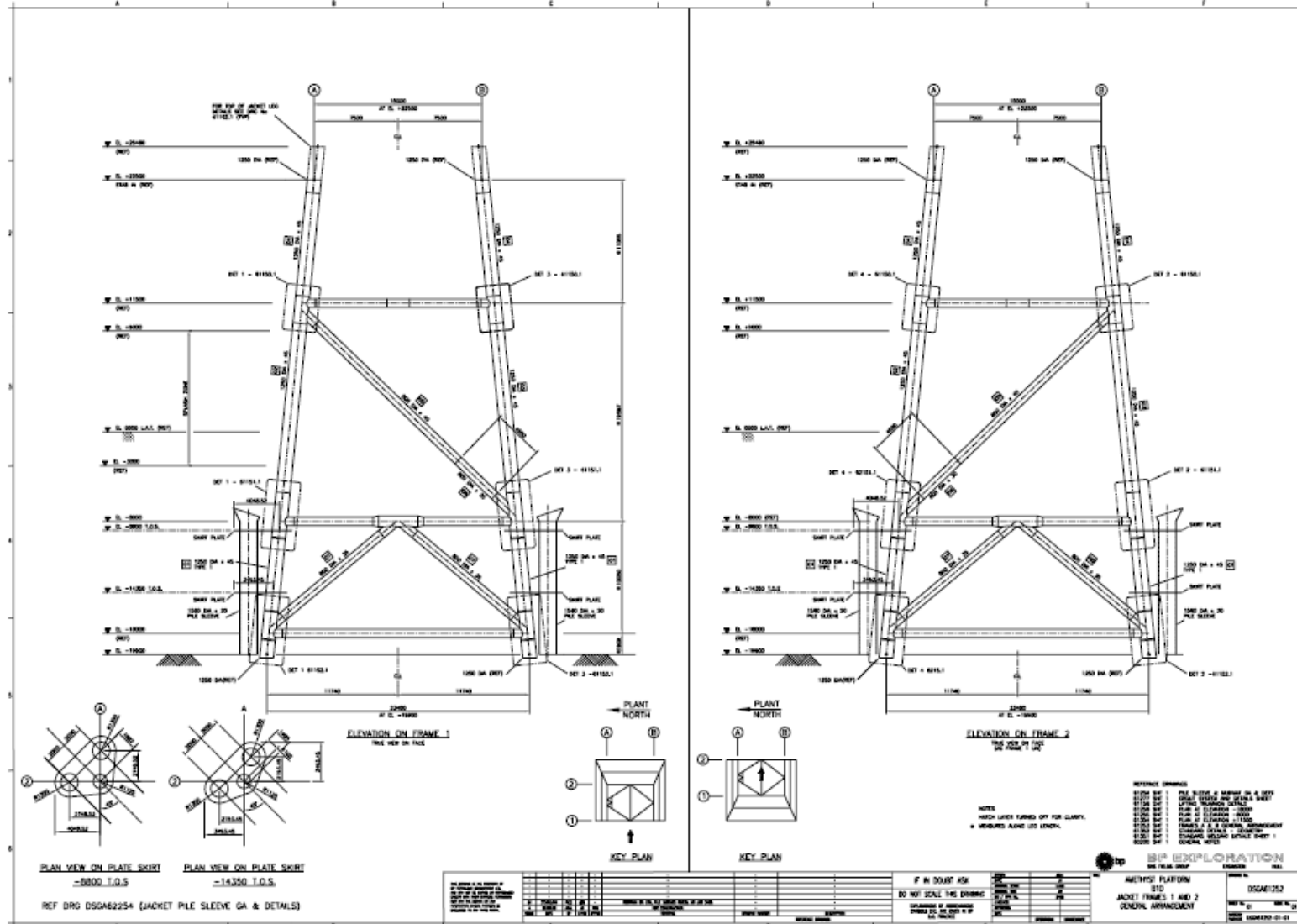
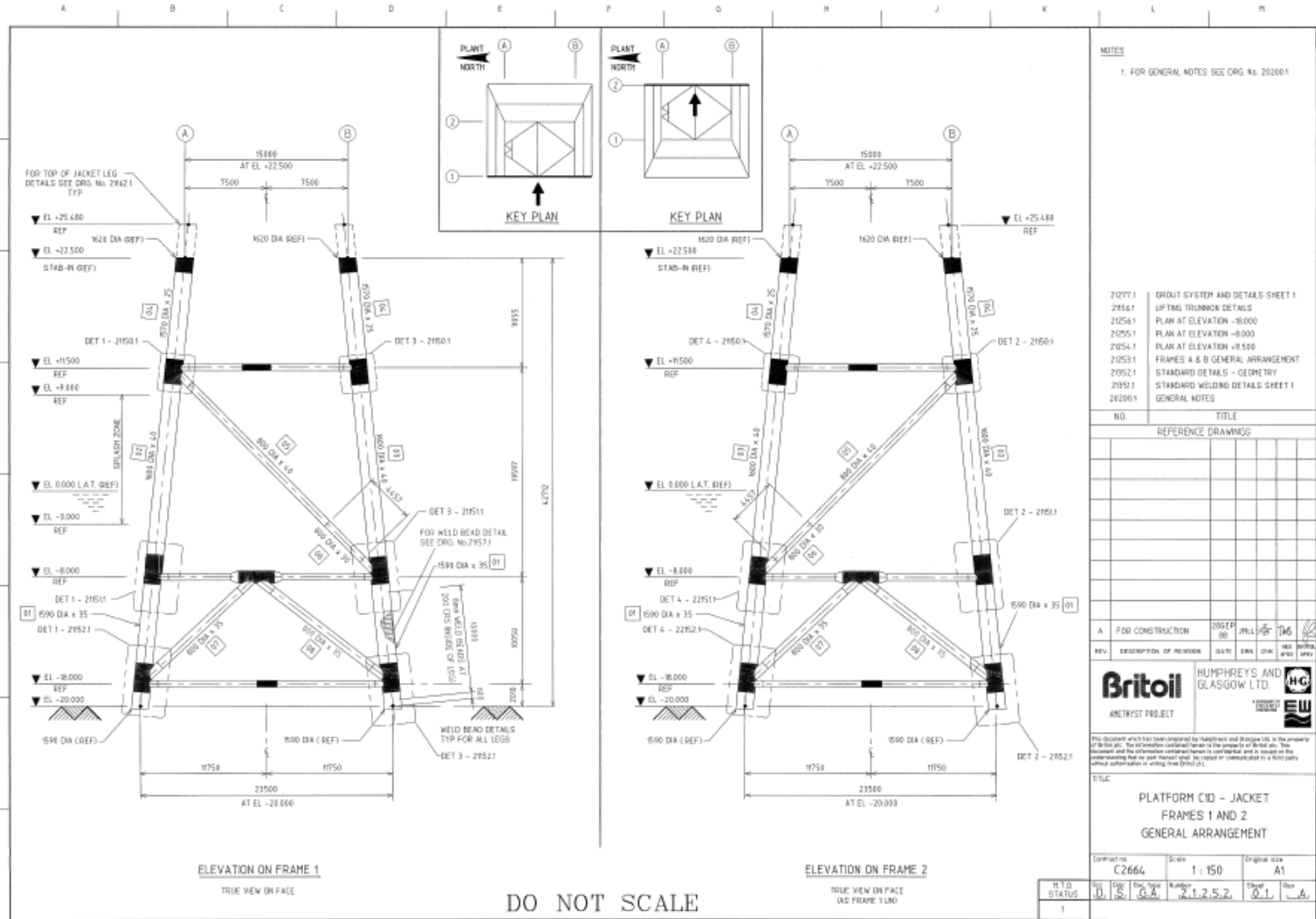


Figure 3-5: C1D Jacket Frame A and B



REV		NO.		TITLE	
REFERENCE DRAWINGS					
2077.1 DROUT SYSTEM AND DETAILS SHEET 1 2054.1 LIFTING TRUMMON DETALS 2025.1 PLAN AT ELEVATION -10.000 2025.1 PLAN AT ELEVATION -8.500 2025.1 PLAN AT ELEVATION -8.500 2053.1 FRAMES A & B GENERAL ARRANGEMENT 2052.1 STANDARD DETAILS - GEOMETRY 2052.1 STANDARD WELDING DETAILS SHEET 1 2020.1 GENERAL NOTES					
A FOR CONSTRUCTION 0007 08 10/11/23 09 09/11/23 10/11/23 09/11/23 09/11/23 09/11/23					
Britoil ANTHRIST PROJECT HUMPHREYS AND GLASGOW LTD.					
CONTRACT NO. C2664 Scale 1:150 Original size A1					
TITLE PLATFORM CID - JACKET FRAMES 1 AND 2 GENERAL ARRANGEMENT					



3.1.2 Jacket Removal Methods

The Jackets will be removed to shore for cleaning and disposal. The pile cuts will be made to -3m below the seabed level 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 A1D, A2D, B1D and C1D Jackets will be removed by the methods outlined in the table below.

Table 3-1: Jacket Removal Methods	
1) HLV (semi-submersible crane vessel) <input checked="" type="checkbox"/> 2) Single lift Vessel (SLV) <input type="checkbox"/> 3) Piece small <input type="checkbox"/> 4) Other <input type="checkbox"/> (describe briefly)	
Method	Description
Single lift removal by SLV/HLV	<p>A1D, B1D and C1D, with their piles, will be removed as complete units and transported to shore for re-use of selected equipment, recycling, break up and disposal.</p> <p>A2D, with its piles, Helvellyn riser, spool piece, and umbilical sections, will also be removed as complete units and transported to shore for re-use of selected equipment, recycling, break up and disposal.</p> <p>If the decommissioning method changes, OPRED will be notified.</p>

3.2 Waste Streams

Table 3-2: Waste Stream Management Methods	
Waste Stream	Removal and Disposal Method
Marine Growth	Removed offshore/onshore. Disposed according to guidelines.
Naturally Occurring Radioactive Material (NORM)/ Low Specific Activity (LSA Scale)	The pipelines were made HCS (flushed, cut, and filled with seawater). No NORM was detected when the risers were previously cut. Therefore, we are not expecting NORM/LSA waste.
Other Hazardous Wastes	The pipelines were made HCS (flushed, cut, and filled with seawater). Due to this, a survey for hazardous waste will not be required for this decommissioning activity.
Onshore Dismantling Sites	If required, appropriate licensed sites will be selected. The dismantling site must demonstrate a proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver re-use and recycling options. If an onshore site is required, DESNZ will be contacted.

Table 3-3: Inventory Disposition			
	Total Inventory (Te)	Planned (Te) to Shore	Planned (Te) Left in-situ***
Jacket A1D	2285*	1650	635
Jacket A2D	2098.67**	1532	566.67
Jacket B1D	1711*	1542	169
Jacket C1D	1938*	1531	407

* The total inventory includes the weight of the piles and the jacket.

**Includes the weight of the piles, Helvellyn Riser and Umbilical within J-Tub.

*** Tonnage left in situ are the piles left cut -3m below the seabed.

4. ENVIRONMENTAL APPRAISAL OVERVIEW

4.1 Environmental Sensitivities (Summary)

Table 4-1: Environmental Sensitivities	
Environmental Receptor	Main Features
Conservation Interests	<p>There are six Marine Protected Areas (MPA) within 40km of the Amethyst field:</p> <ul style="list-style-type: none"> Greater Wash Special Protected Area (SPA) – 13.1km southwest of A1D. Inner Dowsing, Race Bank and North Ridge Special Area of Conservation (SAC) -18km south of B1D Southern North Sea SAC - 8.4km north of C1D and 18.7km E of A2D. Holderness Offshore Marine Conservation Zone (MCZ) - 3km north of C1D. Humber Estuary SAC - 38km West of C1D. Holderness Inshore MCZ – 25km west of C1D. <p>Full details are presented within the Amethyst Jackets EA.</p>
Seabed	<p>The following European Nature Information System (EUNIS) seabed classifications have been identified in the vicinity of the Amethyst Jackets:</p> <ul style="list-style-type: none"> A5:14: Circalittoral coarse sediment. A5:15: Infralittoral coarse sediment. A5:25/A5:26: Circalittoral sand. A5:44: Circalittoral mixed sediments. A5:45: Offshore circalittoral mixed sediment. A4:27: Faunal communities on deep moderate energy circalittoral rock.
Fish	<p>There are potential fish spawning areas in International Council for the Exploration of the Seas (ICES) rectangle 36F0 for Herring (<i>Clupea harengus</i>), Lemon Sole (<i>Microstomus kitt</i>), Sandeels (<i>Ammodytes</i> spp.) Plaice (<i>Pleuronectes platessa</i>) and, Sole (<i>Solea solea</i>).</p> <p>In addition to the spawning grounds described above, the waters of ICES rectangles 36F0 also act as nursery areas (or aggregation area for 0 group fish)</p>



Table 4-1: Environmental Sensitivities	
Environmental Receptor	Main Features
	for Herring (<i>Clupea harengus</i>), Plaice (<i>Pleuronectes platessa</i>), Lemon Sole (<i>Microstomus kitt</i>), Sole (<i>Solea solea</i>), sandeel (<i>Ammodytes</i> spp.), Sprat (<i>Sprattus sprattus</i>), Whiting (<i>Merlangius merlangus</i>) and, Cod (<i>Gadus morhua</i>).
Fisheries	<p>Fishing activity in the area primarily takes place over summer months between July and October and is dominated by traps with 94% of the total efforts, followed by dredges with 6% and lastly trawls, seine nets and harvesting machines with negligible fishing activity recorded within the area (<1%). This is reflected in the landings data which indicates that shellfish species are the most significant component of the fishery in terms of landed tonnage (98.6%) and value, although some demersal fish are also caught. Of the species caught between the years 2017 and 2021, Crabs (<i>Cancer Pagarus</i>) landings are the greatest tonnages in ICES Rectangle 36F0, followed by Lobsters, scallops, and whelks.</p> <p>Data presented within the Navigational Risk Assessment (NRA) indicates fishing vessel activity on Automatic Identification System (AIS) (15 m length and above) to be moderate in the area. The vast majority of vessels were UK registered (94%) followed by French (4%) and Dutch (2%).</p>
Marine Mammals	<p>Cetaceans (whales, dolphins, and porpoises) are protected under Annex IV of the Council Directive 92/43/EEC (also known as the Habitats Directive). Cetacean abundance in the SNS is relatively low compared to the northern and central North Sea, with the exception of the harbour porpoise (<i>Phocoena phocoena</i>).</p> <p>The relative abundance and density of cetaceans in the vicinity of the Amethyst field can be derived from data obtained during the Small Cetacean Abundance of the North Sea (SCANS) SCANS-IV aerial and ship-based surveys. This project identified the abundance and density of cetacean species within predefined sectors of the North Sea and Northeast Atlantic. The Amethyst field is situated within the SCANS-IV Block 'NS-C' and was surveyed by air. The density of the harbour porpoise within the SCANS-IV Block 'NS-C' is higher than the total surveyed area, suggesting that the area may be important for these species. Densities for white-beaked dolphin were observed to be lower.</p> <p>In addition to the aforementioned cetaceans, other species have been observed or have been modelled to have presence in the North Sea. These include the Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>), Risso's dolphin (<i>Grampus griseus</i>), short-beaked common dolphin (<i>Delphinus delphis</i>), and killer whale (<i>Orcinus orca</i>).</p> <p>Two species of seals are found in the North Sea around the English east coast: grey seal (<i>Halichoerus grypus</i>) and the harbour (or common) seal (<i>Phoca vitulina</i>).</p> <p>Harbour seals tend to be found closer to the coast. As with grey seals, the UK harbour seal population is predominantly found around the Scottish coast with smaller colonies around The Wash and along the east coast of England. Harbour seals are restricted to their haul-out sites and the</p>



Table 4-1: Environmental Sensitivities	
Environmental Receptor	Main Features
	<p>surrounding waters during pupping (June and July) and during their annual moult (August). This species can be found offshore from late August through to the following June and tends to forage within 40 – 50km of its haul-out sites. The harbour seal at sea utilisation of waters surrounding the Amethyst field may be moderate (5-10 individuals per 5km²).</p> <p>Seal populations within areas where the power cables make landfall are likely to be greater, this is particularly the case for the grey seal.</p>
Birds	<p>The most common species of seabird found in this area of the SNS include Northern fulmar (<i>Fulmarus glacialis</i>), Great Skua (<i>Stercorarius skua</i>), Black legged kittiwake (<i>Rissa tridactyla</i>), Great black backed gull (<i>Larus marinus</i>), Common gull (<i>Larus canus</i>), Lesser black backed gull (<i>Larus fuscus</i>), Herring gull (<i>Larus argentatus</i>), Common guillemot (<i>Uria aalge</i>), Razorbill (<i>Alca torda</i>), Little auk (<i>Alle alle</i>) and Atlantic puffin (<i>Fratercula arctica</i>).</p> <p>Fulmars are present in the highest numbers during the early and late breeding seasons, leading to peak densities in September. Kittiwakes are widely distributed throughout the year. Lesser black-backed gulls are mainly summer visitors, while in contrast, guillemot numbers are greatest during winter months. In addition, substantial numbers of terns migrate northwards through the offshore North Sea area in April and May, with return passage from July to September.</p>
Onshore Communities	<p>No impact on onshore communities was identified.</p>
Other Users of the Sea	<p>Oil and gas activity within the SNS is generally high and targets a number of existing gas fields. There is significant surface and subsurface infrastructure in UKCS Blocks 47/13, 47/14 and 47/15.</p> <p>There are several licenced marine aggregate areas within close proximity to the Amethyst infrastructure. One licenced marine aggregate area within UKCS block 47/14 (Humber 4) is located approximately 1.5 km and 0.6 km west of PL776 and PL778 respectively. The remaining Humber 1, 2, and 3 aggregation areas lie adjacent towards the west. Within a range of 20 km towards the south of B1D pipelines, there are six additional aggregation areas, including the Humber Estuary, Off Saltfleet, Humber Overfalls, Outer Dowsing, and Inner Dowsing.</p> <p>The closest offshore windfarm to the Amethyst field is the Triton Knoll offshore wind farm developed by Innogy Renewables UK Ltd which is located approximately 15 km south east of the C1D platform falling within the boundaries of block 47/14. Turbine commissioning was completed in January 2022.</p> <p>The waters surrounding the Amethyst field are described as having ‘High’ to ‘Very High’ shipping activity. An NRA commissioned by Perenco in 2020 identified the area as having high shipping density, with an estimated 74 vessels per day passing within 10 nautical miles (nm) of Amethyst based on the AIS data. The majority of these were cargo vessels and tankers.</p>



Table 4-1: Environmental Sensitivities	
Environmental Receptor	Main Features
Atmosphere	<p>Although the project will produce atmospheric emissions and consume energy, these activities are required to be undertaken to meet decommissioning obligations for the infrastructure. The preferred option has been considered with a focus on minimising vessel time and therefore minimising any associated emissions. An assessment of air emissions associated with the Jacket removal is presented in Appendix 1 of the EA report.</p> <p>These contributions are far below any thresholds for emissions in the UKCS or on a global scale and are not significantly larger than general vessel operations in the region. The resulting emissions are determined to be negligible as they will be extremely small in the context of UKCS and global emissions.</p> <p>Although there will be a short term and localised increase in emissions from the proposed operations, the total emissions will contribute a small percentage to the offshore and UK total CO₂e emissions (<0.0160% and <0.0005%, respectively).</p>

4.2 Potential Environmental Impacts and Their Management

Environmental Impact Assessment Summary:

The aspects for which Perenco consider there to be minimal or non-significant impact and therefore have been screened out from further detailed assessment within the EA report are described below:

- Energy and emissions.
- Waste generation.
- Physical presence of vessels in relation to other sea users.
- Operational discharges to sea.
- Noise emissions.

Potentially significant impacts which are assessed in detail within the EA include:

- Impacts associated with seabed disturbance.

Overview:

Following a detailed review of the proposed decommissioning option, the environmental sensitivities present in the area, and potential impacts on other sea users and the environment, it has been determined that the decommissioning of the Amethyst Jackets (by removal) will not present any significant impacts.

Most impacts associated with the decommissioning option are well understood and managed through the implementation of established mitigation measures. The impacts with the potential to be significant were those associated with seabed disturbance associated with the cutting of pipelines, power cables and jacket piles and the positioning of the removal vessel. However, following further assessment, these have been determined not to be significant following the implementation of the stated mitigation measures. Overall, the decommissioning option presented within this report is determined as not having a significant impact. In addition, the EA is considered by Perenco to be in alignment with the objectives and marine planning policies of the East marine plan area.



Based on the assessment findings of the EA, including the identification and subsequent application of appropriate mitigation measures it is considered that the proposed decommissioning activities do not pose any significant impact to environmental or societal receptors within the UKCS or internationally.

Table 4-2: Environmental Impact Management		
Activity	Main Impacts	Management
Jacket Removal	Seabed disturbance	<ul style="list-style-type: none"> HLB positioning assessment will determine the optimal position for the JUB to minimise the requirement for rock placement for footings. Preloading of HLB will minimise requirements for rock placement of footings. Operational planning to ensure the minimal number of HLB positions at Amethyst infrastructure. Proposed internal pile cuts will be carefully planned to avoid excessive seabed disturbance and prevent deposition of garnet.

5. INTERESTED PARTY CONSULTATIONS

Table 5-1: Summary of Stakeholder Comments		
Who	Comment	Response
1. Informal Stakeholder Consultations		
JNCC		
Health and Safety Executive		
Environment Agency		
MOD		
CEFAS		
2. Public		
3. Statutory Consultations		
National Federation of Fishermen's Organisations		



Scottish Fishermen’s Federation		
Northern Ireland Fish Producers Organisation		
Global Marine Group		
North Sea Transition Authority		Perenco has consulted with NSTA under S29(2A) of the Petroleum Act.

6. PROGRAMME MANAGEMENT

6.1 Project Management and Verification

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

Perenco 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 consent and the consultations required as part of this process.

6.2 Post-Decommissioning Debris Clearance and Verification

Before the commencement of all physical decommissioning activities as proposed in this DP, a pre-decommissioning survey was completed along the Amethyst Pipelines and inside the Amethyst (A1D, A2D, B1D and C1D) 500m safety zones. This survey included: a bathymetry survey, to identify any free spans, exposures, or large objects (which may present a snagging hazard), and an Environmental Baseline Survey (EBS) and Habitat Assessment Survey (HAS).

Following the completion of these activities detailed in this DP, a post-decommissioning survey will be completed, and a summary comparison of pre-and post-environmental survey results will be provided as part of the Close Out report.

A clear seabed certificate will not be obtained, as required under the Decommissioning Debris Surveys and Recovery and Seabed Clearance Verification guidance by OPRED and NFFO, because the isolation plugs installed on the cut ends of the Amethyst pipelines (PL649) protrude above the seabed. This design choice was intentional to facilitate visibility during routine integrity inspections of the plugs and the cut ends of the pipelines. However, this configuration poses a snagging hazard. Therefore, we plan to request a new 500m safety zone order (ON54). This 500m safety zone will remain in place until the pipelines are fully decommissioned which will be detailed in the Amethyst Pipeline DP.

Any requirement for future legacy monitoring based on the results of the pre- and post-decommissioning surveys will be agreed upon with OPRED as part of the closeout process.



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

6.3 Schedule

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

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



Figure 6-1: Gantt Chart of Project Plan

Year	2024				2025				2026				2027				2028				2029			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Decommissioning Programme																								
Submission of DP																								
Consultation																								
Approval of DP																								
Campaign																								
A1D Jacket Removal																								
A2D Jacket Removal																								
B1D Jacket Removal																								
C1D Jacket Removal																								
Post Decommissioning Activities and Surveys																								
Post Decommissioning Surveys																								
Close Out Letter																								

LEGEND	
	Earliest date task could be completed
	Period in which the task expected to be completed



6.4 Costs

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

6.5 Close Out

In accordance with the OPRED Guidance Notes [Ref 2], a Close Out document will be submitted to OPRED within 12 months of the completion of the offshore decommissioning scope including debris clearance, verification of seabed clearance and the first post-decommissioning environmental survey. The report will detail the outcomes of surveys as well as explain any major variances from the programme.

6.6 Post-Decommissioning Monitoring and Evaluation

A post-decommissioning survey centred around sites of the wellheads and former jackets, will be carried out. The survey will focus on chemical and physical disturbances of the decommissioning area and be compared with the pre-decommissioning survey. The results of this survey will be forwarded to OPRED.

7. SUPPORTING DOCUMENTS

Table 7-1: Supporting Documents		
Document Number	Title	Document Reference
1	Amethyst Jackets Decommissioning Environmental Appraisal report	200605-S-REP-0047
2	Amethyst Pre-Decommissioning Geophysical Survey	<ul style="list-style-type: none"> • NSW-PJ00045-RR-DC-SUR-01A_2.0 Amethyst A1D Results Report • NSW-PJ00045-RR-DC-SUR-01B_2.0_Amethyst_A2D_Results_Report • NSW-PJ00045-RR-DC-SUR-01C_2.0_Amethyst_B1D_Results_Report • NSW-PJ00045-RR-DC-SUR-01D_2.0_Amethyst_C1D_Results_Report
3	Amethyst Pre-Decommissioning Environmental Survey	<ul style="list-style-type: none"> • 2010_Perenco_AMS-INT_EBS_00 • 2010_Perenco_AMS_INT_HAS_00
4	Seabird Survey 2023	Biocensus (2023). Perenco Assets Ornithological Assessment 2023. RSK Biocensus, UK.
5	Seabird Survey 2024	Xodus (2024). Perenco: Ornithological Support Perenco Asset Survey 2024. Xodus, Aberdeen, UK.



8. LETTERS OF SUPPORT



9. APPENDICES