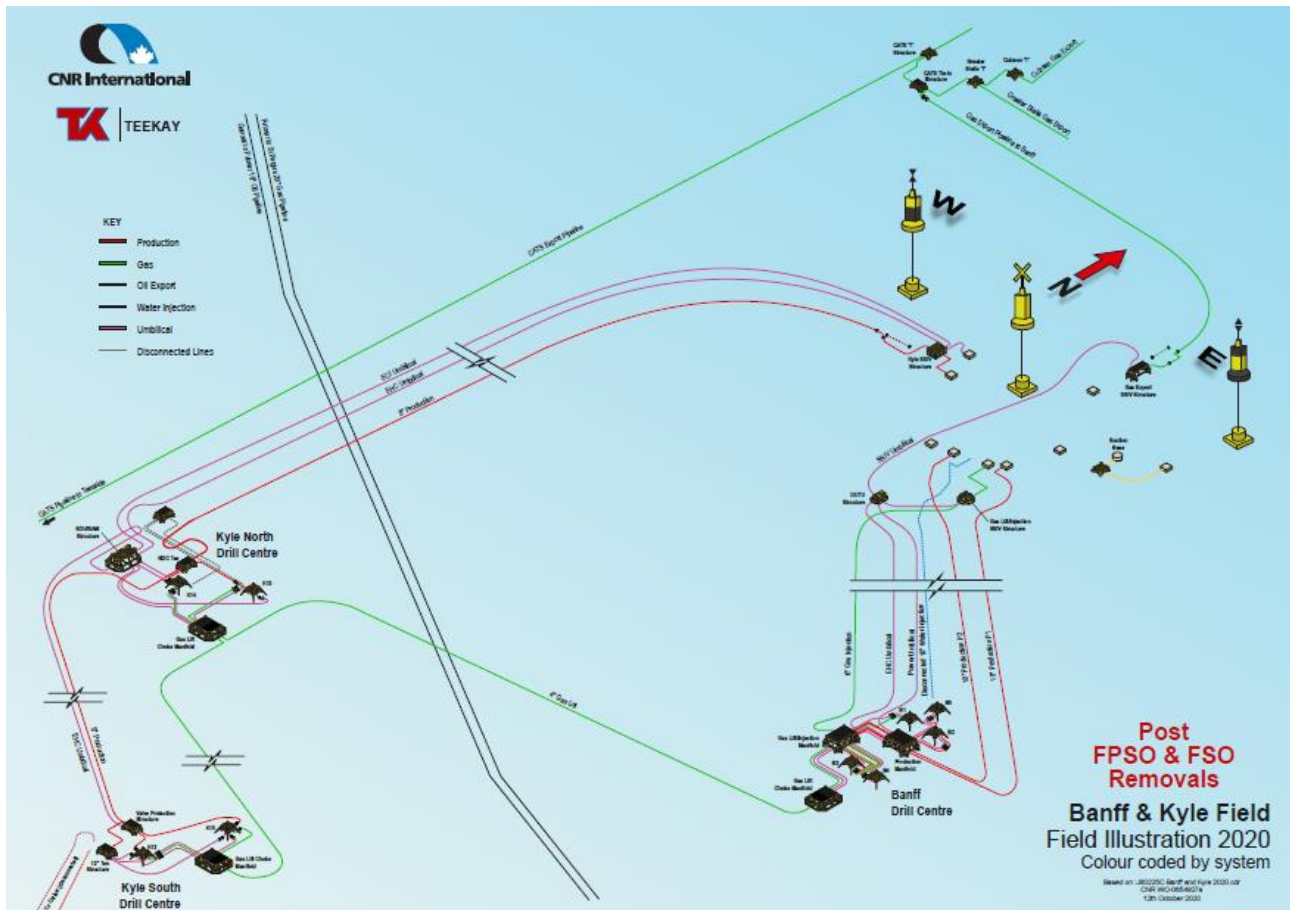




CNR International



BANFF AND KYLE FIELDS DECOMMISSIONING PROGRAMMES

P0009-CNR-EN-REP-00013

Final Decommissioning Programmes

APPROVALS

	Name
Compiled By	KL
Reviewed by (CNRI)	PR
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TERMS AND ABBREVIATIONS

Abbrev.	Definition
AUV	Autonomous Underwater Vehicle
BEIS	Department of Business, Environment and Industrial Strategy
CA	Comparative Assessment
CATS	Central Area Transmission System
Chem	Chemical
CNRI	CNR International (U.K.) Limited
CNS	Central North Sea
CoP	Cessation of Production
CO ²	Carbon Dioxide
Dia	Diameter
DP	Decommissioning Programme
DUTU	Dynamic Umbilical Termination Unit
EA	Environmental Appraisal
E&A	Exploration & Appraisal
EIA	Environmental Impact Assessment
Elec	Electric
EMS	Environmental Management Systems
EMT	Environmental Management Team
ENVID	Environmental Impact Identification
EU	European Union
ES	Environmental Statement
FPSO	Floating Production, Storage and Offloading vessel
FSO	Floating Storage and Offloading vessel
GHG	Greenhouse Gas
GMG	Global Marine Group
HSES	Health, Safety, Environment and Security
HSE	Health and Safety Executive
In	Inch
JNCC	Joint Nature Conservative Committee
ICES	International Council for the Exploration of the Seas
Km	Kilometre
M	Metre
M ²	Metre Squared
M ³	Cubic Metre
MAT	Master Application Template
MCA	Maritime and Coastguard Agency
MCDA	Multi Criteria Decision Analysis
Mm	Millimetre
MPA	Marine Protected Area
MS	Marine Scotland
N/A	Not Applicable
NCMPA	Nature Conservation Marine Protected Area
NFFO	National Federation of Fishermen's Organisation
NLB	Northern Lighthouse Board
NORM	Naturally Occurring Radioactive Material
NIFPO	Northern Irish Fish Producers Organisation
OBM	Oil Based Mud
ODU	Offshore Decommissioning Unit

Abbrev.	Definition
OEI	Offshore Environmental Inspectorate
OGA	Oil and Gas Authority
O&G	Oil & Gas
OGUK	Oil and Gas UK
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo Paris Convention
PL	Pipeline
PLEM	Pipeline End Manifold
PLU	Pipeline Umbilical
PWAV	Pipeline Works Authorisation Variation
ROV	Remotely Operated Vehicle
SAL	Submerged Anchor Loading
STL	Subsea Turret Loading
SAM	Subsea Accumulator Module
SAT	Subsidiary Application Template
SEPA	Scottish Environmental Protection Agency
SDU	Subsea Distribution Unit
SFF	Scottish Fishing Federation
SOSI	Seabird Oil Sensitivity Index
SSIV	Subsea Isolation Valve
SSS	Side Scan Sonar
TBC	To be Confirmed
Te	Tonne
TFSW	Trans Frontier Shipment of Waste
TPFP	Teekay Petrojarl Floating Production UK Ltd
TUTU	Topsides Umbilical Termination Unit
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
UKHO	United Kingdom Hydrographic Office
USS	Ugland Stena Storage
UTA	Umbilical Termination Assembly
WIA	Well Intervention Application
WONS	Well Operations Notification System
WHPS	Wellhead Protection Structure
WMP	Waste Management Plan
VMS	Vessel Monitoring System
XTs	Xmas Trees

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1. EXECUTIVE SUMMARY

1.1 DECOMMISSIONING PROGRAMMES

This document contains the Decommissioning Programmes for the Banff and Kyle fields decommissioning activities and specifically covers:

- all subsea installations (including trees and wellheads) and stabilisation materials;
- drill cuttings;
- the pipelines (including spools and jumpers and stabilisation materials);
- remaining mooring infrastructure and associated remediation; and
- well decommissioning.

The Banff and Kyle fields produced via a Floating Production Storage and Offloading Vessel (FPSO), the Petrojarl Banff FPSO and the Floating Storage Offloading Vessel (FSO), Apollo Spirit. The FPSO, FSO and associated risers and anchor systems (excluding steel piles) are covered under a separate and approved Decommissioning Programme (DP/163/19) during 2020. All activities associated with DP/163/19 have taken place and have been formally closed out by the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) via an approved Decommissioning Programme Interim Close Out Report (approved May 2021).

1.2 REQUIREMENT FOR DECOMMISSIONING PROGRAMMES

Installations:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Banff and Kyle fields Subsea Installations (see Table 1.2 and Table 1.8) are applying to the Offshore Petroleum Regulator for Environment & Decommissioning (OPRED) to obtain approval for decommissioning the installations detailed in Section 2.2 of this programme. See also Section 8 - Partner Letter(s) of Support.

Pipelines:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Banff and Kyle fields pipelines (see Table 1.4, Table 1.6, Table 1.10 and Table 1.12) are applying to OPRED to obtain approval for decommissioning the pipelines detailed in Section 2.3 of this programme. See also Section 8 - Partner Letter(s) of Support.

In conjunction with public, stakeholder and regulatory consultation, the Decommissioning Programmes are submitted in compliance with national and international regulations and OPRED guidelines. The base case schedule outlined in this document (Section 6.3) is for a five year project plan, with offshore activities due to begin in 2022.

1.3 INTRODUCTION

The Decommissioning Programmes (DP) have been prepared to support the decommissioning of the Banff and Kyle fields.

The licensee submitted to the Oil & Gas Authority (OGA) for consideration a Cessation of Production (CoP) document which demonstrated that all economic development opportunities have been pursued for; the fields and associated infrastructure, current and future development opportunities, and consideration of access to current infrastructure.

Cessation of Production from Banff and Kyle fields was approved on the 2nd March 2020, and occurred on the 1st June 2020.

The Banff and Kyle fields are subsea developments: Banff is located in United Kingdom Continental Shelf (UKCS) Blocks 29/2a and 22/27a in the UK Sector of the Central North Sea (CNS) some 200 km due east of Aberdeen in approximately 95 m water depth. Kyle is located in UKCS Block 29/2c and 29/2h in the UK Sector of the CNS some 200 km due east of Aberdeen in approximately 90 m water depth. The fields were tied back to Teekay Petrojarl Floating Production UK Ltd's (TPFP) Petrojarl Banff FPSO, where produced fluids were processed. Gas was used for gas lift, fuel and export to the Central Area Transmission System (CATS). The FPSO associated with the Banff and Kyle fields has been removed from station under the Banff and Kyle FPSO and FSO Float Off approved Decommissioning Programme (DP/163/19). The oil export route for the FPSO was via a submerged turret loading (STL) system through to the Apollo Spirit (FSO). Prior to this, oil was exported via a Submerged Anchor Loading (SAL) system. The components of this system within the water column were decommissioned via an approved decommissioning programme in 2019.

The main components of the Banff and Kyle subsea fields consists of: 3 drill centres (one for Banff fields and two for the Kyle field), 8 production wells, 1 gas lift well, 15 exploration/appraisal wells (10 of which have been fully abandoned), 5 production manifolds, 9 riser bases, 1 suction base, several pipelines and umbilicals.

Following public, stakeholder and regulatory consultation, the Decommissioning Programmes are submitted without derogation and in full compliance with OPRED and Oil & Gas UK Guidelines. The Decommissioning Programmes explain the principles of the decommissioning activities and are supported by a Comparative Assessment (CA) of decommissioning options and an Environmental Appraisal (EA).

1.4 OVERVIEW OF THE INSTALLATIONS BEING DECOMMISSIONED

1.4.1 INSTALLATIONS- BANFF FIELDS

Table 1.1: Installations Being Decommissioned			
Fields:	Banff	Production Type (Oil/Gas/Condensate)	Oil and Gas
Water Depth (m)	Approx. 90 m	UKCS block	29/2a & 22/27a
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
30	1 x Gas Export Tether Base 1 x Banff Dynamic Umbilical Termination Unit (DUTU) Structure 1 x Banff P1 Production Riser Base 1 x Banff P2 Production Riser Base 1 x Banff Gas Lift/ Injection Riser Base 1 x Banff Oil Export Tether Base 1 x Banff Oil Export STL Tether Base 1 x Banff Suction Base (SAL Anchor Base) 1 x Pipeline End Manifold (PLEM) Tee 1 x Banff Umbilical Tether Base 1 x Banff Umbilical Tether Base Anode Skid A 1 x Banff Umbilical Tether Base Anode Skid B 1 x Gas Export Tether Base Anode Skid A 1 x Gas Export Tether Base Anode Skid B 1 x Gas Export SSIV Anode Skid 1 x Oil Export Tether Base Structure Anode Skid A 1 x Oil Export Tether Base Structure Anode Skid B 1 x Pipeline End Manifold (PLEM) Tee Anode Skid 1 x Banff Production Manifold 1 x Banff Gas Lift / Injection Manifold 1 x Banff Gas Lift / Choke Manifold 5 x Xmas Trees (XT) 4 x Abandoned Guide Base	N/A	5
Drill Cuttings pile(s)		Distance to median	Distance from nearest UK Coastline

Number of Piles	Total Estimated volume (m ³)	km	km
1	3,580	63 km (UK/Norway)	191 km (Peterhead)

Table 1.2 Installation Section 29 Notice Holders Details		
Installation	Section 29 Notice Holders	Registration Number
Floating Production, Storage and Offloading (FPSO) vessel and subsea installations.	Banff L.L.C	962000
	CNR International (U.K.) Developments Limited	01021629
	CNR International (U.K) Limited	00813187
	Chrysaor Production (U.K.) Limited	00524868
	Dana Petroleum (E&P) Limited	02294746
	Teekay Petrojarl Floating Production UK Ltd	02436350
	Altera Infrastructure Production AS	939545832
Floating Storage Offloading (FSO) Apollo Spirit and subsea equipment.	Chrysaor Production (U.K.) Limited	00524868
	CNR International (U.K) Limited	813187
	Ugland Stena Storage AS	882 048 152
	CNR International (U.K.) Developments Limited	1021629
	Dana Petroleum (E&P) Limited	2294746

1.4.2 PIPELINES- BANFF FIELDS

Table 1.3: Pipelines Being Decommissioned- Banff	
Number of Pipeline(s) Details given in Table 2.3	8
Number of Umbilical (s) Details given in Table 2.3	11
Number of Subsea Pipeline(s) Structures Details given in Table 2.4	1

Table 1.4: Pipeline Section 29 Notice Holders Details		
Fields	Section 29 Notice Holders	Registration Number
Banff Fields Pipelines	Teekay Petrojarl Floating Production UK Ltd	02436350

Table 1.5: Pipelines Being Decommissioned	
Number of Pipeline(s) Details given in Table 2.3	10
Number of Umbilical (s) Details given in Table 2.3	1
Number of Subsea Pipeline(s) Structures Details given in Table 2.4	1

Table 1.6: Pipeline Section 29 Notice Holders Details

Fields	Section 29 Notice Holders	Registration Number
Banff Fields Pipelines	CNR International (UK) Developments Ltd	01021629
	CNR International (UK) Ltd	00813187
	Dana Petroleum (E&P) Ltd	02294746

1.4.3 INSTALLATIONS- KYLE FIELDS**Table 1.7: Installations Being Decommissioned**

Fields:	Kyle	Production Type (Oil/Gas/Condensate)	Oil and Gas
Water Depth (m)	Approx. 90 m	UKCS block	29/2c & 29/2h
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
16	1 x Kyle North SDU / SAM Structure 1 x Kyle North Gas Lift / Choke Manifold 1 x Kyle North Drill Centre Valve Structure (NDC Tee) 1 x Kyle North SDU / SAM Structure (Disconnected Structure) 1 x Kyle North Production Riser Base 1 x Kyle North Umbilical Riser Base 1 x Kyle South 12" Tee Structure 1 x Kyle South Gas Lift / Choke Manifold 1 x Kyle South Drill Centre Valve Structure (8" Tee Structure) 4 x Xmas Trees 1 x Abandoned Guide Base 1 x Curlew DUTU Structure 1 x Tee connector	N/A	4
Drill Cuttings pile(s)		Distance to median	Distance from nearest UK Coastline
Number of Piles	Total Estimated volume (m³)	km	km
1	1,432	63 km (UK/Norway)	191 km (Peterhead)

Table 1.8 Installation Section 29 Notice Holders Details

Installation	Section 29 Notice Holders	Registration Number
Kyle Subsea Installations	CNR International (UK) Developments Ltd	01021629
	CNR International (UK) Ltd	00813187
	Dana Petroleum (BVUK) Ltd	03337437
	Harbour Energy plc	SC234781
	Premier Oil UK Ltd	SC048705

1.4.4 PIPELINES- KYLE FIELDS

Table 1.9: Pipelines Being Decommissioned

Number of Pipeline(s) Details given in Table 2.3	42
Number of Umbilical(s) Details given in Table 2.3	10
Number of Subsea Pipeline(s) Structures Details given in Table 2.4	3

Table 1.10: Pipeline Section 29 Notice Holders Details

Fields	Section 29 Notice Holders	Registration Number
Kyle Pipelines	CNR International (UK) Developments Ltd	01021629
	CNR International (UK) Ltd	00813187
	Dana Petroleum (BVUK) Ltd	03337437
	Harbour Energy plc	SC234781
	Premier Oil UK Ltd	SC048705

Table 1.11: Pipelines Being Decommissioned

Number of Pipeline(s) Details given in Table 2.3	15
Number of Umbilical(s) Details given in Table 2.3	1

Table 1.12: Pipeline Section 29 Notice Holders Details

Fields	Section 29 Notice Holders	Registration Number
Kyle Pipelines	CNR International (UK) Developments Ltd	01021629
	CNR International (UK) Ltd	00813187
	Dana Petroleum (BVUK) Ltd	03337437
	Premier Oil UK Ltd	SC048705

1.5 SUMMARY OF PROPOSED DECOMMISSIONING PROGRAMMES

Table 1.13: Summary of Decommissioning Programmes

Selected Option	Reason for Selection	Proposed Decommissioning Solution
1. Subsea Installations		
Group 6*: All subsea installations will be removed from the seabed. ^{Note 1} Full Removal	In line with current guidance and removes snagging risk.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
2. Pipelines		
Group 1*: Trenched and Buried Rigid Pipelines Leave <i>in-situ</i>	Comparatively assessed as preferred option. The rigid flowlines are trenched and buried and stable, posing no risk to marine users. Minimal seabed disturbance, lower energy use, reduced risk to personnel engaged in the activity.	Leave <i>in-situ</i> . Exposed ends & areas of spans/ exposure/ shallow burial to have rock placement. Local rock placement to mitigate snag hazard from cut ends. Group 1 is expected to have minimal spans and exposures, however none of the spans met the reportable criteria.
Group 2*: Trenched & Buried Flexible Flowlines & Umbilical Leave <i>in-situ</i>	Comparatively assessed as preferred option. The flexible flowlines are sufficiently trenched and buried and stable posing no risk to marine users. Minimal seabed disturbance, lower	Leave <i>in-situ</i> . Exposed ends & areas of spans/ exposure/ shallow burial to have rock placement. Local rock placement to mitigate snag hazard from cut ends.

	energy use, reduced risk to personnel engaged in the activity.	
Group 3*: Surface Laid Flexible Flowlines & Umbilical Full Removal	In line with current guidance and removes snagging risk.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
Group 4*: Trenched with Rock Placement Rigid Pipelines Leave <i>in situ</i>	Comparatively assessed as preferred option. The rigid flowlines are trenched with rock placement and are stable, posing no risk to marine users. Minimal seabed disturbance, lower energy use, reduced risk to personnel engaged in the activity.	Leave <i>in-situ</i> . Exposed ends & areas of exposure to have rock placement. Local rock placement to mitigate snag hazard from cut ends. There are no spans or exposures expected for pipelines in Group 4.
3. Pipeline Structures		
Group 5*: Surface Laid Spools and Jumpers Full Removal	In line with current guidance and removes snagging risk.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
Group 7*- Protection/ Stabilisation features ¹ . Full Removal	In line with current guidance and removes snagging risk.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
4. FSO Mooring Piles and remaining Chains		
Group 8*: Mooring Piles and remaining chains and related scour ^{Note 3} Full Removal	In line with current guidance and removes snagging risk.	Mooring Anchor Piles will be cut below the natural seabed. Mooring chains will be removed.
5. Moorings depressions and Related Scour		
Group 9*: FPSO Mooring depressions and associated scour ^{Note 2} Full Removal	In line with current guidance and removes snagging risk.	Targeted remediation- pending additional studies; however, outcome will be discussed with the Regulator.
6. Drill Cuttings		
Drill cuttings present. Leave <i>in situ</i>	Screening of drill cuttings based on desktop exercise and pre-decommissioning environmental survey data. Drill cuttings fall below OSPAR Thresholds.	Given the low amount of Oil Based Mud (OBM) discharges, other sources of contamination and lack of physical cuttings pile, any cuttings should be left to degrade naturally.
7. Wells		

¹ All stabilisation material removal is subject to feasibility.

Wells will be decommissioned to CNR International (UK) Ltd. standards which comply with “Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996” and align with Oil & Gas UK Well Decommissioning Guidelines for the Suspension and Abandonment of Wells (Issue 6, June 2018).	Meets HSE Regulatory requirements in accordance with O&G UK and OGA guidelines.	A Master Application Template (MAT) and the supporting Subsidiary Application Template (SAT) will be submitted in support of activities carried out. Applications to decommission the wells will be submitted through the Wells Operations Notification Systems (WONS). Additionally, planned work will be reviewed by a well examiner to CNRI standards, and then submitted to the HSE for review.
7. Interdependencies		
No third-party pipeline crossings will be disturbed as a result of the decommissioning proposals.		
Subsea infrastructure and pipelines have been flushed and cleaned prior to the commencement of subsea decommissioning operations.		
Pipeline stabilisation features such as concrete mattresses and any grout bags found that are exposed (i.e. not fully or partially buried under deposited rock) will be removed as part of the pipeline decommissioning activities. Although some deposited rock will be disturbed during the removal activities, it will remain <i>in situ</i> .		
Notes		
<ol style="list-style-type: none"> 1. For the SAL Suction Base CNRI will seek to remove by reverse installation however there are known difficulties with the recovery of suction anchors driven by the integrity of the system to retain pressure and the unknown ability for the soil plug to withstand the pressure. In the event the suction base cannot be recovered in its current configuration, potential snagging risk caused by the in-situ anchor base will be mitigated by rock. This back up option has been captured by the environmental assessment supporting this decommissioning programme. 2. CNRI are conducting a study of these features to determine the most appropriate method of targeted remediation and will monitor the depressions in the interim to assess change over time. The results of the study will be relayed to OPRED and a discussion will be initiated to determine the most appropriate course of action. The method of remediation is therefore yet to be determined, with the worst-case assumption involving the placement of rock to fill the dimensions of the trenches. Any future remediation activities relating to the mooring depressions in the Banff Field will also be covered by the applicable permitting. The mooring and anchor features associated with the Banff FPSO moorings have been added to Kingfisher and FishSafe system. 3. In line with current guidance, in this instance any piles should be severed below the natural seabed level at such a depth to ensure that any remains are unlikely to become uncovered. CNRI will aim to achieve a cut depth of 3 m below the natural seabed level, however consideration will be given to the prevailing seabed conditions and currents. However, any deviation from the -3 m pile cut will be discussed and agreed with OPRED. 		

*Refers to the Inventory Group Categories as defined in the Comparative Assessment Report.

1.6 FIELDS LOCATION INCLUDING FIELDS LAYOUT AND ADJACENT FACILITIES

Figure 1.1 Fields Location on the UKCS

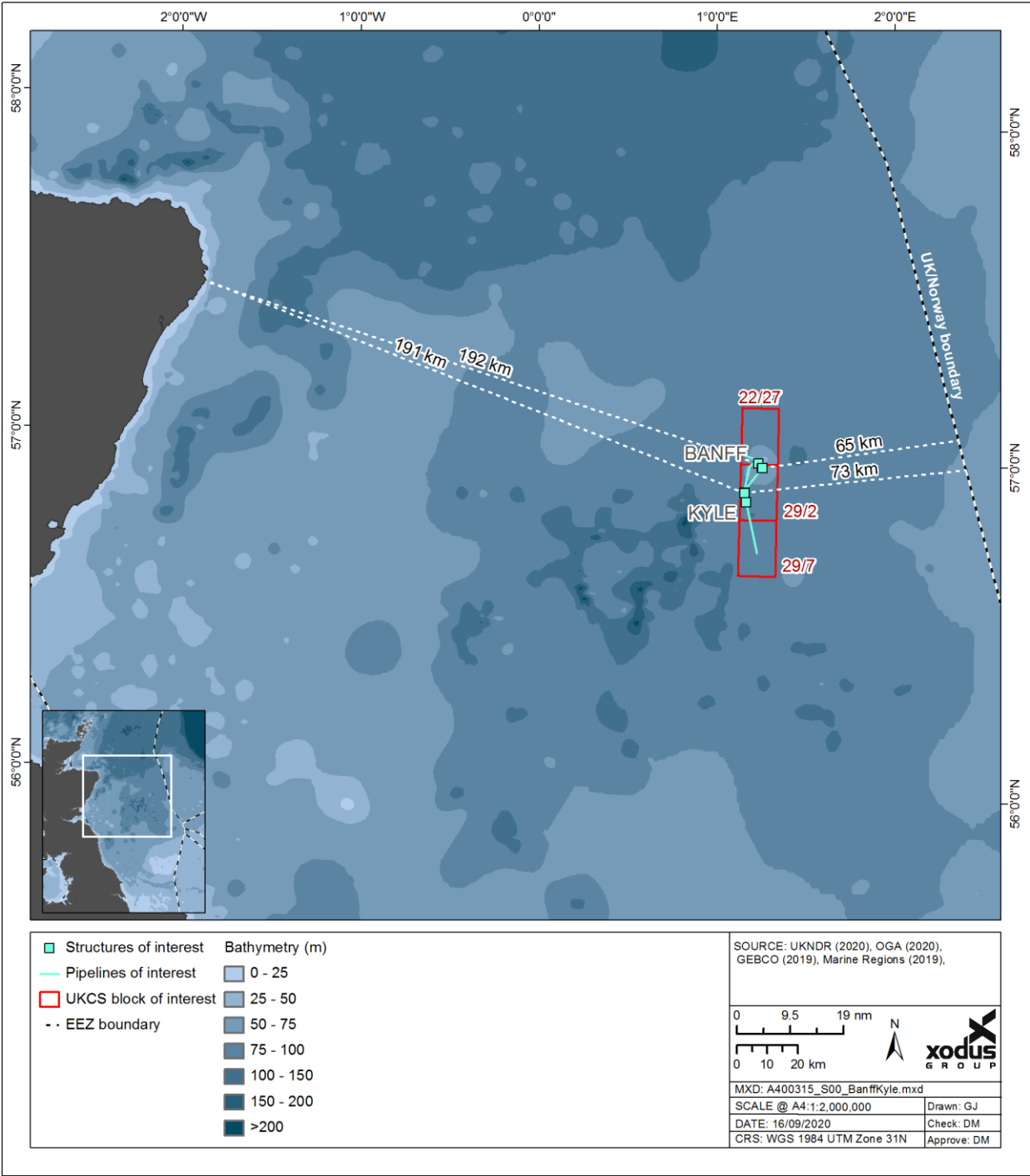


Figure 1.2 Current Fields Layout

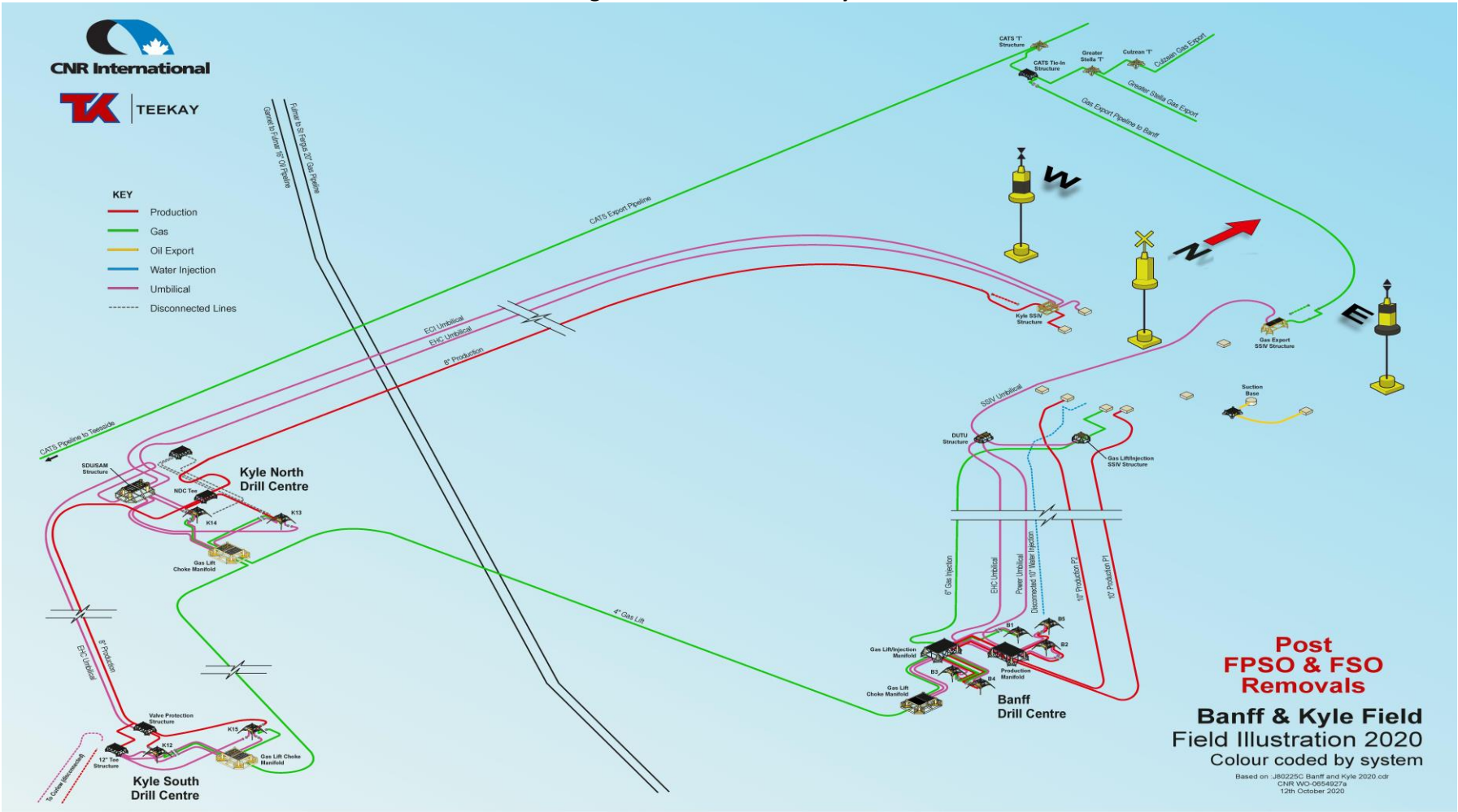


Figure 1.3 Post Decommissioning Fields Layout

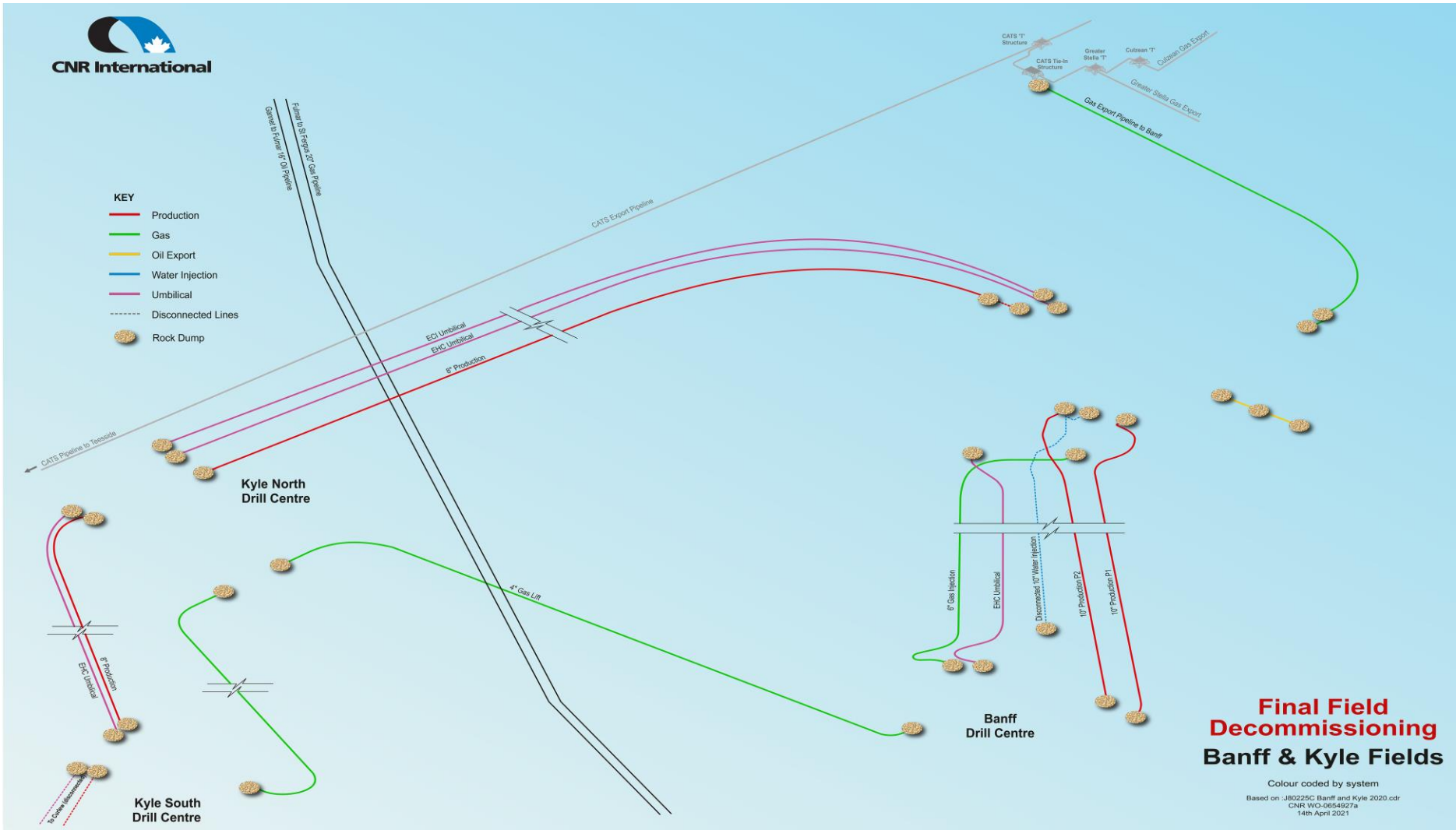


Table 1.14 Adjacent Facilities

Operator	Name	Type	Distance/ Direction	Information	Status
CATS North Sea Limited	CATS 36" Export Pipeline	Gas	8 km NW of FPSO 500 m zone	Gas export tie in route for Banff FPSO	Active
Ithaca Energy (UK) Limited	Stella to CATS 10" Export Pipeline	Gas	8 km NW of FPSO 500 m zone	3 rd party tie-in to Banff valve structure at CATS T5.	Active
Total E&P North Sea U.K. Limited	Culzean to CATS 22" Export Pipeline	Gas	8 km NW of FPSO 500 m zone	3 rd party tie-in to Stella valve structure at CATS T5.	Active
Shell U.K. Limited	Fulmar to St Fergus 20" Gas Pipeline	Gas	5 km west of FPSO 500 m zone at closest point	Crossed by Kyle flowlines, umbilicals, and the Banff to Kyle gas lift line.	Active
Shell U.K. Limited	Gannet to Fulmar 16" Oil Pipeline	Oil	5 km west of FPSO 500 m zone at closest point	Crossed by Kyle flowlines, umbilicals, and the Banff to Kyle gas lift line.	Active
Shell U.K. Limited	Gannet to Fulmar 16" Oil Pipeline	Oil	5 km west of FPSO 500 m zone at closest point	Cut and disused.	Inactive
Shell U.K. Limited	Gannet A Platform	Oil	27 km NW FPSO 500 m zone at closest point	Producing Platform	Active
Dana Petroleum (E&P) Limited	Triton FPSO	Oil	25 km West FPSO 500 m zone at closest point	Producing FPSO	Active
Total E&P North Sea U.K. Limited	Elgin and Franklin	Gas & condensate	30 km East FPSO 500 m zone at closest point	Producing Platform	Active
Shell U.K. Limited	Shearwater	Gas	40 km East FPSO 500 m zone at closest point	Producing Platform	Active

Impacts of Decommissioning Proposals

Note: Adjacent facilities refer to those potentially impacted by this programme (within 40 km)

The Banff and Kyle fields decommissioning activities are planned so they will not affect the decommissioning of other fields or the operation of other developments in the area. The environmental appraisal will consider the potential cumulative implications of decommissioning activities in context of other oil and gas/ other industry activities in the area.

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1.7 INDUSTRY IMPLICATIONS

The Banff and Kyle fields decommissioning activities will be managed by CNRI in Aberdeen. Reasonable efforts will be made to plan decommissioning activities for the DP to realise synergies and efficiencies in offshore execution. Furthermore, in line with the OGA's (2021) Net Zero Stewardship Expectations 11, CNRI will look to plan and execute decommissioning activities to reduce Greenhouse Gas (GHG). CNRI will actively engage with industry to further reduce GHG through scope aggregations and optimising decommissioning activities.

The activities to decommission the Banff and Kyle fields will be completed using selected marine vessels and equipment that comply with technical and safety expectations.

It is CNRI's intention to develop a contract strategy and Supply Chain Action Plan that will result in an efficient and cost-effective execution of the decommissioning works for this DP. Where appropriate existing framework agreements may be used for such decommissioning activities.

CNRI will look for opportunities to combine Banff and Kyle decommissioning activities with other developments or decommissioning activities to improve cost efficiency should the opportunity arise. The decommissioning schedule is designed to allow flexibility for when decommissioning operations are carried out and completed.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 INSTALLATIONS: SUBSEA INCLUDING STABILISATION FEATURES

Table 2.1: Subsea Installations and Stabilisation Features					
Subsea installations including stabilisation features	Number	Size (m)/ Weight (Te)	Location		Comments/ Status
Gas Export Tether Base	1	L 7 x W 7 x H 2.9 39 Te	WGS84 Decimal	57.001954°N 01.295630°E	Gravity Based
			WGS84 Decimal Minute	57° 00' 7.0344 N 01° 17' 44.2680 E	
Banff Dynamic Umbilical Termination Unit (DUTU) Structure	1	L 7.5 x W 5.5 x H 2.9 42 Te	WGS84 Decimal	57.000742°N 01.296712°E	Gravity Based
			WGS84 Decimal Minute	57° 00' 2.6712 N 01° 17' 48.1630 E	
Banff P1 Production Riser Base	1	L 8.7 x W 4.5 x H 4.3 69 Te	WGS84 Decimal	57.001954°N 01.295630°E	Gravity Based
			WGS84 Decimal Minute	57° 00' 7.0344 N 01° 17' 44.2680 E	
Banff P2 Production Riser Base	1	L 8.7 x W 4.5 x H 4.3 69 Te	WGS84 Decimal	57.001647°N 01.295176°E	Gravity Based
			WGS84 Decimal Minute	57° 00' 5.9292 N 01° 17' 42.6340 E	
Banff Gas Lift/ Injection Riser Base	1	L 8.7 x W 4.5 x H 4.3 69 Te	WGS84 Decimal	56.991143°N 01.315387°E	Gravity Based
			WGS84 Decimal Minute	56° 59' 28.1148 N 01° 18' 55.3930 E	
Banff Oil Export Tether Base	1	L 7 x W 7 x H 2.9 39 Te	WGS84 Decimal	57.003497°N 01.295380°E	Gravity Based
			WGS84 Decimal Minute	57° 00' 12.5892 N 01° 17' 43.3680 E	
Banff Oil Export STL Tether Base	1	L 4 x W 3 x H 1.4 40 Te	WGS84 Decimal	57.011658°N 01.326339°E	Gravity Based
			WGS84 Decimal Minute	57°00' 41.97 N 01°19' 34.82 E	
Banff Suction Base (SAL Anchor Base)	1	L 9.0 x W 9.0 x H 16.7 186.0 Te	WGS84 Decimal	56.989061°N 01.275433°E	Suction based anchor
			WGS84 Decimal Minute	56°59'20.62 N 01°16'31.56 E	
Pipeline End Manifold (PLEM) Tee	1	L 3.1 x W 3 x H 1.7 8 Te	WGS84 Decimal	56.989061°N 01.275433°E	Gravity Based

			WGS84 Decimal Minute	56°59'20.62 N 01°16'31.56 E	
Banff Umbilical Tether Base Anode Skid A	1	L 2.5 x W 1.5 x H 0.5 1.5 Te	WGS84 Decimal	57.001662°N 01.294756°E	Connected to Banff Umbilical Tether Base
			WGS84 Decimal Minute	57° 00' 5.9832 N 01° 17' 41.1220 E	
Banff Umbilical Tether Base Anode Skid B	1	L 2.5 x W 1.5 x H 0.5 1.5 Te	WGS84 Decimal	57.001662°N 01.294756°E	Connected to Banff Umbilical Tether Base
			WGS84 Decimal Minute	01.294756°E 01° 17' 41.1220 E	
Gas Export Tether Base Anode Skid A	1	L 2.5 x W 1.5 x H 0.5 1.5 Te	WGS84 Decimal	57.003474°N 01.293708°E	Connected to Gas Export Tether Base
			WGS84 Decimal Minute	57°00'12.5064 N 01°17'37.3490 E	
Gas Export Tether Base Anode Skid B	1	L 2.5 x W 1.5 x H 0.5 1.5 Te	WGS84 Decimal	57.003474°N 01.293708°E	Connected to Gas Export Tether Base
			WGS84 Decimal Minute	57°00'12.5064 N 01°17'37.3490 E	
Gas Export SSIV Anode Skid	1	L 2.1 x W 1.5 x H 0.5 1.2 Te	WGS84 Decimal	57.004124°N 01.293566°E	Connected to Gas Export SSIV
			WGS84 Decimal Minute	57°00'14.8464 N 01°17'36.8380 E	
Oil Export Tether Base Structure Anode Skid A	1	L 2.5 x W 1.5 x H 0.5 1.5 Te	WGS84 Decimal	57.011658°N 01.326339°E	Connected to Oil Export Tether Base
			WGS84 Decimal Minute	57°00' 41.97 N 01°19' 34.82 E	
Oil Export Tether Base Structure Anode Skid B	1	L 2.5 x W 1.5 x H 0.5 1.5 Te	WGS84 Decimal	57.011658°N 01.326339°E	Connected to Oil Export Tether Base
			WGS84 Decimal Minute	57°00' 41.97 N 01°19' 34.82 E	

Pipeline End Manifold (PLEM) Tee Anode Skid	1	L 0.75 x W 0.5 x H 0.2 0.5 Te	WGS84 Decimal	56.989061°N 01.275433°E	Connected to 12" Hose connection at PLEM
			WGS84 Decimal Minute	56°59'20.62 N 01°16'31.56 E	
Banff Umbilical Tether Base	1	L 7 x W 7 x H 2.9 39 Te	WGS84 Decimal	57.001662°N 01.294756°E	Gravity Based
			WGS84 Decimal Minute	57° 00' 5.9832 N 01° 17' 41.1220 E	
Banff Production Manifold	1	L 18 x W 16 x H 5.2 209.9Te	WGS84 Decimal	56.991374°N 01.315492°E	Gravity Based
			WGS84 Decimal Minute	56° 59' 28.9464 N 01° 18' 55.7710 E	
Banff Gas Lift / Injection Manifold	1	L 18 x W 14 x H 4.8 40 Te	WGS84 Decimal	56.991143°N 01.315387°E	Gravity Based
			WGS84 Decimal Minute	56° 59' 28.1148 N 01° 18' 55.3930 E	
Banff Gas Lift / Choke Manifold	1	L 13 x W 11 x H 3.7 66 Te	WGS84 Decimal	56.991131°N 01.316134°E	Gravity Based
			WGS84 Decimal Minute	56° 59' 28.0716 N 01° 18' 58.0820 E	
Kyle North Subsea Distribution Unit (SDU)/ Subsea Accumulator Module (SAM) Structure- Kyle North	1	L 9.0 x W 8.0 x H 1.9 4.9 Te	WGS84 Decimal	56.915975°N 01.222099°E	Gravity Based
			WGS84 Decimal Minute	56°54'57.5107 N 01°13'19.556 E	
Kyle North Gas Lift / Choke Manifold	1	L 13 x W 11 x H 3.7 66 Te	WGS84 Decimal	56.915702°N 01.223444°E	Gravity Based
			WGS84 Decimal Minute	56°54'56.5272 N 01°13'24.3980 E	
Kyle North Drill Centre Valve Structure (NDC Tee)	1	L 10 x W 8 x H 2.4 75 Te	WGS84 Decimal	56.916042°N 01.222480°E	Gravity Based
			WGS84 Decimal Minute	56°54'57.7512 N 01°13'20.9280 E	
Kyle North Production Riser Base	1	L 8 x W 8 x H 3.2 86 Te	WGS84 Decimal	57.002622°N 01.292028°E	Gravity Based
			WGS84 Decimal Minute	57°00'9.4392 N 01°17'31.3010 E	
Kyle North Umbilical Riser Base	1	L 8 x W 8 x H 3.2 48 Te	WGS84 Decimal	57.002798°N 01.292188°E	Gravity Based
				57°00'10.0728 N	

			WGS84 Decimal Minute	01°17'31.8770 E	
Kyle North Disconnected Structure (old SDU/SAM Structure)-	1	L 7.6 x W 6.8 x H 1.8 4.9 Te	WGS84 Decimal	56.916324°N	Gravity Based
				01.221626°E	
			WGS84 Decimal Minute	56°54'58.7664 N	
				01°13'17.8540 E	
Abandoned Umbilical Tee Connector at KN	1	L 6.2 x W 4.3 x H 1.3 23Te	WGS84 Decimal	56.915055°N	Weight is approximate
				01.221647°E	
			WGS84 Decimal Minute	56° 54' 54.20 N	
				01° 13' 17.93 E	
Kyle South 12" Tee Structure	1	L 11.8 x W 8.8 x H 2.2 40.1 Te	WGS84 Decimal	56.880601°N	Gravity Based
				01.2334611°E	
			WGS84 Decimal Minute	56° 52' 50.1636 N	
				01° 14' 0.4600 E	
Kyle South Gas Lift / Choke Manifold	1	L 13 x W 11 x H 3.7 209.9 Te	WGS84 Decimal	56.887324°N	Gravity Based
				01.233801°E	
			WGS84 Decimal Minute	56° 53' 14.3664 N	
				01° 14' 1.6840 E	
Kyle South Drill Centre Valve Structure (8" Tee Structure)	1	L 10 x W 8 x H 2.4 75 Te	WGS84 Decimal	56.887145°N	Gravity Based
				01.232812°E	
			WGS84 Decimal Minute	56° 53' 13.7220 N	
				01° 13' 58.1230 E	
Curlew DUTU Structure	1	L 2.9 x W 1.3 x H 1.3 1.8 Te	WGS84 Decimal	56.737768°N	Gravity Based
				01.703325°E	
			WGS84 Decimal Minute	56° 44' 15.9648N	
				01° 42' 11.97 E	
Xmas Trees (XT) with guide base Well B1- Banff	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.989494°N	Attached to wellhead
				01.313761°E	
			WGS84 Decimal Minute	56°59'22.18 N	
				01°18'49.54 E	
XT with guide base Well B2- Banff	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.999928°N	Attached to wellhead
				01.313761°E	
			WGS84 Decimal Minute	56°59'59.74 N	
				01°18'49.54 E	
XT with guide base Well B3- Banff	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.989997°N	Attached to wellhead
				01.316022°E	
			WGS84 Decimal Minute	56°59'23.99 N	
				01°18'57.68 E	

XT with guide base Well B4-Banff	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	57.989117°N 01.316069°E	Attached to wellhead
			WGS84 Decimal Minute	57°59'20.82 N 01°18'57.85 E	
XT with guide base Well B5-Banff	1	L 10 x W 10 x H 6.3 58.7 Te	WGS84 Decimal	57.029131°N 01.202039°E	Attached to wellhead
			WGS84 Decimal Minute	57°01'44.87" N 01°12'07.34" E	
XT with guide base Well K14-Kyle North	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.915922°N 01.222762°E	Attached to wellhead
			WGS84 Decimal Minute	56°54'57.3192 N 01°13'21.9430 E	
XT with guide base Well K13-Kyle North	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.916067°N 01.223383°E	Attached to wellhead
			WGS84 Decimal Minute	56°54'57.8412 N 01°13'24.1790 E	
XT with guide base Well K12-Kyle South	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.887136°N 04.233584°E	Attached to wellhead
			WGS84 Decimal Minute	56° 53' 13.6896 N 04° 14' 0.9020 E	
XT with guide base Well K15-Kyle South	1	L 5.3 x W 5.3 x H 5.2 40 Te	WGS84 Decimal	56.887406°N 04.233643°E	Attached to wellhead
			WGS84 Decimal Minute	56° 53' 14.6616 N 04° 14' 1.1150 E	
Abandoned Guide Base- well 29/02c-14	1	L 9.4 x W 9.4 x H 3.1 11.25 Te	WGS84 Decimal	56.915902° N 01.223133° E	Attached to wellhead
			WGS84 Decimal Minute	56°54'57.2472 N 01°13'23.2790 E	
Abandoned Guide Base- well 29/02a-6z	1	L 2.8 x W 2.8 x H 3 6 Te	WGS84 Decimal	56.991074° N 01.318212° E	Attached to wellhead
			WGS84 Decimal Minute	56°59'23.293N 1°19'6.067E	
Abandoned Guide Base- well 29/2a-7	1	L 2.8 x W 2.8 x H 3 6 Te	WGS84 Decimal	56.987328° N 01.31419° E	Attached to wellhead
			WGS84 Decimal Minute	56°59'9.810N 1°18'51.590E	
Abandoned Guide Base- well 29/02a-10	1	L 3 x W 3.2 x H 4 5.5 Te	WGS84 Decimal	56.995634° N 01.289823° E	Attached to wellhead

			WGS84 Decimal Minute	56°59'39.712N 1°17'23.878E	
Abandoned Guide Base- well 29/02c-11y	1	L 3 x W 3 x H 3.4 6 Te	WGS84 Decimal Minute	56.901094° N 01.235167° E 56°53'59.380N 1°14'7.130E	Attached to wellhead
FSO Mooring piles- c/w 10 m of mooring chain (max.) each	4	30 m x 1.83 m 102 Te	WGS84 Decimal	57.02403°N 01.324213°E	Anchor pile has approximately 8 m of chain in 60% burial, exposed at the pile with no trench visible
			WGS84 Decimal Minute	57°01'26.508 N 01°19'27.167 E	
		30 m x 1.83 m 102 Te	WGS84 Decimal	57.020906°N 01.337252°E	Anchor pile has a chain bundle approximately 10 m from pile position. Chain to pile and pile all in full burial.
			WGS84 Decimal Minute	57°01'15.2612 N 01°20'14.107 E	
		30 m x 1.83 m 102 Te	WGS84 Decimal	57.014978°N 01.344138°E	Anchor pile has a small chain bundle approximately 8 m from the pile suspected position. Chain to pile and pile are all in full burial.
			WGS84 Decimal Minute	57°00'53.9205 N 01°20'38.897 E	
		30 m x 1.83 m 102 Te	WGS84 Decimal	57.007209°N 01.343742°E	ML4 Anchor pile has approximately 4 m of chain in 50% burial 4 m from the estimated pile position. The chain to pile are all in full burial.
			WGS84 Decimal Minute	57°00'25.9524 N 01°20'37.471 E	
	3	24 m x 1.83 m 80 Te	WGS84 Decimal	57.004382°N 01.330464°E	ML5 Anchor pile is visible approximately 30 cm above seabed- 9 m from the pile there is half a link of chain exposed- all other chain are in burial.
			WGS84 Decimal Minute	57°00'15.7752 N 01°19'49.67 E	
		24 m x 1.83 m 80 Te	WGS84 Decimal	57.005922°N 01.317913°E	Anchor pile is not visible nor is the chain- all are in full burial.
			WGS84 Decimal Minute	57°00'21.319 N 01°19'4.487 E	
		24 m x 1.83 m 80 Te	WGS84 Decimal	57.01184°N 01.311042°E	Anchor pile is protruding approximately 30 cm above seabed- all chain is in full burial.
			WGS84 Decimal Minute	57°00'42.624 N 01°18'39.751 E	
	1	28 m x 1.83 m 93 Te	WGS84 Decimal	57.018689°N 01.313861°E	ML8 anchor pile is exposed protruding

			WGS84 Decimal Minute	57°01'7.2804 N	approximately 20 cm above the seabed- there is approximately 4 m of chain in 20% burial next to the pile.
				01°18'49.9 E	

Table 2.2: Banff and Kyle Subsea Installations-Stabilisation Features

Stabilisation Feature	Total Number	Total weight (Te)	Locations	Exposed/Buried/Condition
Concrete Mattresses ^{Note 1} (6 m x 3 m x 0.15 m)	110	743	Various locations across subsea infrastructure	Latest survey information indicates that all mattresses associated with subsea installations are exposed.
Grout Bags (25 kg bags) ^{Note 2}	1,250	31.25	Various locations across subsea infrastructure	Latest survey information indicates that there is a mixture of some grout bags covered by mattresses and some exposed.

Notes:

- Concrete mattresses are: 6 m x 3 m x 0.15 m (Approx. mass of each mattress 6.7 Te)
- The quantity of grout bags is an estimate as the as-built data is not explicit.

2.2 PIPELINE(S)

Full details will be provided in the PWAV applications.

Table 2.3: Pipeline/ Flowlines/ Umbilical Information

Description	Pipeline No. (as per PWA)	Dia. (in)	Length (km)	Description of Component Parts	Product Conveyed	End Points		Burial Status	Pipeline Status	Current Content
						From	To			
Banff Production P2	PL1546	10"	1.759	Steel/ Flexible	Produced Fluids	Disconnected at B2 Tree	Disconnected at Riser Base	Trenched and Buried	Out of Use	Seawater/ left open ended
Oil Production flexible Jumper	PL1546(J) B5	8"	0.02	Flexible	Produced Fluids	Banff Production Manifold	Disconnected at B5	Surface Laid	Out of Use	Seawater/ left open ended
Banff Production P1	PL1547	10"	1.740	Steel/ Flexible	Produced Fluids	Disconnected at Banff Production Manifold	Disconnected at Riser Base	Trenched and Buried	Out of Use	Seawater/ left open ended
Banff Gas Lift / Injection/ Water Injection	PL1548	10"	1.715	Steel/ flexible	Processed Gas/ Injection Water	Disconnected at Riser Base	Disconnected at Banff Production Manifold	Surface Laid	Out of Use	Seawater/ left open ended
Banff Gas Export	PL1549*	6"	6.578	Steel/ Flexible	Processed Gas	Disconnected at API transition spool	Disconnected at CATS tie-in structure	Trenched and Rock Back Filled	Out of Use	Seawater/ left open ended
Banff Gas Export (redundant section)	PL1549A	6"	0.150	Steel	Processed Gas	Disconnected cut end	Disconnected cut end	Surface laid	Out of Use	Seawater/ left open ended

Banff Oil Export	PL1550	12"	1.920	Steel/ Flexible	Processed oil	Disconnected at Tie-in Spool	Disconnected at 12" flexible flowline	Trenched and Buried	Out of Use	Seawater/ left open ended
Banff Oil Export, SAL (redundant section)	PL1550A	12"	0.051	Steel / flexible	Processed oil	Disconnected at PLEM Tee end	SAL	Surface laid	Out of Use	Seawater/ left open ended
Banff Chemical Injection umbilical	PLU1552	4.75"	1.750	Composite	Methanol	Disconnected at Banff DUTU structure	Disconnected at B5 Tree	Trenched and Buried	Out of Use	Cleaned/ Flushed with seawater (there are known blocked cores in this umbilical which will still contain chemical- previously)
	PLU1553	4.75"	1.625	Composite	Chemicals	Disconnected at Banff DUTU structure	Disconnected at Banff Production Manifold	Trenched and Buried	Out of Use	Seawater/ left open ended
	PLU1554.1-.7	4.75"	1.625	Composite	Chemicals	Disconnected at Banff DUTU structure	Disconnected at Banff Production Manifold	Trenched and Buried	Out of Use	Seawater/ left open ended
Banff Gas Lift / Injection	PL2052**	6"	1.842	Steel	Processed Gas	Disconnected at Gas Injection/ Lift Riser Base	Gas Lift Injection Manifold	Trenched and Buried	Out of Use	Seawater/ left open ended
Banff Gas Lift / Injection	PL2052JB1	2"	0.039	Steel	Processed Gas	Gas lift / injection manifold	Disconnected at B1 tree	Surface Laid	Out of Use	Seawater/ left open ended
Banff Gas Lift / Injection	PL2052JB3	2"	0.039	Steel	Processed Gas	Gas lift / injection manifold	Disconnected at B3 tree	Surface Laid	Out of Use	Seawater/ left open ended
Banff Gas Lift / Injection	PL2052JB4	2"	0.039	Steel	Processed Gas	Gas lift / injection manifold	Disconnected at B4 tree	Surface Laid	Out of Use	Seawater/ left open ended
Banff Production	PL2053	6"	0.039	Steel	Produced Fluids	Disconnected at B4 Tree	Gas Lift/ Injection Manifold	Surface Laid	Out of Use	Seawater/ left open ended

Banff Production	PL2054	6"	0.029	Steel	Produced Fluids	Disconnected at B3 Tree	Gas Lift/ Injection Manifold	Surface Laid	Out of Use	Seawater/ left open ended
Banff Production	PL2055	10"	0.029	Steel	Produced Fluids	Gas Lift/ Injection Manifold	Banff Production Manifold	Surface Laid	Out of Use	Seawater/ left open ended
Banff Production	PL2056	10"	0.036	Steel	Produced Fluids	Gas Lift/ Injection Manifold	Banff Production Manifold	Surface Laid	Out of Use	Seawater/ left open ended
Banff Control Umbilical	PLU4522	3"	1.651	Composite	n/a	Banff DUTU structure	Gas Lift/ Injection Manifold	Surface Laid	Out of Use	Seawater/ left open ended
Banff B1 control umbilical	PL4987	2"	0.039	Composite	Methanol	Gas Lift/ Injection Manifold	Disconnected at B1 tree	Surface Laid	Out of Use	Seawater/ left open ended
Kyle Production	PL1660***	8"	12.023	Steel/ Flexible	Produced Fluids	North Kyle Drill Centre Tie-In Tee	Disconnected at Riser Base	Trenched and Buried	Out of Use	Seawater/ left open ended
Kyle Production (redundant section)	PL1660A	8"	0.400	Steel	Produced fluids	Disconnected cut end	Disconnected at Kyle SSIV	Surface Laid	Out of Use	Seawater/ left open ended
Kyle EHC Umbilical	PL1661.1-22	5.4"	12.033	Composite	Various	Disconnected at Riser Base	Disconnected at Well K14	Trenched and Buried	Out of Use	Seawater/ left open ended
Kyle K13 Production	PL1797	8"	3.370	Steel	Produced Fluids	Disconnected at production Tree 29/2C-K13	Kyle South 12" Tee Structure	Trenched and Buried	Out of Use	Seawater/ left open ended
Kyle 12 Production	PL1798	12"	16.975	Steel	Produced Fluids	Disconnected at Kyle South 12" tee structure	Pipeline flange	Trenched and Buried	Out of Use	Seawater/ left open ended
Kyle 12 Production	PL1798A	12/8"	0.115	Steel	Produced Fluids	Disconnected at production Tree 29/2C-K12z	Kyle South 12" Tee Structure	Surface Laid	Out of Use	Seawater/ left open ended
Kyle South EHC umbilical	PL1799.1-19	5.4"	3.548	Composite	Various	Kyle North SDU/SAM	Kyle South SDU (12" Tee Structure)	Trench and Buried	Out of Use	Seawater/ left open ended

Kyle K13 Umbilical (redundant)	PL1799A	3.85"	0.143	Composite	Various	Kyle North Original SDU/SAM	Disconnected at production Tree 29/2C-K13	Surface Laid	Out of Use	Seawater/ left open ended
Kyle 12 umbilical	PL1800A	4"	0.030	Composite	Various	Kyle South 12" Tee Structure	Disconnected at K12 tree	Surface Laid	Out of Use	Seawater/ left open ended
Kyle K14 Production	PL1887	11"	0.050	Flexible	Produced Fluids	Disconnected at production Tree 29/2C-K14a	Kyle NDC Tee structure	Surface Laid	Out of Use	Seawater/ left open ended
Kyle K14 umbilical (redundant)	PLU1888	11"	0.045	Composite	Various	Kyle North Original SDU/SAM	Disconnected at production Tree 29/2C-K14a	Surface Laid	Out of Use	Seawater/ left open ended
Kyle K15 Production	PL1952(J)	10.75"	0.056	Flexible	Produced Fluids	Disconnected at K15 tree	Kyle South 8" Valve Protection Structure	Surface Laid	Out of Use	Seawater/ left open ended
Kyle K15 umbilical	PLU1953(J)	11"	0.075	Composite	Various	Disconnected at K15 tree	Kyle South 12" Tee Structure	Surface Laid	Out of Use	Seawater/ left open ended
Kyle K13 umbilical	PLU2188	11"	0.154	Composite	Various	Disconnected at production Tree 29/2C-K13	Kyle North SDU/SAM	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North chemical umbilical	PL2189	1.4"	0.045	Composite	Chemicals	Kyle North SDU/SAM	Kyle North Tee Structure	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North Gas Lift	PL2387	4"	10.252	Steel	Processed Gas	Banff Gas Lift/ Injection Manifold	Kyle North Drill Centre Gas Lift Choke Manifold	Trenched and Buried	Out of Use	Seawater/ left open ended
Kyle North gas lift K13	PL2387JK13	2"	0.060	Steel	Processed Gas	Kyle North Drill Centre Gas Lift Choke Manifold	Disconnected at production Tree 29/2C-K13	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North gas lift K14a	PL2387JK14a	2"	0.058	Steel	Processed Gas	Kyle North Drill Centre Gas Lift Choke Manifold	Disconnected at production Tree 29/2C-K14a	Surface Laid	Out of Use	Seawater/ left open ended

Kyle South Gas Lift	PL2388	4"	3.289	Steel	Processed Gas	Kyle North Drill Centre Gas Lift Choke Manifold	Kyle South Drill Centre Gas Lift Choke Manifold	Trenched and Buried	Out of Use	Seawater/ left open ended
Kyle South gas lift K12z	PL2388JK12z	2"	0.051	Steel	Processed Gas	Kyle South Drill Centre Gas Lift Choke Manifold	Disconnected at production Tree 29/2C-K12z	Surface Laid	Out of Use	Seawater/ left open ended
Kyle South gas lift K15	PL2388JK15	2"	0.040	Steel	Processed Gas	Kyle South Drill Centre Gas Lift Choke Manifold	Disconnected at production Tree 29/2C-K15	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North K13 control umbilical	PLU2389	11"	0.083	Composite	Hydraulic fluid	Kyle North gas lift choke manifold	Disconnected at production Tree 29/2C-K13	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North K14a control umbilical	PLU2390	11"	0.083	Composite	Hydraulic fluid	Kyle North gas lift choke manifold	Disconnected at production Tree 29/2C-K14	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North control umbilical	PLU2391	11"	0.127	Composite	Methanol	Kyle North SDU/ SAM	Kyle North gas lift choke manifold	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North K15 control umbilical	PLU2392	11"	0.054	Composite	Hydraulic fluid	Kyle South gas lift choke manifold	Disconnected at production Tree 29/2C-K15	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North control umbilical	PLU2393	11"	0.095	Composite	Methanol	Kyle South 12" Tee Structure	Kyle South gas lift choke manifold	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North K12z control umbilical	PLU2394	11"	0.086	Composite	Hydraulic fluid	Kyle South gas lift choke manifold	Disconnected at production Tree 29/2C-K12z	Surface Laid	Out of Use	Seawater/ left open ended
Kyle North control umbilical	PLU2520	6"	0.150	Composite	Various	Banff gas lift injection manifold	Banff gas lift choke manifold	Surface Laid	Out of Use	Seawater/ left open ended

Banff gas export SSIV umbilical	PLU3106	3"	0.536	Composite	Hydraulic Fluid	Banff DUTU structure	Banff gas export SSIV structure	Surface Laid	Out of Use	Seawater/ left open ended
Kyle South umbilical	PL1800	5.5"	17.30	Composite	Various	Curlew DUTU	Disconnected at Kyle South 12" tee structure	Trench and Buried	Out of Use	Inhibited water / hydraulic fluid HW540
Kyle ECI umbilical	PLU3117	4"	12.292	Composite	Various	Kyle DUTU SSIV structure	Kyle North SDU/SAM	Trench and Buried	Out of Use	Seawater/ left open ended
Banff gas lift/injection SSIV umbilical	PL5074	4"	0.175	Composite	Various	Banff DUTU structure	Gas Lift/ Injection SSIV Structure	Surface Laid	Out of Use	Seawater/ left open ended
Banff gas lift/injection SSIV umbilical	PL5075	4"	0.175	Composite	Hydraulic Jumper	Banff DUTU structure	Gas Lift/ Injection SSIV Structure	Surface Laid	Out of Use	Seawater/ left open ended
Banff gas lift/injection SSIV umbilical	PLU5076	4"	0.175	Composite	Electrical Jumper	Banff DUTU structure	Gas Lift/ Injection SSIV Structure	Surface Laid	Out of Use	Seawater/ left open ended
Banff oil export disconnected /redundant spool	PL5073	12"	0.07	Steel	Processed Oil	Disconnected cut end	Disconnected cut end	Surface Laid	Out of Use	Seawater/ left open ended

*Pipeline PL1549 is served by the Gas Export SSIV Structure.

** Pipeline PL2052 is served by the Banff Gas Lift SSIV/ Injection Structure

*** Pipeline PL1660 is served by the Kyle SSIV Structure.

Table 2.4: Subsea Pipeline Structures					
Subsea installations including stabilisation features	Number	Size (m)/ Weight (Te)	Location		Comments/ Status
Gas Export SSIV Structure	1	L 10 x W 5.5 x H 3.9 63 Te	WGS84 Decimal	57.001662°N	Gravity Based. Associated with PL1549 Contents have been flushed.
				01.294756°E	
			WGS84 Decimal Minute	57° 00' 5.9832 N	
				01° 17' 41.1220 E	
Banff Gas Lift SSIV / Injection Structure	1	L 8.7 x W 8.3 x H 3.4 40 Te	WGS84 Decimal	57.001748°N	Gravity Based 0.390 m below mudline Associated with PL2052 Contents have been flushed.
				01.296102°E	
			WGS84 Decimal Minute	57° 00' 6.2928 N	
				01° 17' 45.9670 E	
Kyle SSIV Structure	1	L 6 x W 7.5 x H 3.2 80 Te	WGS84 Decimal	57.002870°N	Gravity Based. Associated with PL1660 Contents have been flushed.
				01.291173°E	
			WGS84 Decimal Minute	57°00'10.3320 N	
				01°17'28.2230 E	
Banff to KN Umbilical Wet Splice at KN	1	L 3 x W 1.2 x H 0.8 3 Te	WGS84 Decimal	56.914827°N	Weight is approximate
				01.221441°E	
			WGS84 Decimal Minute	56°54'53.38 N	
				01°13'17.19 E	
KN to KS Umbilical Wet Splice at KN	1	L 2.6 x W 1.2 x H 0.6 1.5Te	WGS84 Decimal	56.914827°N	Weight is approximate
				01.221441°E	
			WGS84 Decimal Minute	56° 54' 53.40 N	
				01° 13' 18.41 E	

Table 2.5: Banff and Kyle Pipelines Stabilisation Features

Stabilisation Feature	Total Number	Total weight (Te)	Locations	Exposed/Buried/Condition
Concrete Mattresses ^{Note 1} (6 m x 3 m x 0.15 m)	1,230	8,392	Various locations across pipeline infrastructure	Latest survey information indicates that there is a mixture of some mattresses that are doubled up, rock placement, shared with other pipelines and multiple overlaps.
Concrete Mattresses ^{Note 2} (6 m x 3 m x 0.3 m)	210	1,798	Various locations across pipeline infrastructure	Latest survey information indicates that there is a mixture of some mattresses that are doubled up, rock placement, shared with other pipelines and multiple overlaps.
Grout Bags (25 kg bags) ^{Note 3}	12,250	306.25	Various locations across pipeline infrastructure	Latest survey information indicates that there is a mixture of some grout bags covered by mattresses and some exposed.
Rock placement ^{Note 4}	N/A	Estimated 8,010	Various locations for spot rock placement and crossings at PL1660	Exposed
Rock placement ^{Note 4}	N/A	Estimated 4,830	Banff FPSO 6" Gas Lift / Injection flowline tie-in arrangement (PL2052)	Exposed
Rock placement ^{Note 4}	N/A	Estimated 21.8	4" Gas Lift Pipeline (PL2387 & PL2388)	Exposed
Rock placement ^{Note 4}	N/A	Estimated 5,000	Various locations across pipeline PL1549	Exposed

Notes:

1. Concrete mattresses are: 6 m x 3 m x 0.15 m (Approx. mass of each mattress 6.7 Te)
2. Concrete mattresses are: 6 m x 3 m x 0.3 m (Approx. mass of each mattress 8.3 Te)
3. The quantity of grout bags is an estimate as the as-built data is not explicit.
4. All rock placement quantities are estimates based on as-built data sheets.

2.3 BANFF AND KYLE WELLS

Table 2.6: Banff and Kyle Wells Information				
Subsea Wells				
WONS Name Current Bore	CNR Well Name	Designation	Status	Category of Well
29/02a-B1	29/02a-B1	Gas Injector	Shut-in	SS 4-0-1
29/02a-B2	29/02a-B2	Producer	Shut-in	SS 4-0-1
29/02a-B3Z	29/02a-B3Z	Producer with Gas Lift	Shut-in	SS 3-0-1
29/02a-B4	29/02a-B4	Producer with Gas Lift	Shut-in	SS 4-0-1
29/02a-B5X	29/02a-B5X	Producer	Shut-in	SS 3-0-1
29/02c-12Z	29/02c-K12	Producer	Shut-in	SS 3-0-1
29/02c-13	29/02c-K13	Producer	Shut-in	SS 3-0-1
29/02c-14A	29/02c-K14	Producer	Shut-in	SS 3-0-1
29/02c-15	29/02c-K15	Producer	Shut-in	SS 3-0-1
29/02a-10	29/02a-10	E&A	Suspended	SS 0-0-1
29/02a-6z	29/02a-6	E&A	Suspended	SS 0-0-1
29/02a-7	29/02a-7	E&A	Suspended	SS 0-0-1
29/02c-11Y	29/02c-11Y	E&A	Suspended	SS 0-0-1
29/02a-4	29/02a-4	E&A	Abandoned	SS 0-0-0
29/02c-8z	29/02c-8z	E&A	Abandoned	SS 0-0-0
29/02c-9	29/02c-9	E&A	Abandoned	SS 0-0-0
29/02c-14	29/02c-14	E&A	Suspended	SS 0-0-1
22/27a-1	22/27a-1	E&A	Abandoned	SS 0-0-0
22/27a-2	22/27a-2	E&A	Abandoned	SS 0-0-0
22/27a-03Y	22/27a-03Y	E&A	Abandoned	SS 0-0-0
22/27a-04z	22/27a-04z	E&A	Abandoned	SS 0-0-0
29/02-1	29/02-1	E&A	Abandoned	SS 0-0-0
29-02a-2	29-02a-2	E&A	Abandoned	SS 0-0-0
29/02a-3	29/02a-3	E&A	Abandoned	SS 0-0-0

Well abandonment categorisation reports have been prepared for the Banff and Kyle wells, in accordance with the OGUK Well Decommissioning Guidelines, Issue 6, June 2018.

2.4 BANFF AND KYLE DRILL CUTTINGS

Table 2.7: Banff and Kyle Drill Cutting Pile Information		
Location of Pile Centre (Latitude/ Longitude)	Seabed Area (m ²)	Estimated Volume of Drill Cuttings (m ³)
Banff Fields	4,886	3,580
Kyle Fields	4,271	1,432

The historic drill cuttings pile at Banff is estimated to cover approximately 4,886 m² with an estimated volume of 3,580 m³. It was created as a result of the drilling of nine wells, four of which were drilled using oil based mud (OBM) (wells B1, B2, B3 and B4; ERT, 2008). The Kyle fields historic drill cuttings pile is estimated to cover approximately 4,271 m² with an estimated volume of 1,432 m³. It was created as a result of the drilling of six wells, two of which were drilled using OBM; K12 at the Kyle South drill centre and K13 at the Kyle North drill centre. The drill cuttings are compliant and do not breach the thresholds in the OSPAR Recommendation 2006/5 Guidelines. Therefore the intention is to follow the recommendation in OSPAR 2006/5 and leave the cutting piles undisturbed to degrade naturally.

No significant cuttings mounds were identified from the echosounder and SSS bathymetry results obtained during the Fugro 2020 survey from the 15 wells being drilled in total across the 3 drill centres.

2.5 INVENTORY ESTIMATES

Tables 2.8 and 2.9 provide an estimate of the total weight of materials associated with the Banff and Kyle installations and pipelines. Please refer to the Banff and Kyle Decommissioning Programmes Environmental Appraisal for further details.

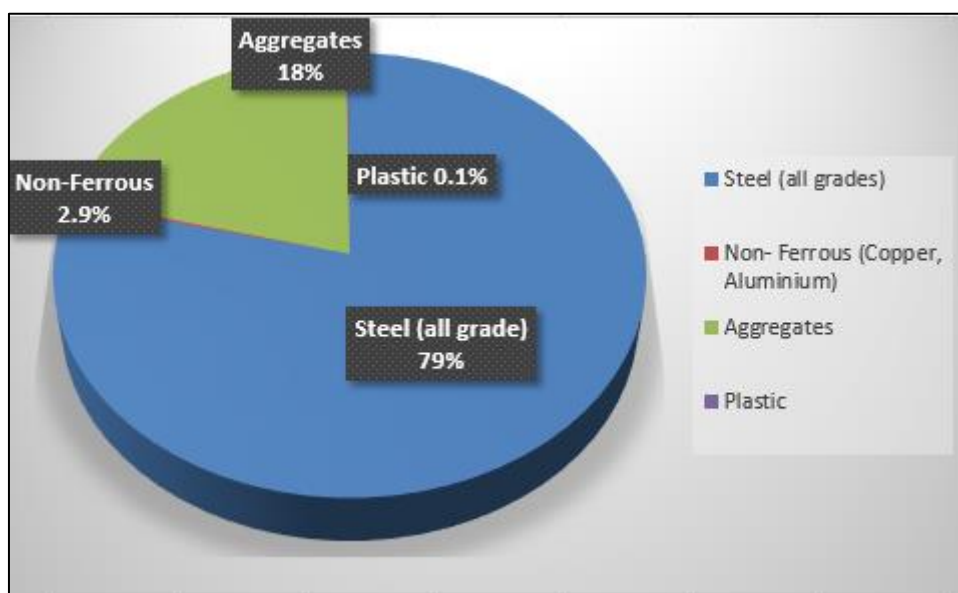
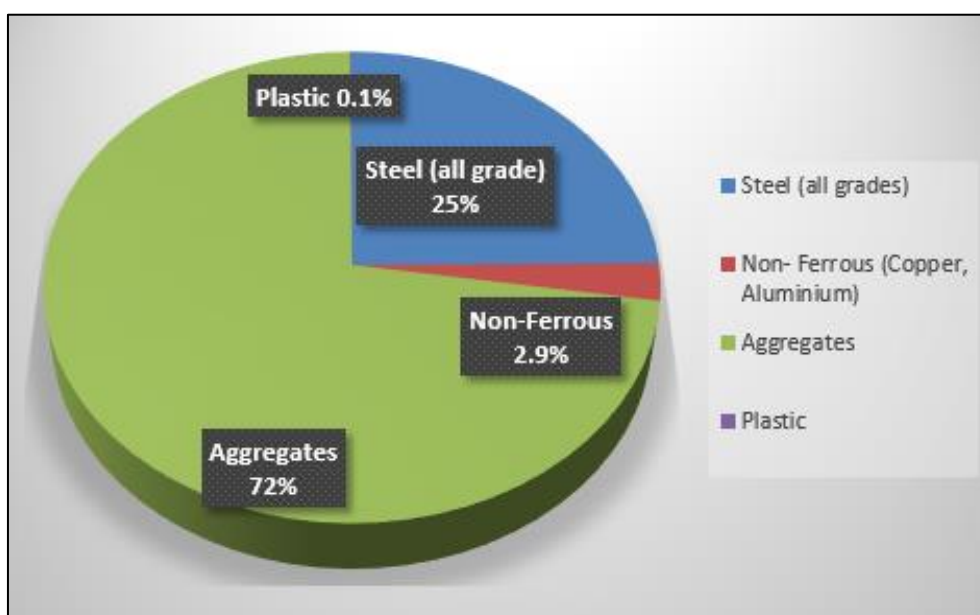
A further breakdown of the inventory estimates for the subsea installations and pipeline is provided in Figure 2.1 and Figure 2.3 respectively.

Table 2.8: Inventory of the material associated with Banff and Kyle Installations

Items	Description	Weight (tonnes)
Metals	Steel (all grades)	2,955.44
	Non- Ferrous (Copper, Aluminium)	9.01
Concrete	Aggregates (mattresses and grout bags)	774.25
Plastic	Rubbers, polymers	7.7
Hazardous	Residual Fluids (hydrocarbons, chemicals)	Trace
	NORM scale	To be determined
Other		0
Total for Banff and Kyle fields		3,746.4

Table 2.9: Inventory of the material associated with Banff and Kyle Pipelines

Items	Description	Weight (tonnes)
Metals	Steel (all grades)	3,604.13
	Non- Ferrous (Copper, Aluminium)	370.37
Concrete	Aggregates (mattresses and grout bags)	10,496.25
Plastic	Rubbers, polymers	15.43
Hazardous	Residual Fluids (hydrocarbons, chemicals)	Trace
	NORM scale	To be determined
Other	(Glass filament, Silica)	Trace
Total for Banff and Kyle fields		14,486.18

Figure 2.1: Pie Chart of Estimated Inventories- Subsea Installations (including stabilisation materials)**Figure 2.2: Pie Chart of Estimated Inventories- Pipelines (including stabilisation materials)**

3. REMOVAL AND DISPOSAL METHODS

Waste will be dealt with in accordance with the Waste Framework Directive. The re-use of any infrastructure, or parts thereof, is first in the order of preferred decommissioning options. Options for re-use of an infrastructure, or parts thereof are currently under investigation. Waste generated during decommissioning will be segregated by type and periodically transported to shore in an auditable manner through licenced waste contractors.

Article 4 of the EU Waste Framework Directive (Directive 2008/98/EC) sets out the five steps to manage waste ranked according to environmental impact (also known as the waste hierarchy). In line with the waste hierarchy, the re-use of an installation (or parts thereof) is first in the order of preferred decommissioning options. CNRI will follow the principles of the waste hierarchy (Figure 3.1) in order to minimise waste production resulting from any removal of subsea infrastructure and pipelines (including stabilisation materials).

Recovered infrastructure will be returned by CNRI to shore and transferred to a suitably licenced decommissioning facility and it is expected that the recovered infrastructure will be cleaned before largely recycled.

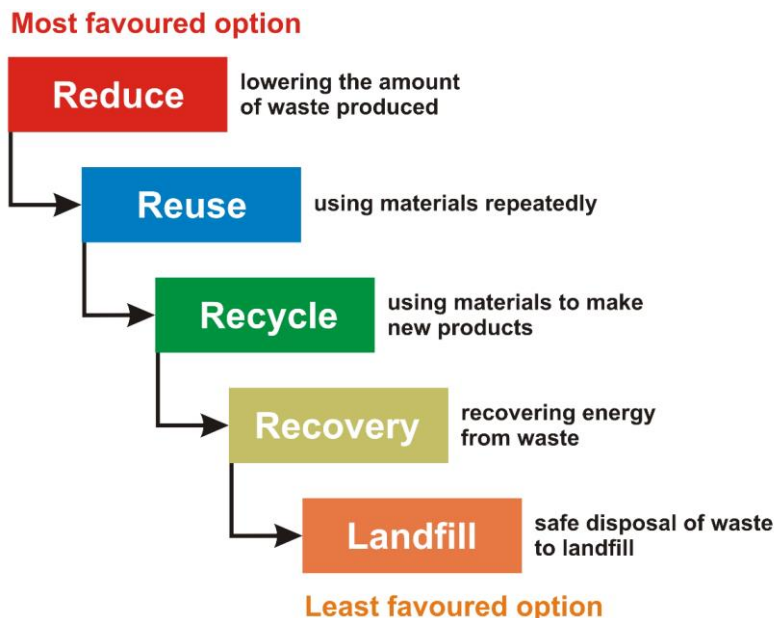
Concrete mattresses and grout bags that are recovered, will be cleaned of marine growth if required, and either reused, recovered as aggregate for infrastructure projects or disposed of in landfill sites.

Appropriately licenced waste management facilities will be identified through a selection process that will ensure that the chosen facilities demonstrate a proven record of waste stream management throughout the deconstruction process, the ability to deliver innovative reuse/ recycling options, and ensure the aims of the waste hierarchy are achieved.

Geographic locations of potential disposal yards may require the consideration of Trans Frontier Shipment of Waste (TFSW), including hazardous materials. Early engagement with the relevant waste regulatory authorities will ensure that any issues with TFSW are addressed before the shipment of any waste.

CNRI will engage with other companies and industries to identify potential reuse opportunities. CNRI recognises that such opportunities are best achieved through the tendering and selection of a waste management contractor with expert knowledge and experience in this area.

Figure 3.1: Waste Hierarchy



3.1 SUBSEA INSTALLATIONS AND STABILISATION FEATURES

Table 3.1: Subsea Installations and Stabilisations Features			
Subsea Installations and Stabilisation Features	Quantity	Option	Disposal Route (if applicable)
Subsea Manifold	5	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Tee Protection Structure	3	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
UTA/ DUTU Protection Structure	2	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Riser Base	5	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Tether Base	4	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
SDU/ SAM structure	2	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Suction Base	1	Full recovery as part of decommissioning Campaign- in the event the structure cannot be recovered, further options to decommission the item will be discussed with the Regulator.	Return to shore for reuse, recycling or disposal
Pipeline End Manifold (PLEM) Tee	1	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Anode Skids	8	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
XT	9	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Guide Base	5	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
FSO Mooring Piles (c/w mooring chain)	8	Partial recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Tee connector	1	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Concrete Mattresses	1,550	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal
Grout Bags	13,750	Full recovery as part of decommissioning campaign	Return to shore for reuse, recycling or disposal

3.2 PIPELINES

Decommissioning Options:

*Key to Options

- | | |
|--------------------------------------|-------------------------------------|
| 1) Re-use | 2a) Cut and Lift Deburial |
| 2b) Reverse Reel without Deburial | 2c) Reverse Reel with Deburial |
| 2d) Lift and Cut without Deburial | 2e) Lift and Cut with Deburial |
| 3a) Retrench and Bury entire Line | 3b) Rock Placement over Entire Line |
| 4a) Rock Placement over Exposures | 4b) Trench & Bury Exposures |
| 4c) Remove Exposures | 4d) Accelerated Decomposition |
| 5) Remove Ends & Remediate Snag Risk | 6) Leave as-is |

Table 3.2: Pipeline or Pipeline Groups Decommissioning Options

Pipeline or Group (as per PWA)	Condition of line/ group (Surface laid/ Trenched/ Buried/ Spanning)	Whole or part of pipeline/ group	Decommissioning options considered
Group 1: Rigid Pipelines, Trenched and Buried. PL1546, PL1547, PL1548, PL1550, PL1660, PL1797, PL1798 & PL2388	Trenched and Buried	Whole	2a, 4a, 4c & 5
Group 2: Flexible/ Umbilicals, Trenched and Buried PLU2052, PLU1552.1&2, PL1800, PL1661.1-22, PLU1553, PL1554.1-7, PL3117 & PL1799.1-8	Trenched and Buried	Whole	2b, 4a & 5
Group 3: Flexibles/ Umbilicals, Surface laid PLU4522 & PLU3106	Surface Laid	Whole	Full removal
Group 4: Rigid Pipelines, Trenched and Rock Covered PL1549 & PL2387	Trenched and Rock Covered	Whole	2a, 4a & 5
Group 5: Spools and Jumpers PL1546, PL1547, PL1550, PLU1552, PLU1553, PLU1554.1-7, PLU4522, PL2052, PL1660, PL1797, PL1548, PL1798, PL1799.1-19, PLU3117, PL2387, PL154, PL2388, PL1549A, PL1550A, PL2052JB1, PL2052JB3, PL2052JB4, PL2053, PL2054, PL2055, PL2056, PL4987, PL1660A, PL1798A, PL1800A, PL1799A, PL1887, PLU1888, PL1952(J), PLU1953(J), PLU2188, PL2189, PL2387JK13, PL2387JK14a, PL2388JK12Z, PL2388KJ15, PLU2389, PLU2390, PLU2391, PLU2392, PLU2393, PLU2394, PLU2520, PL1546(J)B5, PL3106, PL5073, PL5074, PL5075 & PLU5076	Surface laid	Whole	Full removal

3.2.1 COMPARATIVE ASSESSMENT METHOD

Comparative Assessment is integral to the overall planning and approval of decommissioning options. CNRI's Comparative Assessment process is aligned with the Oil & Gas UK Guidelines for Comparative Assessment in Decommissioning Programmes and OPRED Guidance Notes for the Decommissioning of Offshore Oil and Gas Installations and Pipelines.

CNRI have scoped all of the infrastructure into logical groupings. All feasible decommissioning options for each of the infrastructure groups have been identified, assessed, ranked and screened, utilising the OPRED Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines to carry forward credible decommissioning options to be assessed through the Comparative Assessment process.

The Comparative Assessment process uses five assessment criteria, which are; Safety, Environment, Technical, Societal and Economic to compare the relative merits of each credible decommissioning option for each group of infrastructure. The 5 differentiating criteria and associated sub-criteria carry weightings which reflects CNRI's position to prioritise Safety considerations. These weightings have been used on the previous three successful decommissioning projects executed by CNRI.

An independent consultancy utilising its bespoke Multi Criteria Decision Analysis (MCDA) process was employed to facilitate Comparative Assessment workshops. The workshops were attended by specialists from the Operator, Fields Partners and representatives from key stakeholders namely:

- Scottish Fishermen's Federation (SFF);
- Health and Safety Executive;
- OPRED EMT;
- OPRED ODU;
- Dana Petroleum; and
- Premier Oil

At each workshop, each decommissioning option for each infrastructure grouping was assessed against each of the assessment criteria utilising a pairwise comparison system. The relative importance of each of the criteria was assessed in a qualitative way, supported by quantification where appropriate.

The process provides for differentiation between decommissioning options in each infrastructure group taking account of stakeholder views.

Table 3.3: Outcomes of the Comparative Assessment

Pipeline or Group	Recommendation Option*	Justification
Group 1: Rigid Pipelines, Trenched and Buried. PL1546, PL1547, PL1548, PL1550, PL1660, PL1797, PL1798 & PL2388	Option 4a- Rock Placement over areas of spans/ exposures/ shallow burial	This results in minimal disturbance to the seabed, lower energy use and reduced risk to personnel. Once decommissioned, the remaining sections of the pipelines can be expected to remain buried and stable throughout their lengths.
Group 2: Flexible/ Umbilicals, Trenched and Buried PL2052, PL1552.1&2, PL1553, PL1800, PL1661.1-22, PL1554.1-7, PL3117 & PL1799.1-8	Option 4a- Rock Placement over areas of spans/ exposures/ shallow burial	Note: there are no areas of spans or exposures associated with the lines in Group 2. This results in minimal disturbance to the seabed, lower energy use and reduced risk to personnel. Once decommissioned, the remaining sections of the pipelines can be expected to remain buried and stable throughout their lengths.
Group 3- Flexibles/ Umbilicals, Surface Laid PLU4522 & PLU3106	Full removal	Items are surface laid and recoverable.
Group 4: Rigid Pipelines, Trenched and Rock Covered PL1549 & PL2387	Option 4a- Rock Placement over areas of spans/ exposures/ shallow burial	Note: there are no areas of spans or exposures associated with the lines in Group 4. This results in minimal disturbance to the seabed, lower energy use and reduced risk to personnel. Once decommissioned, the remaining sections of the pipelines can be expected to remain buried and stable throughout their lengths.

Group 5: Spools and Jumpers PL1546, PL1547, PL1550, PLU1552, PLU1553, PLU1554.1-7, PLU4522, PL2052, PL1660, PL1797, PL1548, PL1798, PL1799.1-19, PLU3117, PL2387, PL154, PL2388, PL1549A, PL1550A, PL2052JB1, PL2052JB3, PL2052JB4, PL2053, PL2054, PL2055, PL2056, PL4987, PL1660A, PL1798A, PL1800A, PL1799A, PL1887, PLU1888, PL1952(J), PLU1953(J), PLU2188, PL2189, PL2387JK13, PL2387JK14a, PL2388JK12Z, PL2388KJ15, PLU2389, PLU2390, PLU2391, PLU2392, PLU2393, PLU2394, PLU2520, PL1546(J)B5, PL3106, PL5073, PL5074, PL5075 & PLU5076	Full removal	Items are surface laid and recoverable.
Notes: 1- Where buried in deposited rock, remedial work may be required to bury the end of the pipeline where it protrudes out from the rock. As a contingency measure, small deposits of rock may need to be added to the existing rock to make sure that the pipeline ends remain buried.		

* Recommendation option carried forward from the Comparative Assessment.

3.3 PIPELINE STABILISATION FEATURES

Table 3.4: Pipeline Installations stabilisation Features			
Stabilisation Features	Number	Option	Disposal Route (If Applicable)
Concrete Mattresses (6 x 3 x 0.15 m)	1,230	Full Removal- it is intended that the mattresses will be recovered to shore, however, in the event of practical difficulties OPRED will be consulted.	Recover and transport ashore for recycling or other waste treatment as appropriate.
Concrete Mattresses (6 x 3 x 0.30 m)	210	Full Removal- it is intended that the mattresses will be recovered to shore, however, in the event of practical difficulties OPRED will be consulted.	Recover and transport ashore for recycling or other waste treatment as appropriate.
Grout Bags	12,250 (estimated)	Full removal is intended with an option to reuse on location	Recover and transport ashore for recycling or other waste treatment as appropriate.
Rock placement (Te)	17,861.8 Te	To remain in place.	N/A

There are a number of concrete mattresses and rock placement associated with the Banff and Kyle pipeline crossings and these have been accounted for in this DP.

3.4 WELLS

Table 3.5: Well Decommissioning

The wells for the Banff and Kyle fields covered by this Decommissioning Programmes will be decommissioned, as listed in Section 2.3 (Table 2.6), in accordance with Oil & Gas UK Guidelines for the Suspension and Abandonment of Wells, Issue 6, June 2018.

A Well Operations Notification System (WONs) application update will be submitted along with an appropriate Well Intervention Application (WIA) permit, via the UK Energy Portal, in support of each well decommissioning.

3.5 DRILL CUTTINGS

Table 3.6: Banff and Kyle Drill Cuttings Pile

How many drill cuttings piles are present? Two		
Review of Pile Characteristic	Pile 1- Banff Fields	Pile 2- Kyle Fields
How has the cuttings pile been screened? Desktop study and Pre-decommissioning survey	Y	Y
Dates of sampling (if applicable)	2020	2020
Sampling to be included in pre-decommissioning survey?	Y	Y
Does it fall below both OSPAR thresholds?	Y	Y
Will the drill cuttings pile have to be displaced in order to remove the infrastructure?	N	N
What quantity (m3) would have to be displaced/removed?	3,580	1,432
Will the drill cuttings pile have to be displaced in order to remove any pipelines?	N/A	N/A
What quantity (m3) would have to be displaced/removed?	N/A	N/A
Have you carried out a Comparative Assessment of options for the Cuttings Pile?	N/A	N/A

The oil release rate falls below the OSPAR thresholds therefore no comparative assessment was required.

3.6 WASTE STREAMS

The CNRI Waste Management Strategies specify the requirements for the contractor waste management plan. The waste management plan will be developed once contracts have been awarded during the project execution phase. The plans shall adhere to the waste stream licensee conditions and controlled accordingly. Discussion with the regulator will ensure that all relevant permits and consents are in place.

Table 3.7: Waste Streams Management Methods

Waste Stream	Removal and Disposal Method (For recovered assets)
Bulk liquids	Bulk flushing/ de-oiling of Banff and Kyle pipelines was covered under the Banff and Kyle Decommissioning Programme for FPSO and FSO Float-off.
Marine Growth	Some marine growth may be removed offshore. Onshore disposal will be managed by the selected waste management contractor. Marine Growth will also be disposed of according to guidelines.
NORM/ LSA Scale	Any NORM contaminated material in recovered assets will be returned to shore under the appropriate licence or permit to be disposed of by the selected onshore waste management contractor.
Asbestos	No Asbestos is expected, however if any is found it will be contained and taken onshore for disposal.

Other Hazardous wastes	Will be recovered onshore and will be managed by the selected waste management contractor/s and disposed of under appropriate permit. The inventory of hazardous materials will identify hazardous materials present and CNRI's risk management processes will be used to prevent spills offshore
Onshore Dismantling sites	Appropriate licenced contractors and sites will be selected. Facilities selected must demonstrate competence and proven disposal track record and waste stream management & traceability throughout the deconstruction process and demonstrate their ability to deliver innovative recycling options

Table 3.8: Inventory Disposition			
	Total Inventory Tonnage (Te)	Planned tonnage to shore (Te)	Planned left <i>in situ</i> (Te)
Pipelines	14,486.18	11,364.18	3,122
Subsea Installations	3,746.4	3,080.4	666

All recovered material will be brought onshore for re-use, recycling or disposal. It is not possible to predict the market for reusable materials with any confidence; so, the figures in Table 3.9 are disposal aspirations.

Table 3.9: Recovered Inventory Reuse, Recycle, Disposal Aspirations			
	Reuse	Recycle	Disposal
Pipelines	<5%	>95%	<5%
Subsea Installations	<5%	>95%	<5%

Please refer to the Banff and Kyle Environmental Appraisal for further details.

4. ENVIRONMENTAL APPRAISAL

4.1 ENVIRONMENTAL SENSITIVITIES (SUMMARY)

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Feature
Conservation interests	<p>Banff and Kyle fields are located partly within the conservation site, the East of Gannet and Montrose Fields MPA. Approximately 10 km due North of the Kyle Fields. This conservation site has been designated for the protection of ocean quahog habitat and aggregations. No living specimens of <i>A. islandica</i>, or infaunal siphons were observed during site specific environmental survey data at the Banff and Kyle fields. There was no evidence of any Annex I protected features in the area.</p> <p>Seapens and burrowing mega fauna habitat was present within both the Banff and Kyle fields. According to the SACFOR classification, the seapen <i>P. phosphorea</i> ranged from 'occasional' to 'common' during the Banff survey. <i>V. mirabilis</i> was 'frequent' at one station and 'absent' at all others. Faunal burrows between 3-15 cm were either 'frequent' or 'common' at the four sites where they were present (Fugro, 2020a). Faunal burrows sized 3-15 cm were considered either 'common' or 'frequent' at all Kyle North sites. At Kyle South the SACFOR classification of faunal burrows was 'common' at all but one site which was considered 'abundant'. Burrows >15 cm were 'absent' at all stations and 'frequent' along both visual transects (Fugro, 2020b).</p>
Seabed Habitats and Fauna	<p>The water depths across Banff and Kyle are between 90- 95 m. The Banff Fields is located partly within A5.27 'Deep circalittoral sand', and also within an area of A5.37 'Deep circalittoral mud'. The Kyle Fields is almost exclusively located within A5.37 'Deep circalittoral mud'. Directly to the south of the Banff Fields is a small patch of A5.15 'Deep circalittoral coarse sediment' (EMODnet, 2019). Side-scan sonar (SSS) data revealed regions of seabed which had higher sonar reflectivity corresponded with regions of A5.44 'Circalittoral mixed sediment' in the Banff Fields (Fugro, 2020a).</p> <p>Benthic fauna was much the same between the Banff and Kyle fields. The dominant taxa observed within both the sandy and mixed substrate at the Banff Fields, were sea pens (<i>Pennatula phosphorea</i>), hermit crabs (Paguridae) and anemones (Actiniaria including <i>Hormathiidae</i> and <i>Epizoanthus papillosus</i>) (Fugro, 2020a). Sea urchins (<i>Gracilechinus acutus</i>) were additionally amongst the dominant species within the Kyle Fields (Fugro, 2020b). Bioturbation was evident across both survey areas (Fugro 2020a, 2020b).</p> <p>Seapens and burrowing megafauna communities were present within both the Banff and Kyle fields. According to the SACFOR classification, the seapen <i>P. phosphorea</i> ranged from 'occasional' to 'common' during the Banff survey. <i>V. mirabilis</i> was 'frequent' at one station and 'absent' at all others. Faunal burrows between 3-15 cm were either 'frequent' or 'common' at the four sites where they were present (Fugro, 2020a). Faunal burrows sized 3-15 cm were considered either 'common' or 'frequent' at all Kyle North sites. At Kyle South the SACFOR classification of faunal burrows was 'common' at all but one site which was considered 'abundant'. Burrows >15 cm were 'absent' at all stations and 'frequent' along both visual transects taken from the site specific survey done at Banff and Kyle.</p>

Fish	<p>Banff and Kyle fields are located within the nursery grounds in the vicinity of the project area: anglerfish (<i>Lophius piscatorius</i>), blue whiting (<i>Micromesistius poutassou</i>), cod, European hake (<i>Merluccius merluccius</i>), haddock (<i>Melanogrammus aeglefinus</i>), herring (<i>Clupea harengus</i>), ling (<i>Molva molva</i>), mackerel, Norway pout, plaice (<i>Pleuronectes platessa</i>), sandeel, spurdog (<i>Squalus acanthias</i>) and whiting (<i>Merlangius merlangus</i>) (Coull <i>et al.</i>, 1998; Ellis <i>et al.</i>, 2012).</p> <p>Fisheries sensitivity maps indicate that the probability of significant aggregations of juveniles of these species in the project area is low (Ellis <i>et al.</i>, 2012).</p> <p>Aires <i>et al.</i> (2014) provides modelled spatial representations of the predicted distribution of 0 age group fish. The modelling indicates the presence of juvenile fish (less than one year old) for multiple species: anglerfish, blue whiting, European hake, haddock, herring, mackerel, horse mackerel (<i>Trachurus trachurus</i>), Norway pout, plaice, sprat (<i>Sprattus sprattus</i>), and whiting. Across the project area, the probability of juvenile fish aggregations occurring is low for all species (<0.15).</p>
Marine Mammals	<p>Harbour porpoise (<i>Phocoena phocoena</i>), short beaked common dolphin (<i>Delphinus delphis</i>), white-beaked dolphin (<i>Lagenorhynchus albirostris</i>), Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>) and minke whale (<i>Balaenoptera acutorostrata</i>) are known to be visitors to the waters surrounding the project area (Reid <i>et al.</i>, 2003; Hammond <i>et al.</i>, 2017).</p> <p>Seal densities are very low across the Banff and Kyle area due to its distance from shore (Russell <i>et al.</i>, 2017 and Marine Scotland, 2017).</p>
Seabirds	<p>According to the density maps provided in Kober <i>et al.</i> (2010), the following species could be found within the Banff and Kyle fields area: northern fulmar (<i>Fulmarus glacialis</i>), Manx shearwater (<i>Puffinus puffinus</i>), European storm-petrel (<i>Hydrobates pelagicus</i>), northern gannet (<i>Morus bassanus</i>), Arctic skua (<i>Stercorarius parasiticus</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 blackbacked gull (<i>Larus fuscus</i>), herring gull (<i>Larus argentatus</i>), Arctic tern (<i>Sterna paradisaea</i>), common guillemot (<i>Uria aalge</i>), razorbill (<i>Alca torda</i>), little auk (<i>Alle alle</i>), Atlantic puffin (<i>Fratercula arctica</i>) and pomarine skua (<i>Stercorarius pomarinus</i>).</p> <p>Seabird Oil Sensitivity Index (SOSI) identifies areas at sea where seabirds are likely to be most sensitive to surface pollution (Webb <i>et al.</i>, 2016). Seabird vulnerability in Blocks 22/27, 29/2 and 29/7 is low throughout the year with no data for November. Block 29/11 experiences a Very High SOSI value in the months of September and October (Webb <i>et al.</i>, 2016). The risk of an oil spill from the proposed operations in the project area is considered remote and therefore the overall risk to birds is considered negligible.</p>
Commercial Fisheries	<p>The Banff and Kyle fields lie in the International Council for the Exploration of the Seas (ICES) Rectangles 42F1 and 43F1 (Scottish Government, 2020).</p> <p>ICES rectangle 42F1 has predominantly been targeted for shellfish in recent years, whilst the adjacent ICES rectangle 43F1 experiences a much greater amount of demersal fishing. The total annual landings for the Banff and Kyle Area (ICES rectangles 42F1 and 43F1) were ≤1% of the total landings within the UKCS for each of the five most recent fishing years (Scottish Government, 2020).</p> <p>Overall effort was low for 42F1. In the years preceding 2018, fishing effort has traditionally been higher during the summer months (Scottish Government, 2020).</p> <p>Comparatively, fishing effort in ICES rectangle 43F1 is much lower. In 2019, effort was highest in January (only 6 days), accounting for 21% of the total number of days fished, with the other disclosive months contributing for the remaining fishing effort. In total there were 28 days of fishing effort in 2019 in 43F1 which is very low (Scottish Government, 2020). Both in 2018 and consistently in past years fishing effort has been greater in rectangle 42F1 compared to 43F1.</p>

	Trawls were the most utilised gear in rectangle 42F1 and 43F1. Trawls contributed between 86% and 99% of the total fishing effort in rectangles 43F1 and 42F1 respectively (Scottish Government, 2020). Vessel Monitoring System (VMS) data indicates that <i>Nephrops</i> fishing occurs in hotspots to the east of Banff and Kyle (< 1 km away), and southwest of Kyle (< 10 km away). To the southwest of Kyle (~10 km away) is an area of pelagic fishing targeting herring (NMPI, 2020).
Other Users of the Sea	Across the Banff and Kyle area, sea users other than commercial fisheries mainly relate to offshore oil and gas. The Banff and Kyle fields are in areas of either low or very low shipping intensity (Oil and Gas Authority, 2016). The Banff and Kyle fields are in a mature area of the CNS with extensive oil and gas development.
Atmosphere	The majority of atmospheric emissions for the decommissioning of Banff and Kyle relate to vessel use or are associated with the recycling of material returned to shore. The estimated CO ² emissions to be generated by the selected decommissioning options will be approximately 6,652 Te. This equates to 0.08% of the total UKCS vessel emissions, excluding fishing vessels, in 2017 (7,800,000 Te; BEIS, 2019). Furthermore, in line with the OGA's (2021) expectations, CNRI are dedicated to the reduction of greenhouse gas emissions from all decommissioning operations, as far as is reasonable for each project.'
Onshore Communities	Waste generated during decommissioning will be transported to shore in an auditable manner through licenced waste contractors, as managed under Banff and Kyle's waste management plan (WMP). Wastes will be treated using the principles of the waste hierarchy, as defined in the WMP, focusing on the reuse and recycling of wastes where possible. Raw materials will be returned to shore with the expectation to recycle the majority of the returned material. There may be instances where infrastructure returned to shore is contaminated (e.g. by NORM, hazardous, and/or special wastes) and cannot be recycled. In these instances, the materials will require disposal. However, the weight and/or volume of such material is not expected to result in substantial landfill use.

4.2 POTENTIAL ENVIRONMENTAL IMPACTS AND THEIR MANAGEMENT

ENVIRONMENTAL APPRAISAL SUMMARY

The EA addresses potential environmental and societal impacts by characterising the likelihood and significance of interactions between the proposed decommissioning activities and the local environment, whilst considering stakeholder response. The EA also details mitigation measures designed to abate potential impacts in accordance with CNRI's Environmental Management System (EMS) and Health, Safety, Environment and Security (HSES) Policy. Key potential environmental and societal impacts which were considered to be 'potentially significant', and thus requiring further assessment, were identified through an environmental issues identification (ENVID) workshop, they include: seabed impacts and physical presence of infrastructure left in situ. These potential impacts have undergone detailed assessment within the EA. The following environmental and societal impacts were screened out from further assessment due to existing controls limiting the likelihood of potential significant impacts: impacts to water quality; emissions to air; vessel presence; underwater noise emissions; resource use; onshore activities; waste; and unplanned events. The justifications for screening out these impact pathways are detailed in the accompanying EA.

In line with the OGA's (2021) expectations, CNRI are dedicated to the reduction of greenhouse gas emissions from all decommissioning operations, as far as is reasonable for each project.

The EA concludes that the recommended options to decommission the Banff and Kyle's infrastructure can be completed without causing significant impact to environmental or societal receptors.

Overview in Table 4.2.

Table 4.2: Environmental Impact Management

Activity	Main Impacts	Management
Subsea Installations removal	<p>Seabed impacts from:</p> <ul style="list-style-type: none"> • Excavation of buried infrastructure and stabilisation materials; • Removal of grout bags and stabilisation materials; • Recovery of infrastructure; and • Cutting of piles below the seabed. <p>Impacts to commercial fisheries from project activities excluding access to fishing grounds.</p>	<p>Reasonable efforts will be made so that vessel use will be optimised/minimised by CNRI for these decommissioning activities and managed in accordance with agreed vessel management procedures, including a vessel work programme.</p> <p>The 500 m subsea safety exclusion zones will remain in operation during these decommissioning activities reducing risk of non-project related vessels entering into the area where these decommissioning activities are taking place. There are cardinal buoys currently marking the now decommissioned FPSO and FSO area. The safety exclusion zones will be revised following the completion of the relevant decommissioning activities enabling fisheries to regain access to grounds. Fishing activities have the potential to increase in the area once the 500 m safety zones surrounding the existing substructures are re-assessed.</p> <p>Use of established contractors with appropriate capability, licences and maintenance procedures will be selected and audited. Other sea users will be notified in advance of activities occurring</p> <p>The infrastructure is currently shown on Admiralty Charts and the FishSafe system. When decommissioning activity has been completed, updated information will be made available to update Admiralty Charts and the FishSafe system. All pipeline routes and installation sites will be the subject of oilfields debris clearance and as-left verification surveys when decommissioning activity has concluded.</p> <p>Cardinal Buoys are in the fields and mark all of the subsea hazards that are not over trawable. These will remain until the installations have been decommissioned.</p>
Decommissioning Rigid Pipelines and flexibles/ umbilicals- trenched and buried/ rock covered (including Stabilisation Features)	<p>Seabed impacts from decommissioning of pipelines, with rock placement over spans:</p> <ul style="list-style-type: none"> • Cutting ends and recovery of lengths of pipelines; • Removal of grout bags and stabilisation materials; and • Recovery of any spans and exposures: • Localised rock placement <p>Snagging risk associated with pipelines decommissioned in-situ</p>	<p>Reasonable efforts will be made so that vessel use will be optimised/minimised by CNRI for these decommissioning activities and managed in accordance with agreed vessel management procedures, including a vessel work programme.</p> <p>The 500 m subsea safety exclusion zones will remain in operation during these decommissioning activities reducing risk of non-project related vessels entering into the area where these decommissioning activities are taking place. There are cardinal buoys currently marking the now decommissioned FPSO and FSO area. The safety exclusion zones will be revised following the completion of the relevant decommissioning activities enabling fisheries to regain access to grounds. Fishing activities have the potential to increase in the area once the 500 m safety zones surrounding the existing substructures are re-assessed.</p> <p>Use of established contractors with appropriate capability, licences and maintenance procedures will be selected and audited. Other sea users will be notified in advance of activities occurring.</p>

		<p>The infrastructure is currently shown on Admiralty Charts and the FishSafe system. When decommissioning activity has been completed, updated information will be made available to update Admiralty Charts and the FishSafe system. All pipeline routes and installation sites will be the subject of oilfields debris clearance and as-left verification surveys when decommissioning activity has concluded.</p> <p>Operations will be conducted as carefully as possible to minimise sediment disturbance, avoiding dragging of items on the seabed where possible.</p> <p>Rock placement will be carefully managed, e.g. through use of an ROV to limit the areas covered (reducing unnecessary spreading) and depth of coverage to that required to ensure no snagging hazards remain.</p> <p>Any snagging risk to other users of the sea will be minimised by continual monitoring of degrading structures or free spans (type and frequency to be determined through a risk-based approach but will be agreed with OPRED).</p>
Decommissioning of surface laid spools, jumpers and flexible umbilical.	<p>Seabed impacts from:</p> <ul style="list-style-type: none"> • Removal of surface laid flexible flowlines, umbilicals, jumpers and rigid spool pieces; • Reverse-reeling of buried flexible umbilical; • Removal of stabilisation features; and • Clear seabed verification which may require direct intervention (e.g. overtrawling) <p>Impacts to commercial fisheries from project activities excluding access to fishing grounds.</p>	<p>Reasonable efforts will be made so that vessel use will be optimised/minimised by CNRI for these decommissioning activities and managed in accordance with agreed vessel management procedures, including a vessel work programme.</p> <p>The 500 m subsea safety exclusion zones will remain in operation during these decommissioning activities reducing risk of non-project related vessels entering into the area where these decommissioning activities are taking place. There are cardinal buoys currently marking the now decommissioned FPSO and FSO area. The safety exclusion zones will be revised following the completion of the relevant decommissioning activities enabling fisheries to regain access to grounds. Fishing activities have the potential to increase in the area once the 500 m safety zones surrounding the existing substructures are re-assessed.</p> <p>Use of established contractors with appropriate capability, licences and maintenance procedures will be selected and audited. Other sea users will be notified in advance of activities occurring.</p> <p>The infrastructure is currently shown on Admiralty Charts and the FishSafe system. When decommissioning activity has been completed, updated information will be made available to update Admiralty Charts and FishSafe system. All pipeline routes and installation sites will be the subject of oilfields debris clearance and as-left verification surveys when decommissioning activity has concluded.</p> <p>Operations will be conducted as carefully as possible to minimise sediment disturbance, avoiding dragging of items on the seabed where possible.</p>

5. INTERESTED PARTY CONSULTATIONS

Consultations Summary:

The following key stakeholders have been identified with whom to engage regarding these decommissioning activities and schedule relating to the subsea installation, pipelines (spools and jumpers) and pipeline structures removal:

- Adjacent pipelines operator – Shell U.K. Limited
- Banff Fields Partners - CNRI, Dana Petroleum (E&P) Limited
- CATS system stakeholders – CATS North Sea Limited, Ithaca Energy, Total E&P UK
- Global Marine Group (GMG)
- Health and Safety Executive (HSE)
- Joint Nature Conservation Committee (JNCC)
- Kyle Fields Partners - CNRI, Premier Oil UK Limited, Dana Petroleum (BVUK) Limited
- Maritime and Coastguard Agency (MCA)
- Marine Scotland (MS)
- Northern Lighthouse Board (NLB)
- OPRED Offshore Decommissioning Unit (ODU)
- OPRED Environmental Management Team (EMT)
- OPRED Offshore Environmental Inspectorate (OEI)
- Oil & Gas Authority (OGA)
- Scottish Fishermen's Federation (SFF)
- Scottish Environment Protection Agency (SEPA)
- United Kingdom Hydrographic Office (UKHO)

Statutory and public consultations were carried out between 7th June 2021 to 7th July 2021.

Copies of the Decommissioning Programmes were made available on request and as a download from the BEIS website:

<https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines>

A public notice was published in The Times and Aberdeen Press and Journal newspapers on the 7th June 2021. Please refer to Appendix A for a copy of the public notice. The public notice gave instructions for representations to be made in writing by 7th July 2021. Where stakeholder comments required a CNRI response, these are outlined in Table 5.1.

Table 5.1: Summary of stakeholder comments		
Stakeholder	Comment	Response
Informal Consultation		
Partners	Pre-DRAFT DP issued for Review Pre-DRAFT EA issued for Review Pre-DRAFT CA issued for Review	Minor comments incorporated
TPFP	Pre-DRAFT DP issued for Review Pre-DRAFT EA issued for Review Pre-DRAFT CA issued for Review	Minor comments incorporated
ODU	EIA Scoping Letter Pre-DRAFT DP Issued for Review Pre-DRAFT EA Issued for Review Pre-DRAFT CA Issued for Review	No Response
OPRED (BEIS EMT)	EIA Scoping Letter Pre-DRAFT EA Issued for Review	No Response
JNCC	EIA Scoping Letter (issued 26.05.21) Meeting held on the 06.05.21	No Response

Table 5.1: Summary of stakeholder comments		
Stakeholder	Comment	Response
Informal Consultation		
		<p><u>Discussion points:</u> CA recommendations, Anchor and Mooring line depressions, SAL anchor, worst case rock placement figures in the EA and the decision tree process.</p> <p><u>Main Outcomes:</u> JNCC provided minor comments on rock placement and areas of clarification. Highlighted preference to reduce hard substrate in the area and avoid further disturbance to the seabed.</p>
Scottish Fishing Federation (SFF)	EIA Scoping Letter Meeting held on the 27.04.21	<p>No Response</p> <p><u>Discussion points:</u> CA recommendations, Anchor and Mooring line depressions, SAL anchor and decision trees.</p> <p><u>Main Outcomes:</u> SFF mentioned previous experience on other projects with snagging on depressions; SFF acknowledged the data CNRI had provided on depressions was sufficient enough for them to not do a first pass trial trawl over them, as they are deemed too large and steep to not be considered a snagging issue;</p> <p>SFF referred to the boulders as not being an additional risk, as boulders are common in that area (particularly in the Banff and Kyle area). Fishermen in that expect to encounter boulders;</p> <p>SFF made reference to filling with rock 1 m below the seabed for the depressions would still be considered a risk;</p> <p>SFF referred to any rock cover needing to be the appropriate profile, to ensure it is over trawlable.</p>
National Federation of Fishermen's Organisation (NFFO)	EIA Scoping Letter	No Response
Global Marine Systems (GMS)	EIA Scoping Letter	No Response
Northern Irish Fish Producers Organisation (NIFPO)	EIA Scoping Letter	No Response
SEPA	EIA Scoping Letter	No Response
CNRI has engaged with interested parties and stakeholders who participated in the comparative assessment workshop, held on the 17 th November 2020, including SFF, OPRED EMT, OPRED ODU, HSE and Partners (Premier Oil and Dana Petroleum).		N/A
Statutory Consultation		
Public		No adverse comments received.

CNRI have and will continue to engage with the stakeholders regarding overall decommissioning plans and in particular, the plans under this Decommissioning Programme Arrangements.

6. PROGRAMME MANAGEMENT

6.1 PROGRAMME MANAGEMENT AND VERIFICATION

The Banff and Kyle fields decommissioning activities will be managed by CNRI. Standard procedures for operational control and hazard identification and management will be used. The respective Project Management teams will monitor and track the process of consents and the consultations required as part of this process. Any changes in detail to the offshore removal programme will be controlled by a Management of Change processes and discussed and agreed with OPRED.

6.2 POST DECOMMISSIONING DEBRIS CLEARANCE AND VERIFICATION

A post decommissioning site survey will be carried out by CNRI, to verify their respective decommissioning activities have been completed and will confirm overall completion of the Decommissioning Programme. Oil and gas related seabed debris identified during the survey will be recovered for onshore disposal or recycling. This will be carried out across the designated 500 m safety zones of installation sites and a 100 m corridor along each existing pipeline route (50 m either side).

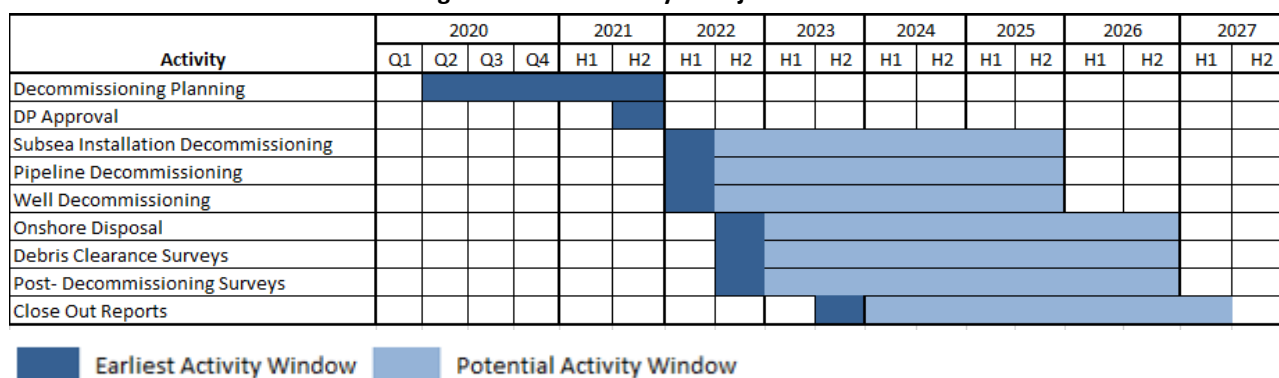
The clear seabed will be validated either by an independent seabed verification trawl over the installation sites and each existing pipeline route, or by non over-trawl techniques such as Side Scan Sonar (SSS)/ ROV or by autonomous underwater vehicle (AUV). The most appropriate validation method(s) will be discussed and agreed with OPRED nearer the time this activity is due to take place.

6.3 SCHEDULE

The high level Gantt chart Figure 6.1 provides the overall schedule for the Banff and Kyle fields programme of decommissioning activities. The activities are subject to the acceptance of the Decommissioning Programme presented in this document and any unavoidable constraints (e.g vessel availability) that may be encountered while executing the decommissioning activities. Therefore, activity schedule windows have been included to account for this uncertainty.

The commencement of offshore decommissioning activities will depend on commercial agreements and commitments. CNRI will examine the possibility of including the offshore work in a wider campaign of subsea works to reduce costs.

Figure 6.1 Banff and Kyle Project Schedule



6.4 COSTS

An overall cost estimate following UK Oil & Gas (OGUK) Guidelines on Decommissioning Cost Estimation (Issue 3, October 2012) will be provided to OPRED.

6.5 CLOSE OUT

In accordance with OPRED Guideline Notes, a Close Out Report will be submitted to OPRED explaining any variations from the DP. This is normally within 12 months of completion of the offshore decommissioning scope. The Close Out Report will be posted on the CNRI website reconciling any variations from the Decommissioning Programme. This includes debris removal and, where applicable independent verification of seabed clearance, and the first post-decommissioning environmental survey.

6.6 POST- DECOMMISSIONING MONITORING AND EVALUATION

The frequency of future surveys and the requirements for legacy and liability management will be described in the Close Out Report and agreed with OPRED. The approach will be supported with a risk based assessment.

It is proposed that residual liability for individual pipelines remaining *in situ* following the decommissioning works associated with these Decommissioning Programmes will remain with the respective Operators and Banff and Kyle Section 29 holders identified in Section 1.4. Unless agreed otherwise in advance with OPRED, CNRI will remain the focal point for such matters, such as any change in ownership, for example.

All pipeline routes and installation sites will be the subject of oilfields debris clearance and as-left verification surveys when decommissioning activity has concluded. The main risk from infrastructure remaining in situ is the potential for interaction with other users of the sea, specifically from fishing related activities. Where the infrastructure is trenched below seabed level or trenched & buried below seabed, the effect of interaction with other users of the sea is considered to be negligible.

The infrastructure is currently shown on Admiralty Charts and the FishSafe system. When decommissioning activity has been completed, updated information will be made available to update Admiralty Charts, FishSafe and OGA Infrastructure data systems.

A post-decommissioning environmental seabed survey, centred around the well locations will be carried out. The survey will focus on chemical, physical and biological changes, disturbances and will be compared with the pre decommissioning survey. Results of this survey will be available once the work is complete, with a copy forwarded to OPRED.

When decommissioning activities have been completed, and where applicable, the safety zones around offshore infrastructure will be removed.

The licence holders recognise their commitment to undertake post-decommissioning monitoring of infrastructure left in situ. After the post-decommissioning survey reports have been submitted to OPRED and reviewed, a post-decommissioning monitoring survey regime, scope and frequency, will be agreed with OPRED. The requirement for legacy and liability management will be described in more detail in the Close Out Report.

7. SUPPORTING DOCUMENTS

Table 7.1: Supporting Documents	
Document Number	Title
P0009-CNR-EN-REP-00015	Banff and Kyle Decommissioning Environmental Appraisal
P0009-CNR-EN-REP-00006	Banff and Kyle Comparative Assessment Report

8. APPENDIX I- PARTNER LETTERS OF SUPPORT



Premier Oil UK Limited
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+44 (0) 1224 618 900
harbourenergy.com



Offshore Petroleum Regulator for the Environment and Decommissioning
Department for Business, Energy and Industrial Strategy
3rd Floor, Wing C
AB1 Building
Crimon Place
ABERDEEN
AB10 1BJ

07 October 2021

FAO: Stewart Welsh, Senior Decommissioning Manager

Dear Sir,

BANFF AND KYLE FIELDS DECOMMISSIONING PROGRAMME

We acknowledge receipt of your letter dated 30 September 2021.

We, Premier Oil UK Limited confirm that we authorise CNR International (U.K.) Limited to submit on our behalf abandonment programmes relating to the Banff and Kyle Fields as directed by the Secretary of State on 30 September 2021.

We confirm that we support the proposals detailed in the CNR International (U.K.) Limited Decommissioning Programme dated 04 October 2021, which is to be submitted by CNR International (U.K.) Limited in so far as they relate to those facilities in respect of which we are required to submit an abandonment programme under section 29 of the Petroleum Act 1998.

Yours faithfully,

A handwritten signature in black ink, appearing to read "Richard Tocher".

Richard Tocher
SVP Decommissioning & Major Projects

For and on behalf of Premier Oil UK Limited



5 October 2021

Offshore Petroleum Regulator for the Environment and Decommissioning
Department for Business, Energy and Industrial Strategy
3rd Floor, Wing C
AB1 Building
Crimon Place
ABERDEEN
AB10 1BJ

FAO: Stewart Welsh, Senior Decommissioning Manager

Dear Sir or Madam

**BANFF AND KYLE FIELDS DECOMMISSIONING PROGRAMMES
PETROLEUM ACT 1998**

We acknowledge receipt of your letters dated 30 September 2021.

We, CNR International (U.K.) Developments Limited, confirm that we authorise CNR International (U.K.) Limited to submit on our behalf abandonment programmes relating to the Banff and Kyle Fields as directed by the Secretary of State on 30 September 2021.

We confirm that we support the proposals detailed in the CNR International (U.K.) Limited Decommissioning Programme dated 4 October 2021 which is to be submitted by CNR International (U.K.) Limited, in so far as they relate to those facilities in respect of which we are required to submit an abandonment programme under section 29 of the Petroleum Act 1998.

Yours faithfully

Roy Aspden, Decommissioning Project Manager
For and on behalf of CNR International (U.K.) Developments Limited

CNR International (U.K.) Developments Limited

Company Number 01021629 (England and Wales)

St Magnus House, Guild Street, Aberdeen, AB11 6NJ United Kingdom
Registered office: c/o Pinsent Masons LLP, 1 Park Row, Leeds, LS1 5AB United Kingdom.

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Dana Petroleum (E&P)
Limited
King's Close
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AB10 1RS

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www.dana-petroleum.com

Offshore Petroleum Regulator for Environment & Decommissioning
Department for Business, Energy and Industrial Strategy (BEIS)
3rd Floor, Wing C
AB1 Building
Crimon Place
Aberdeen
AB10 1BJ
FAO: Stewart Welsh, Senior Decommissioning Manager

Date: 11th October 2021

BANFF AND KYLE FIELDS DECOMMISSIONING PROGRAMMES - P0009-CNR-EN-REP-00013

PETROLEUM ACT 1998

We acknowledge receipt of your letters dated 30 September 2021.

We, Dana Petroleum (E&P) Limited (company number 02294746), as a holder of section 29 notice relative to the Banff field confirm that we hereby authorise CNR International (U.K) Limited (company number 00813187), to submit on our behalf abandonment programmes relating to the Banff and Kyle fields as directed by the Secretary of State on 30 September 2021.

We confirm that we support the proposals detailed in the Banff and Kyle Fields Decommissioning Programmes, dated 4 October 2021, which is to be submitted by CNR International (U.K) Limited in so far as they relate to those facilities in respect of which we are required to submit abandonment programmes under section 29 of the Petroleum Act 1998.

Yours faithfully,

Eiko van Dalen

Eiko van Dalen (Oct 14, 2021 12:48 GMT+1)

Oct 14, 2021

Eiko van Dalen
Chief Operating Officer

For and on behalf of Dana Petroleum (E&P) Limited (company number 02294746)



Dana Petroleum (BVUK)
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King's Close
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Offshore Petroleum Regulator for Environment & Decommissioning
Department for Business, Energy and Industrial Strategy (BEIS)
3rd Floor, Wing C
AB1 Building
Crimon Place
Aberdeen
AB10 1BJ

FAO: Stewart Welsh, Senior Decommissioning Manager

Date: 11th October 2021

BANFF AND KYLE FIELDS DECOMMISSIONING PROGRAMMES – P0009-CNR-EN-REP-00013
PETROLEUM ACT 1998

We acknowledge receipt of your letters dated 30 September 2021.

We, Dana Petroleum (BVUK) Limited (company number 03337437), as a holder of section 29 notice relative to the Kyle field confirm that we hereby authorise CNR International (U.K) Limited (company number 00613187), to submit on our behalf abandonment programmes relating to the Banff and Kyle fields as directed by the Secretary of State on 30 September 2021.

We confirm that we support the proposals detailed in the Banff and Kyle Fields Decommissioning Programmes, dated 4 October 2021, which is to be submitted by CNR International (U.K) Limited in so far as they relate to those facilities in respect of which we are required to submit abandonment programmes under section 29 of the Petroleum Act 1998.

Yours faithfully,

 Oct 14, 2021
Eiko van Dalen (04714, 2021 1249 0471+0)

Eiko van Dalen
Chief Operating Officer

For and on behalf of Dana Petroleum (BVUK) Limited (company number 03337437)

Registered in England and Wales, Company No. 03337437
Registered Office: 70 Cannon Street, London EC4N 6AF



Chrysaor Production (U.K.) Limited
Rubislaw House
Anderson Drive
Aberdeen
AB15 6FZ

Offshore Petroleum Regulator for the Environment and Decommissioning
Department for Business, Energy and Industrial Strategy
3rd Floor, Wing C
AB1 Building
Crimon Place
ABERDEEN
AB10 1BJ

18 October 2021

FAO: Stewart Welsh, Senior Decommissioning Manager

Dear Sir,

BANFF AND KYLE FIELDS DECOMMISSIONING PROGRAMMES

We acknowledge receipt of your letter dated 30 September 2021.

We, Chrysaor Production (U.K.) Limited, confirm that we authorise CNR International (U.K.) Limited to submit on our behalf abandonment programmes relating to the Banff and Kyle Fields as directed by the Secretary of State on 30 September 2021.

We confirm that we support the proposals detailed in the CNR International (U.K.) Limited Decommissioning Programme dated 04 October 2021 which is to be submitted by CNR International (U.K.) Limited, in so far as they relate to those facilities in respect of which we are required to submit an abandonment programme under section 29 of the Petroleum Act 1998.

Yours faithfully,

Richard Tocher
SVP Decommissioning & Major Projects

For and on behalf of Chrysaor Production (U.K.) Limited

Registered in England & Wales, Brettenham House, Lancaster Place, London, WC2E 7EN. Company No.00524868



Banff LLC

18 October 2021

Offshore Petroleum Regulator for Environment and Decommissioning
Department for Business, Energy & Industrial Strategy
3rd Floor, Wing C
AB1 Building, Crimon Place
Aberdeen
AB10 1BJ
Attention: Stewart Welsh
Cc: claire.thomson@beis.gov.uk

**Subject: PETROLEUM ACT 1998
DECOMMISSIONING OF THE BANFF FIELD INSTALLATIONS**

Dear Mr. Welsh,

We refer to your letter dated 30 September 2021.

Banff LLC confirms that it authorises CNR International (U.K.) Limited to submit on its behalf an abandonment programme relating to the Banff Field Installations as directed by the Secretary of State.

We confirm that we support the proposals detailed in the Phase 2 Decommissioning Programme, which is to be submitted by CNR International (U.K.) Limited in relation to those facilities in respect of which Banff LLC is required to submit an abandonment programme under section 29 of the Petroleum Act 1998.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'A. Burgess'.
Director

**Teekay Petrojarl Floating Production UK Ltd.**

4 October 2021

Offshore Petroleum Regulator for Environment and Decommissioning
Department for Business, Energy & Industrial Strategy
3rd Floor, Wing C
AB1 Building, Crimon Place
Aberdeen
AB10 1BJ
Attention: Stewart Welsh
Cc: claire.thomson@beis.gov.uk

**Subject: PETROLEUM ACT 1998
DECOMMISSIONING OF THE BANFF FIELD INSTALLATIONS**

Dear Mr. Welsh,

We refer to your letter dated 30 September 2021.

Teekay Petrojarl Floating Production UK Ltd. confirms that it authorises CNR International (U.K.) Limited to submit on its behalf an abandonment programme relating to the Banff Field Installations as directed by the Secretary of State.

We confirm that we support the proposals detailed in the Phase 2 Decommissioning Programme, which is to be submitted by CNR International (U.K.) Limited in relation to those facilities in respect of which Teekay Petrojarl Floating Production UK Ltd., is required to submit an abandonment programme under section 29 of the Petroleum Act 1998.

Yours faithfully,

Niranjana Dhurandhar
Director

For and on behalf of Teekay Petrojarl Floating Production UK Ltd.

First Floor Templeback, 10 Temple Back, Bristol, United Kingdom, BS1 6FL

**UGLAND STENA STORAGE A.S.**

18 October 2021

Offshore Petroleum Regulator for Environment and Decommissioning
Department for Business, Energy & Industrial Strategy
3rd Floor, Wing C
AB1 Building, Crimon Place
Aberdeen
AB10 1BJ
Attention: Stewart Welsh
Cc: claire.thomson@heis.gov.uk

**Subject: PETROLEUM ACT 1998
DECOMMISSIONING OF THE BANFF FIELD INSTALLATIONS**

Dear Mr. Welsh,

We refer to your letter dated 30 September 2021.

Ugland Stena Storage AS confirms that it authorises CNR International (U.K.) Limited to submit on its behalf an abandonment programme relating to the Banff Field Installations as directed by the Secretary of State.

We confirm that we support the proposals detailed in the Phase 2 Decommissioning Programme, which is to be submitted by CNR International (U.K.) Limited in relation to those facilities in respect of which Ugland Stena Storage AS, is required to submit an abandonment programme under section 29 of the Petroleum Act 1998.

Yours Sincerely,

N. Angelique Burgess
Chairman
Ugland Stena Storage AS

Ugland Stena Storage, Vervan 4, 4014 Stavanger, Norway No. 882 048 152 c/o Teekay 10 Templeback Bristol,
UK, BS1 6FL



29 October 2021

Offshore Petroleum Regulator for Environment and Decommissioning
Department for Business, Energy and Industrial Strategy
AB1 Building
Crimon Place
Aberdeen
AB10 1BJ

FAO: Mr Stewart Welsh

Dear Sirs,

DECOMMISSIONING OF THE BANFF FIELD INSTALLATIONS

Altera Infrastructure Production AS hereby confirms that CNR International (U.K.) Limited may submit the Decommissioning Programme, as detailed in document no. P0009-CNR-EN-REP-0013 revision B3 dated 4 October 2021 and titled Banff and Kyle Fields Decommissioning Programmes, as directed by the Secretary of State in your letter of 20 September 2021.

For the avoidance of doubt, Altera Infrastructure Production AS (as part of the Altera Infrastructure group) maintains that it is inappropriate for FPSO owners to be issued with notices under Section 29. In this circumstance, Altera is only a contractor to the FPSO owner (where the said FPSO was subject to a separate Decommissioning Programme in 2020).

The current legislation, as interpreted by OPRED, is incompatible with the aspirations of MER UK and detrimental to the remaining opportunities in the UKCS basin and we will be following up with you directly on this matter in due course.

Yours faithfully,

Chris Brett
President
For and on behalf of Altera Infrastructure Production AS

9. APPENDIX II- COPIES OF THE PUBLIC NOTICE

PUBLIC NOTICE
THE PETROLEUM ACT 1998
Banff and Kyle
DECOMMISSIONING PROGRAMMES


CNR International

CNR International (U.K.) Limited, on behalf of the co-venturers in the Banff and Kyle fields and Tasekay Petrojarl Floating Production UK LTD, has submitted, for the consideration of the Secretary of State for Business, Energy and Industrial Strategy, a draft Decommissioning Programmes for the Banff and Kyle Fields in accordance with the provisions of the Petroleum Act 1998. It is a requirement of the Act that interested parties be consulted on such decommissioning proposals.

The items/ facilities covered by the Decommissioning Programmes are:

The Banff and Kyle fields subsea infrastructure and pipelines located 200 km North East of Aberdeen. Banff field is located in the UKCS Blocks 29/2a and 22/27a and Kyle field is located in the UKCS Blocks 29/2c and 29/2h.

CNR International (U.K.) Limited hereby gives notice that a summary of the Banff and Kyle Fields Decommissioning Programmes can be viewed online at <http://www.cnri-northsea-decom.com> (see 'Decommissioning Programmes' page).

Alternatively, a hard copy can be requested at the following location during office hours:

CNR International (U.K.) Limited
 St Magnus House
 Guild Street
 Aberdeen
 AB11 6NJ
 Contact: Kerry Langworthy
 Tel: 01224 303756
banffkyledecom@cnri.com

Interested parties are kindly requested to submit any representations in writing to the above address for the attention of Kerry Langworthy by the consultation closing date, 7th July 2021, including the rationale upon which any representations are being made.

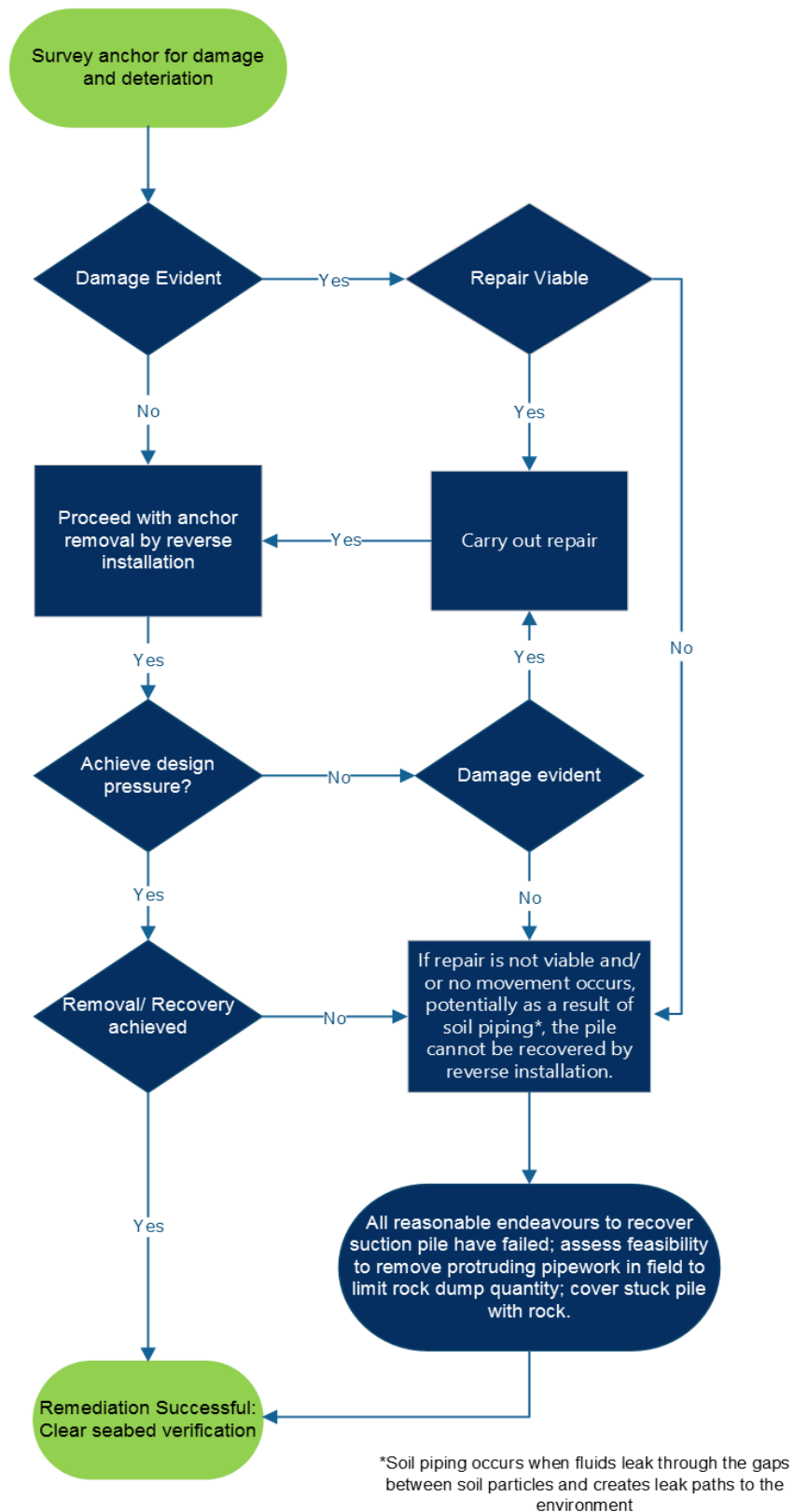
7th June 2021

10. APPENDIX III- DECISION TREE: SAL SUCTION BASE

Removal by Reverse Installation Process

There are three uncertainties that may impact on the success of the operation:

- The mechanical integrity of the suction anchors structure and pipework and its ability to remain intact and retain pressure;
- The ability of the soil plug within the anchor to retain pressure such that a leak path (soil piping) does not occur; and
- The friction forces between the structure and surrounding soil, established over time, exceed the original design expectations, such that even when the maximum design pressure is established and maintained, the suction anchor does not emerge.



11. APPENDIX IV- DECISION TREE: ANCHOR AND MOORING LINE DEPRESSIONS

Anchor and Mooring Line Depression Remediation

