

CALEDONIA

Decommissioning Programmes

FINAL VERSION – 21 December 2021

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Terms and Abbreviations

Abbreviation	Explanation
CA	Comparative Assessment
Dia	Diameter
DP	Decommissioning Programme
DSV	Diving Support Vessel
E	East
EA	Environmental Appraisal
EMT	Environmental Management Team
FPV	Floating Production Vessel
HSE	Health & Safety Executive
HSES	Health, Safety, Environment & Security
in	Inch
JNCC	Joint Nature Conservation Committee
Km	Kilometer
LAT	Lowest Astronomical Tide
LSA	Low Specific Activity Scale
m	Metre
MCDA	Multi Criteria Decision Analysis
mm	Millimetre
MS	Marine Scotland
N	North
N/A	Not Applicable
NW	Northwest
NORM	Naturally Occurring Radioactive Material
ODU	Offshore Decommissioning Unit
OGA	Oil & Gas Authority
OGUK	Oil & Gas UK
OPRED	Offshore Petroleum Regulator for Environment & Decommissioning
PL	Pipeline
Premier Oil	Premier Oil UK Limited
PWA	Pipeline Works Authorisation
S	South
SCAP	Supply Chain Action Plan
SSIV	Subsea Isolation Valve
TBA	To be agreed
Te	Tonne
TFSW	Trans Frontier Shipment of Waste
UKCS	United Kingdom Continental Shelf
W	West

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1. EXECUTIVE SUMMARY

1.1 Decommissioning Programmes

This document contains the Decommissioning Programmes for the Caledonia Field subsea installations and pipelines.

1.2. Requirement for Decommissioning Programmes

Installations:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Caledonia field subsea installations (see Table 1.2) are applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the installations detailed in Section 2.2 of this programme.

Pipelines:

In accordance with the Petroleum Act 1998, the Section 29 notice holders of the Caledonia field pipelines (see Table 1.4) are applying to OPRED to obtain approval for decommissioning the pipelines detailed in Section 2.3 of this programme.

In conjunction with public, stakeholder and regulatory consultation, the Decommissioning Programmes are submitted in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for a seven year decommissioning project plan due to begin in 2022.

1.3. Introduction

The Decommissioning Programmes have been prepared to support the decommissioning of the Caledonia subsea pipelines and installations.

The Caledonia Field is a subsea development located approximately 220km to the north east of Aberdeen in UKCS Block 16/26. The Field lies in a water depth of 139 metres, approximately 6km north of the Britannia Platform, and is tied-back to the Chrysaor operated Britannia Platform via a 12"/8" pipe-in-pipe production pipeline with a piggybacked 4" gas lift pipeline and a control umbilical. The field was sanctioned for development in 2001, with first oil in February 2003. It was developed via a single gas lifted horizontal well, 16/26-30Y. The Caledonia produced fluids were processed on the Britannia Platform, with hydrocarbons exported via the Forties Pipeline System. The subsea infrastructure was flushed and disconnected in 2018.

Due to the close proximity to live Britannia, Alder and Finlaggan subsea infrastructure, the schedule included in the Decommissioning Programmes only applies to the execution of Caledonia infrastructure decommissioning works outside of the Britannia 500m Safety zone. These works will be synergised with the Greater Balmoral Area decommissioning activities. The Caledonia infrastructure within the Britannia 500m Safety zone, which is included in the Decommissioning Programmes, is to be decommissioned after the aforementioned fields have ceased production, most likely as part of the fields' decommissioning activities.

Cessation of Production from Caledonia was approved on the 4th March 2021.

The Caledonia subsea field consists of one E&A well, one production well with a Xmas tree and WHPS, a production manifold, an SSIV skid, two pipelines and an umbilical.

Following public, stakeholder and regulatory consultation, the Decommissioning Programmes are submitted without derogation and in full compliance with OPRED and OGUK 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 Installations/Pipelines Being Decommissioned

Installations

Table 1.1: Installations Being Decommissioned			
Field	Caledonia	Production Type (Oil/Gas/Condensate)	Oil/Gas
Water Depth (m)	139	UKCS block	16/26
Surface Installation(s)			
Number	Type	Topsides Weight (Te)	Jacket Weight (Te)
N/A	N/A	N/A	N/A
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
3	1 x Manifold 1 x SSIV 1 x Xmas tree & WHPS	N/A	2
Drill Cuttings Pile(s)		Distance to Median	Distance from Nearest UK Coastline
Number of Piles	Total Estimated volume (m ³)	km	km
N/A		35 (UK/NOR median)	185

Table 1.2: Installations Section 29 Notice Holders Details

Section 29 Notice Holders	Registration Number	Equity Interest (%)
Premier Oil UK Limited	SC048705	100%
Premier Oil ONS Limited	04453364	Exited
Ithaca Oil and Gas Limited	01546623	Exited
Dana Petroleum (North Sea) Limited	02338195	Exited
Waldorf Production UK Limited	05030838	Exited
Waldorf Production North Sea Limited	03518803	Exited
EnQuest Energy Limited	01019698	Exited
EnQuest Production Limited	01019831	Exited
Equinor UK Limited	01285743	Exited
Fina Petroleum Development Limited	00740632	Exited

Pipelines

Table 1.3: Pipelines Being Decommissioned

Number of Pipelines	2	(See Table 2.3)
Number of Umbilicals	1	(See Table 2.3)

Table 1.4: Pipelines Section 29 Notice Holders Details

Section 29 Notice Holders	Registration Number	Equity Interest (%)
Premier Oil UK Limited	SC048705	100%
Chrysaor Production (U.K.) Limited	00524868	0%
Chrysaor (U.K.) Theta Limited	01491002	0%
Chrysaor Petroleum Company U.K. Limited	00792712	0%
Mitsui E&P UK Limited	07652477	0%
Premier Oil ONS Limited	04453364	Exited
Ithaca Oil and Gas Limited	01546623	Exited
Dana Petroleum (North Sea) Limited	02338195	Exited
Waldorf Production UK Limited	05030838	Exited
Waldorf Production North Sea Limited	03518803	Exited
EnQuest Energy Limited	01019698	Exited
EnQuest Production Limited	01019831	Exited
Equinor UK Limited	01285743	Exited
Fina Petroleum Development Limited	00740632	Exited

On the 31st March 2021, Premier Oil plc and Chrysaor Holdings Limited merged to form Harbour Energy plc. At the time of writing, the Premier Oil plc and Chrysaor Holdings Limited companies are not affected by the completion of the merger, and there are no changes to the company registration details shown in Tables 1.2 and 1.4.

1.5. Summary of Proposed Decommissioning Programmes

Table 1.5: Summary of Decommissioning Programmes		
Selected Option	Reason for Selection	Proposed Decommissioning Solution
1. Subsea Installations		
Group 7*: Installations - Manifold, SSIV, Xmas tree & WHPS Full removal.	Leaves a clear seabed and meets regulations.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
2. Pipelines, Flowlines & Umbilicals		
Group 1*: Trenched & Buried Rigid Flowlines Leave in-situ.	Comparatively assessed as preferred option. The rigid flowlines are sufficiently 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 in-situ. Exposed ends & areas of exposure to be removed & returned to shore for disposal. Local rock placement to mitigate snag hazard from cut ends.
Group 3*: Trenched & Buried Flexible Flowlines & Umbilicals Leave in-situ.	The CA outcome for the trenched and buried umbilical (PLU1921 Static Umbilical) is full removal. However, as this umbilical is located in the same trench as the rigid pipelines, the recommendation is to also decommission in situ.	Leave in-situ. Exposed ends & areas of exposure to be removed & returned to shore for disposal. Local rock placement to mitigate snag hazard from cut ends
Group 6*: Spools & Jumpers Full Removal.	Leaves a clear seabed and meets regulations.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
Group 10*: Dynamic Risers & Dynamic Umbilicals Full Removal.	Leaves a clear seabed and meets regulations.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
Group 8*: Protection and stabilisation features Full removal.	Leaves a clear seabed and meets regulations.	Full Removal. Returned to shore for recycling or appropriate treatment and disposal.
3. Wells		
Wells will be plugged and abandoned to Premier Oil standards which comply with "Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996" and align with Oil & Gas UK Well Decommissioning Guidelines (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 abandon the wells will be submitted through the Well Operations Notification System (WONS). Additionally, planned work will be reviewed by a well examiner to Premier Oil standards, then submitted to the HSE for review.

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

1.6. Field Location Including Field Layout and Adjacent Facilities

Figure 1.1: Field Location in UKCS



Figure 1.2: Field Layout

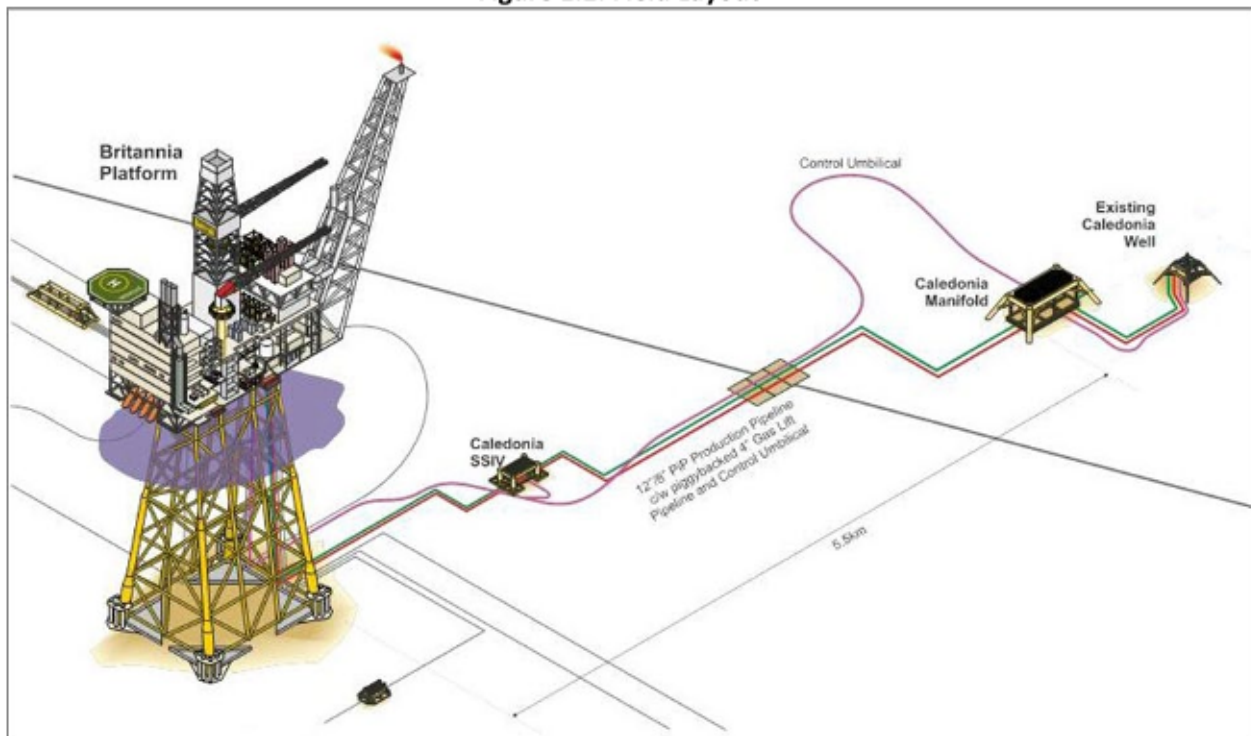


Table 1.6 Adjacent Facilities

Operator	Name	Type	Distance/ Direction	Information	Status
Ithaca Oil and Gas Limited	Alba North	Platform	6.1 km SW 217°	Oil & gas production platform.	Operational
Ithaca Oil and Gas Limited	Alba	Subsea	8.9 km SSW 193°	Oil & gas production tied back to Alba North Platform.	Operational
Premier Oil E&P UK Limited	Balmoral	Subsea	14.3 km N 353°	Oil & gas production tied back to Balmoral FPV.	Shut-in
Repsol Sinopec North Sea Limited	Beaully	Subsea	9.1 km N 356°	Oil & gas production tied back to Balmoral FPV.	Shut-in
Premier Oil E&P UK Limited	Brenda	Subsea	14.5 km NW 318°	Oil & gas production tied back to Balmoral FPV.	Shut-in
Premier Oil E&P UK Limited	Glamis	Subsea	10.0 km NW 324°	Oil & gas production tied back to Balmoral FPV.	Shut-in
Chrysaor (U.K.) Britannia Limited	Britannia	Platform	6.0 km S 185°	Caledonia tied back to Britannia platform. Gas export terminal at St Fergus. Condensate exported via Forties pipeline system.	Operational
Ithaca Oil and Gas Limited	Alder	Subsea	26.3 km W 269°	Oil & gas production tied back to Britannia platform.	Operational
BP Exploration Operating Company Limited	Andrew	Platform	16.5 km E 111°	Oil & gas production platform.	Operational
BP Exploration Operating Company Limited	Cyrus	Subsea	17.7 km E 90°	Oil & gas production tied back to Andrew platform.	Operational

Impacts of Decommissioning Proposals

The Caledonia Field is tied back to the Britannia installation. The Caledonia field will be decommissioned in a programme of activities comprising the Balmoral, Brenda, Glamis, Nicol and Stirling 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 considers the potential cumulative implications of decommissioning activities in context of other oil and gas / other industry activities in the area.

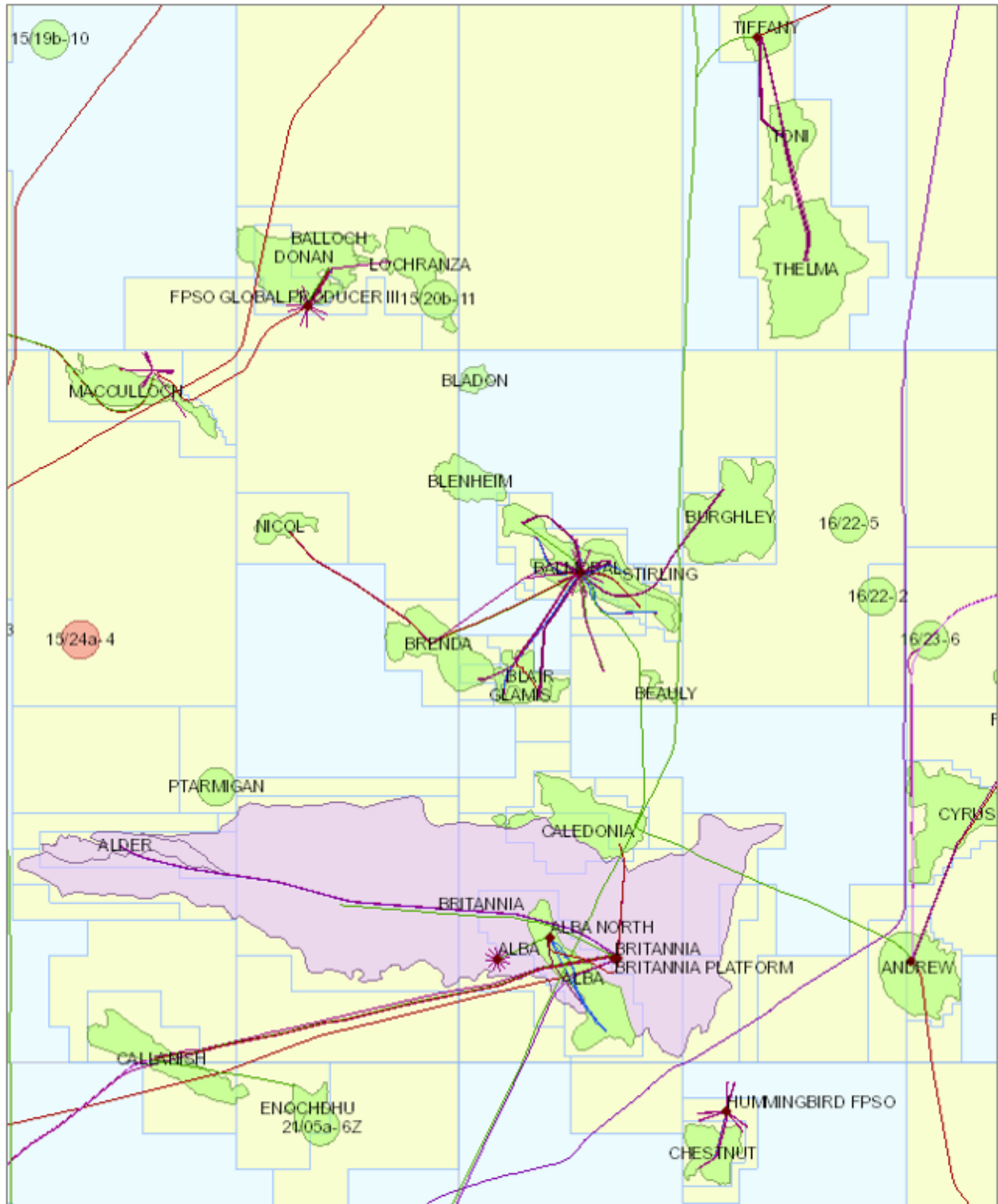
Due to the close proximity to live Britannia, Finlaggan and Alder infrastructure, approximately 710 m (each) of the Caledonia production pipeline / riser (PL1919) and the gas lift pipeline / riser (PL1920), and an estimated 757m of the umbilical (PLU1921), the SSIV structure, 95 concrete mattresses and approx. 800 grout bags will be decommissioned at a later date, together with Britannia area infrastructure.

These sections of pipelines, umbilical, installations and stabilisation features are located within the Britannia / Britannia BLP platforms' 500m Safety Zones.

Premier Oil are fully committed to decommissioning remaining infrastructure at the time of the Britannia field decommissioning and a tracking regime is in place which will be kept updated until all Caledonia decommissioning activities have been completed.

Note: Adjacent facilities refer to those potentially impacted by this programme.

Figure 1.3: Adjacent Facilities



1.7. Industrial Implications

The Caledonia decommissioning activities will be managed by Premier Oil in Aberdeen and will be planned to realise synergies and efficiencies in offshore execution. Therefore, decommissioning activities outside the Britannia platform 500m safety zone will be executed as part of the Greater Balmoral Area decommissioning project, and Caledonia infrastructure inside the Britannia platform 500m safety zone will be decommissioned as part of the Britannia Area infrastructure.

A Supply Chain Action Plan (SCAP) for the Balmoral Area work has been approved by the OGA, and it includes the Caledonia infrastructure outside the Britannia platform 500m safety zone. It is envisaged that the Caledonia infrastructure inside the Britannia platform 500m safety zone will be included in the Britannia Area SCAP, or a dedicated SCAP will be produced nearer the time if required.

Premier Oil have some pre-existing Master Service agreements with specialist contractors, which were the result of previous tender exercises. These contractors will be asked to quote for services to support the decommissioning activity in the first instance. Other specialist services will be competitively tendered or novated. Suppliers' offers will be assessed along many criterions, among which are capacity to execute the work safely; the commercial offer and experience of carrying out this type of operation on the UKCS.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1. Installation(s): Surface Facilities

The Caledonia subsea field is tied back to the Britannia platform. The Britannia platform is operated by Chrysaor.

2.2. 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
Manifold	1	L10.6xW8.4xH3.7 50.8 Te	WGS84 Decimal	58.102° N	Piled
				1.14261° E	
			WGS84 Decimal Minute	58° 06.119' N	
				1° 08.557' E	
SSIV ¹	1	L6.5xW4.4xH3.75 30.5 Te	WGS84 Decimal	58.049° N	Gravity-based
				1.14002° E	
			WGS84 Decimal Minute	58° 02.940' N	
				01° 08.402' E	
Xmas tree & WHPS	1	L6.4xW6.4xH4 55.9 Te	WGS84 Decimal	58.10218° N	Includes weight of protection structure
				1.14282° E	
			WGS84 Decimal Minute	58° 06.131' N	
				1° 08.569' E	

¹ Due to the close proximity to live Britannia Area infrastructure, the subsea installation will be decommissioned at a later date, together with Britannia Area infrastructure. The installation is located within the Britannia / Britannia BLP platforms' 500m safety zones.

2.3. Pipelines Including Stabilisation Features

Table 2.2: Pipeline / Flowline / Umbilical / Risers 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			
Production Pipeline (Pipe-in-Pipe) ²	PL1919	12/8	6,391	Steel	Produced Fluids	Caledonia Well 16/26-30y	Britannia Platform Topside Riser Flange Adaptor	Trenched & Buried	Out-of-use (disconnected)	Filtered seawater
Gas Lift Pipeline (Piggyback) ²	PL1920	4	6,432	Steel	Natural Gas	Britannia Platform Pig Launcher	Caledonia Well 16/26-30y	Trenched & Buried	Out-of-use (disconnected)	Filtered seawater
Electro-hydraulic Chemical Umbilical ²	PLU1921	6.77	6,449	Umbilical	Hydraulic Fluid/ Corrosion Inhibitor/ Wax Inhibitor/ De-Emulsifier/ Methanol/ Electrical Power	Britannia Platform Umbilical End Caps	Caledonia Well 16/26-30y	Trenched & Buried	Out-of-use (disconnected)	Untreated seawater

² Due to the close proximity to live Britannia Area infrastructure, approximately 710 m (each) of the Caledonia production pipeline / riser (PL1919) and the gas lift pipeline / riser (PL1920), and an estimated 757 m of the umbilical (PLU1921) will be decommissioned at a later date, together with Britannia Area infrastructure. These sections of pipelines and umbilical are located within the Britannia / Britannia BLP platforms' 500m safety zones.

Table 2.3: Subsea Pipeline Stabilisation Features

Stabilisation Feature	Total Number	Weight (Te)	Location(s)	Exposed/Buried/Condition
Concrete Mattresses (6m x 3m x 0.15m)	37	174.5	On PL1919 and PL1920 at the manifold and tree	Partially covered in sediment, in good condition
Concrete Mattresses (6m x 2m x 0.15m)	24	75.5	On PLU1921 at the manifold	Partially covered in sediment, in good condition
Concrete Mattresses ³ (6m x 3m x 0.15m)	54	254.6	On PL1919 and PL1920 within the Britannia 500m safety zone	Exposed & in good condition
Concrete Mattresses ³ (6m x 2m x 0.15m)	41	128.9	On PLU1921 within the Britannia 500m safety zone	Exposed & in good condition
Grout Bags	Estimated 600	15	Various locations at the manifold and tree	Partially exposed & in good condition
Grout Bags ³	Estimated 800	20	Various locations within the Britannia 500m safety zone	Partially exposed & in good condition
Rock Dump	N/A	Estimated 7,000	Trench transitions and crossings on PL1919, PL1920 and PLU1921	Exposed

³ Due to the close proximity to live Britannia Area infrastructure, 95 concrete mattresses and approximately 800 grout bags will be decommissioned at a later date, together with Britannia Area infrastructure. These stabilisation features are located within the Britannia / Britannia BLP platforms' 500m safety zones.

2.4. Wells

Table 2.4: Wells Information					
Platform Wells		Designation	License	Status	Category of Well
N/A		N/A	N/A	N/A	N/A
Subsea Wells					
WONS Name Current Bore	Premier Oil Well Name				
16/26-25	16/26-25	E&A	P213	Abandoned Phase 1	TBA
16/26-30y	16/26-30y	Production	P213	Completed (Shut In)	TBA

The well categories require to be evaluated in accordance with the OGUK Well Decommissioning Guidelines, Issue 6, June 2018. This work is ongoing at the time of submission.

2.5. Drill Cuttings

Table 2.5: Drill Cuttings Pile(s) Information		
Location of Pile Centre (Latitude/Longitude)	Seabed Area (m ²)	Estimated Volume of Cuttings (m ³)
These wells were drilled after changes to legislation, so no drill cuttings piles exist at Caledonia.	N/A	N/A

2.6. Inventory Estimates

Tables 2.6 and 2.7 provide an estimate of the total weight of materials associated with the Caledonia installations and pipelines.

A further breakdown of the inventory estimates for the subsea installations and pipelines is provided in Figure 2.1 and Figure 2.2 respectively.

Table 2.6: Inventory of Materials Associated with Caledonia Installations		
Item	Description	Weight (Te)
Metals	Ferrous (steel - all grades)	135.7
	Non-Ferrous (copper, aluminium)	2.3
Concrete	Aggregates (mattresses, grout bags, sand bags)	0
Plastic	Rubbers, polymers	0
Hazardous	Residual fluids (hydrocarbons, chemicals)	N/A
	NORM scale	N/A
Other		0
Total (Tonnes)		138.0

Table 2.7: Inventory of Materials Associated with Caledonia Pipelines		
Item	Description	Weight (Te)
Metals	Ferrous (steel - all grades)	1432.1
	Non-Ferrous (copper, aluminium, etc)	27.0
Concrete	Aggregates (mattresses, grout bags, sand bags)	633.5
Plastic	Rubbers, polymers	80.4
Hazardous	Residual fluids (hydrocarbons, chemicals)	trace
	NORM scale	trace
Other		0
Total (Tonnes)		2173.0

Figure 2.1: Pie Chart of Estimated Inventory (Installations)

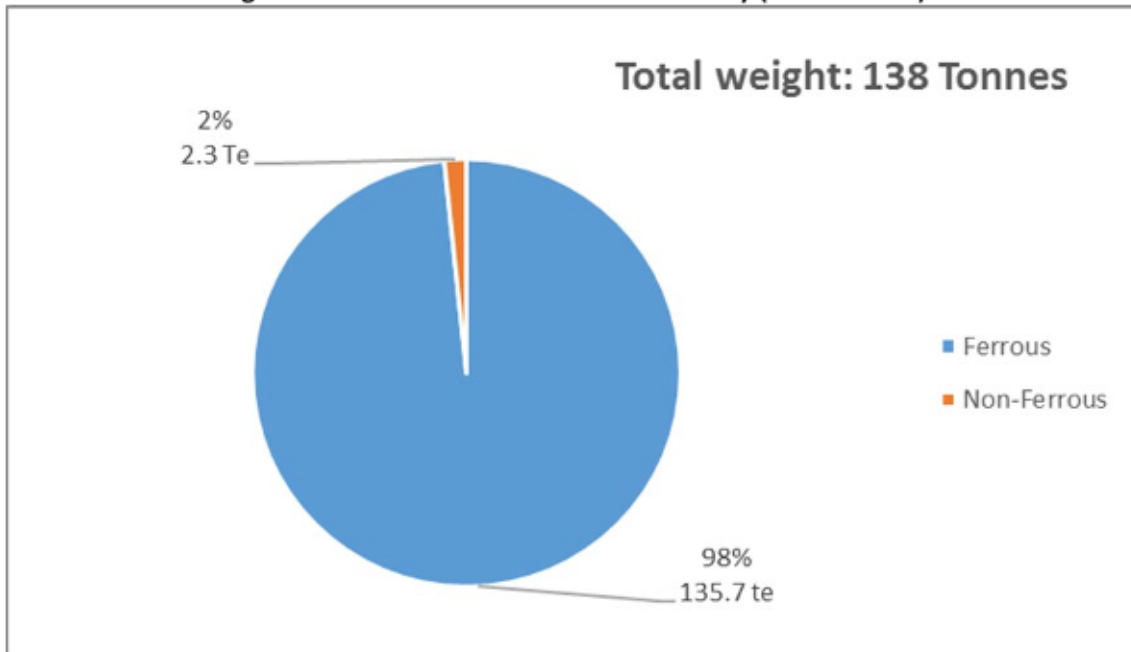
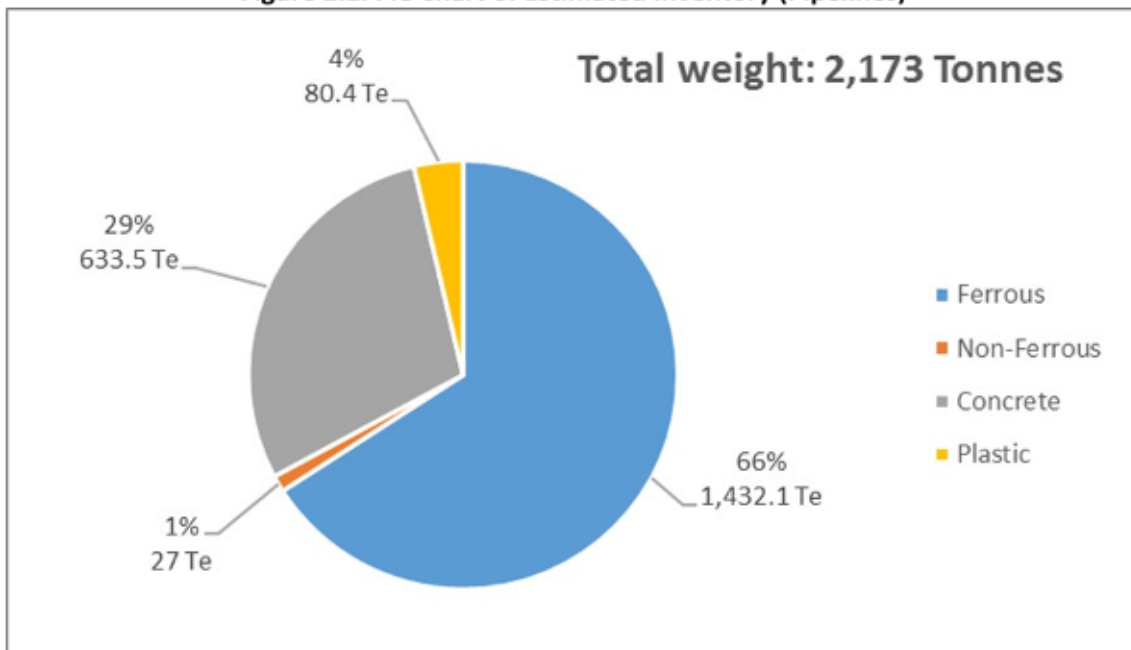


Figure 2.2: Pie Chart of Estimated Inventory (Pipelines)



Please refer to the Caledonia Decommissioning Environmental Appraisal for further details.

3. REMOVAL AND DISPOSAL METHODS

Decommissioning of the Caledonia field will generate a quantity of waste. Premier Oil is committed to establishing and maintaining environmentally acceptable methods for managing wastes in line with the principles of the waste hierarchy:



Recovered infrastructure will be returned to shore and transferred to a suitably licenced decommissioning facility. It is expected that the recovered infrastructure, i.e. SSIV, manifold and spools will be cleaned before being 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.

An appropriately licensed disposal company and yard will be identified through a selection process that will ensure that the chosen facility demonstrates a proven track 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 yard options may require the consideration of Trans Frontier Shipment of Waste (TFSW), including hazardous materials. Early engagement with the regulatory authorities will ensure that any issues with TFSW are addressed.

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

3.1. Subsea Installations and Stabilisation Features

Table 3.1: Subsea Installations and Stabilisation Features			
Subsea Installation(s) and Stabilisation Feature(s)	Number	Option	Disposal Route (if applicable)
Manifold	1	Full recovery as part of decommissioning campaign	Return to shore for recycling or disposal
SSIV	1	Full recovery as part of decommissioning campaign	Return to shore for recycling or disposal
Xmas tree with integrated WHPS	1	Full recovery as part of decommissioning campaign	Return to shore for recycling or disposal
Concrete mattresses	0	N/A	N/A
Grout bags	0	N/A	N/A
Rock Dump	N/A	N/A	N/A

3.2. Pipelines

Decommissioning Options:

Key to Options:

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

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: Trenched & Buried Rigid Flowlines PL1919, PL1920	Trenched & Buried	Whole	2a, 2b, 2c, 2d, 2e, 4d, 5
Group 3: Trenched & Buried Flexible Flowlines & Umbilicals PLU1921	Trenched & Buried	Whole	2a, 2b, 2c, 2d, 2e, 5
Group 6: Spools & Jumpers PL1919, PL1920, PLU1921	Surface Laid	Whole	Full Removal
Group 10: Dynamic Risers & Dynamic Umbilicals PLU1921	Surface Laid	Whole	Full Removal

Comparative Assessment Method:

Comparative Assessment is integral to the overall planning and approval of decommissioning options. Premier Oil's strategy for the CA 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.

Premier Oil has 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 assessment criteria are equally weighted to balance and represent the views of the each of the stakeholders.

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, Field Partners and representatives from key stakeholders namely:

- Scottish Fishermen’s Federation
- National Federation of Fishermen's Organisations
- Joint Nature Conservation Committee
- Health and Safety Executive
- OPRED EMT
- OPRED ODU (observers)
- Premier Oil UK Limited
- Neptune E&P UKCS Limited

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.

Outcome of Comparative Assessment:

Table 3.3: Outcomes of Comparative Assessment		
Pipeline or Group	Recommended Option	Justification
Group 1: Trenched & Buried Rigid Flowlines PL1919, PL1920	Option 5 - Remove ends and remediate snag hazards	Option 5 was clearly preferred against the Safety, Environment and Technical criteria whereas Option 2a was only preferred marginally from a Societal perspective. Once the Economics criterion was considered, this strengthens the preference for Option 5.
Group 3: Trenched & Buried Flexible Flowlines & Umbilicals PLU1921	Option 5 - Remove ends and remediate snag hazards	Option 2b (reverse reeling without de-burial) was preferred against the Safety criterion and equally preferred against the Environmental and Societal criteria. Option 5 was preferred from a Technical perspective. Without including economics, there is a small preference for Option 5. Once the Economics criterion is included, this preference changes to a small preference for Option 2b. However, as this umbilical (PLU1921) is located in the same trench as the rigid pipelines (Group 1), the recommendation is to execute the same decommissioning approach: Option 5.
Group 6: Spools & Jumpers PL1919, PL1920, PLU1921	Full Removal	Items are surface laid and recoverable.
Group 10: Dynamic Riser & Dynamic Umbilicals PLU1921	Full Removal	Items are surface laid and recoverable.

3.3. Pipeline Stabilisation Features

Table 3.4: Pipeline Stabilisation Features			
Stabilisation Features	Number	Option	Disposal Route (if applicable)
Concrete Mattresses (6m x 2m x 0.15m)	65	Full recovery - It is intended that the mattresses 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 (6m x 3m x 0.15m)	91	Full recovery - It is intended that the mattresses 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	1400 (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 Dump	7000 (Te)	To remain in place.	N/A

*A number of grout bags may be redeployed/repurposed locally as snagging hazard mitigation.

3.4. Wells

Table 3.5: Well Plug and Abandonment
<p>The wells for the Field covered by this Decommissioning Programme will be plugged and abandoned, as listed in Section 2.4 (Table 2.4) in accordance with Oil & Gas UK Well Decommissioning Guidelines (Issue 6, June 2018).</p> <p>A WONS application update will be submitted along with an appropriate suite of permit applications, via the UK Energy Portal, in support of each well abandonment.</p>

3.5. Waste Streams

The Premier Oil Waste Management Strategy specifies the requirements for the contractor waste management plan. The waste management plan will be developed once the contract has 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 3.6: Waste Stream Management Methods	
Waste Stream	Removal and Disposal Method
Bulk liquids	N/A (The Caledonia pipelines have been flushed/de-oiled and disconnected in 2018.)
Marine growth	Some marine growth may be removed offshore. Onshore disposal will be managed by the selected waste management contractor.
NORM/LSA Scale	Any NORM contaminated material will be returned to shore to be disposed of by the selected onshore waste management contractor.
Asbestos	N/A
Other hazardous wastes	Will be recovered onshore and will be managed by the selected waste management contractor and disposed of under appropriate permit. The inventory of hazardous materials will identify hazardous materials present and Premier Oil's risk management process will be used to prevent spills offshore.
Onshore Dismantling sites	Appropriate licenced contractor and sites will be selected. Facility selected must demonstrate competence and proven disposal track record and waste stream management & traceability throughout the deconstruction process and (preferably) demonstrate their ability to deliver innovative recycling options.

Table 3.7: Inventory Disposition			
	Total Inventory Tonnage (Te)	Planned Tonnage to Shore (Te)	Planned Left <i>In Situ</i> (Te)
Pipelines	1,259	211	1048
Umbilical	278	42	236
Subsea Installations	138	138	0

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 3.8 are disposal aspirations.

Table 3.8: Recovered Inventory Reuse, Recycle, Disposal Aspirations			
	Reuse	Recycle	Disposal
Pipelines	<5%	>95%	<5%
Umbilical	<5%	>95%	<5%
Subsea Installations	<5%	>95%	<5%

Refer to the Caledonia Decommissioning Environmental Impact Appraisal for further details.

4. ENVIRONMENTAL APPRAISAL

4.1. Environmental Sensitivities (Summary)

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Features
Conservation interests	<p>Caledonia does not lie within any protected sites or marine protected areas and those in the vicinity of the project are all more than 20 km away.</p> <p>The nearest Special Area of Conservation (SAC) to the Caledonia decommissioning project is the Scanner Pockmark, which is situated 21 km from the site of decommissioning. This SAC is designated for the presence of submarine structures formed by leaking gases, which are found within seabed depressions referred to as “pockmarks” and support reef-like communities distinct from the surrounding soft sediments. Depressions have been observed in Caledonia, within 20 m of the pipeline between the Caledonia manifold and Britannia platform; however, it is unclear how they were formed (UTEC, 2008;SNH, 2014).</p> <p>The nearest Nature Conservation Marine Protected Area (NCMPA) to Caledonia is the Norwegian Boundary Sediment Plain MPA located 30 km north east of the project area. The site is designated for the conservation of ocean quahog aggregations, including sands and gravels as their supporting habitat (JNCC, 2014).</p> <p>During the Fugro (2018a) habitat assessment survey, observations across the Greater Balmoral Area revealed the presence of the Seapens and burrowing megafauna communities’ habitat. The Balmoral camera transects are close to Caledonia and it is therefore reasonable to assume this habitat is also present at the Caledonia Field. The ‘Burrowed mud’ Scottish Primary Marine Feature (PMF) habitat is a key component of the OSPAR habitat; this PMF is also present in the Greater Balmoral Area and therefore is likely to be found within the Caledonia area. There was no evidence of ocean quahog (<i>Arctica islandica</i>) siphons or aggregations collected during these surveys (Fugro, 2018b), although this does not definitively rule out the presence of this species either on the investigated transects or at the Caledonia Field.</p>
Seabed Habitats and Fauna	<p>The water depth in the vicinity of the Caledonia manifold is approximately 140 m, and sediments comprise soft to very soft clay (Fugro, 2001). Habitat assessment camera transects conducted during the Balmoral Area pre-decommissioning survey (Fugro, 2018a) indicate the seabed habitat comprises ‘circalittoral fine mud’ (EUNIS code A5.36), which is comparable to the Fugro (2001) findings.</p> <p>Five seabed depressions were recorded within 20 m of the pipeline route between the Caledonia manifold and the Britannia platform (Fugro, 2001). Seabed depressions with shell accumulations inside were also evident in the Balmoral camera transects (Fugro, 2018a). Forty-one seabed depressions were investigated in Fugro (2018a), and the camera transects closest to Caledonia</p>

	<p>were conducted specifically to investigate depressions. Of the 41 depressions investigated across the Greater Balmoral Area, no sign of MDAC or associated communities were found that would constitute these depressions being labelled as pockmarks.</p> <p>Visible fauna recorded in Fugro (2018a) included: sea pen (<i>Pennatula phosphorea</i> and <i>Virgularia mirabilis</i>), starfish (<i>Asteroidea</i>), sea anemone (<i>Actiniaria</i>), hermit crab (<i>Paguridae sp.</i>), sea urchin (Echinodermata) and faunal turf comprising hydrozoans and bryozoans. An unidentified fish and a hagfish (<i>Myxine sp.</i>) were also seen near the seabed. There were abundant faunal tracks and burrows.</p>
Fish	<p>Caledonia is located within the spawning grounds of cod (<i>Gadus morhua</i>), mackerel (<i>Scomber scombrus</i>), Norway lobster (<i>Nephrops norvegicus</i>) and Norway pout (<i>Trisopterus esmarkii</i>) (Coull <i>et al.</i>, 1998; Ellis <i>et al.</i>, 2012). Furthermore, the following species have nursery grounds in the vicinity of the project: 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 lobster, Norway pout, sandeel (<i>Ammodytidae spp.</i>), spotted ray (<i>Raja montagui</i>), 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>Data from Aires <i>et al.</i> (2014) show the probability of the presence of aggregations of age 0 group fish species. The probability of age 0 group fish species occurring at Caledonia is estimated as <0.15 for all species listed (anglerfish, blue whiting, European hake, haddock, herring, mackerel, horse mackerel (<i>Trachurus trachurus</i>), Norway pout, plaice (<i>Pleuronectes platessa</i>), sprat (<i>Sprattus sprattus</i>) and whiting).</p>
Marine Mammals	<p>The following cetacean species are known to be sighted frequently or seasonally in the vicinity of the Caledonia Field: harbour porpoise (<i>Phocoena phocoena</i>); minke whale (<i>Balaenoptera acutorostrata</i>); bottlenose dolphin (<i>Tursiops truncatus</i>); Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>) and white-beaked dolphin (<i>Lagenorhynchus albirostris</i>) (Reid <i>et al.</i>, 2003). Of these, harbour porpoise, white-beaked dolphins and minke whales regularly occur within the vicinity of Caledonia (Hammond <i>et al.</i>, 2017).</p> <p>Seal densities are very low across the project area due to its distance from shore (SMRU and Marine Scotland, 2017).</p>
Seabirds	<p>The following species are expected to occur within Caledonia Field Area in moderate densities: northern fulmar (<i>Fulmarus glacialis</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>), common guillemot (<i>Uria aalge</i>), razorbill (<i>Alca torda</i>), common gull (<i>Larus canus</i>) and Atlantic puffin (<i>Fratercula arctica</i>) (Kober <i>et al.</i>, 2010).</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 Block16/26 is low throughout the year with no data for November and December (Webb <i>et al.</i>, 2016).</p>

<p>Commercial Fisheries</p>	<p>Caledonia is located in International Council for the Exploration of the Seas (ICES) Rectangle 45F1 (Scottish Government, 2020). Amalgamated VMS data from 2007 – 2015 shows demersal trawling activity associated with oil and gas pipelines in this region from <i>Nephrops</i> and demersal trawling. The fishing intensity is generally low and increases slightly from west to east and from north to south. ICES Rectangle 45F1 experiences low/low-moderate levels of trawling (i.e. between 5 – 20 tracks) on the majority of its pipelines, when compared to the rest of the UKCS (Rouse <i>et al.</i>, 2017). In 2019, fishing effort in ICES Rectangle 45F1 was highest in February, April and July, which accounted for 72% of the total number of days fished, whilst January, May, November and December experiencing either no or very low (i.e. disclosive) levels of fishing effort (Scottish Government, 2020). Trawls were the most utilised gear in Rectangle 45F1 (Scottish Government, 2020).</p>
<p>Other Users of the Sea</p>	<p>Caledonia is located in an area that experiences low shipping intensity. Sea users other than commercial fisheries mainly relate to offshore oil and gas. The closest oil and gas installations are the Britannia and Alba North platforms, both located roughly km south of Caledonia and operated by Chrysaor and Ithaca, respectively.</p> <p>There is no other infrastructure in the vicinity of the Caledonia Field. However, there are two wrecks in the vicinity of the project area, approximately 6 km south east and 9 km south west of the project area, one of which is confirmed to be Palmyra and a second, unidentified wreck which is thought to possibly form part of Palmyra as well (Scottish Government, 2019c). Neither of these are protected wrecks</p>
<p>Atmosphere</p>	<p>The majority of atmospheric emissions for the Caledonia decommissioning relate to vessel time or are associated with the recycling of material returned to shore. As the decommissioning activities proposed are of short duration, this aspect is not anticipated to result in significant impacts. The estimated CO₂ emissions to be generated by the selected decommissioning options is 8,644 Te, this equates to 0.11% of the total UKCS vessel emissions (excluding fishing vessels) in 2017 (7,800,000 Te; BEIS, 2019). In addition to emissions associated with production of new required materials and recycling of recovered materials, this CO₂ total has been calculated assuming an anticipated 52 days of vessel activity for the duration of the project, split across three vessel types (including but not limited to a DSV, trawler and survey vessel). This is a worst-case estimate of vessel days based on extensive overtrawling, which will not be required based on the proposed activities and stability of the rigid flowlines being decommissioned <i>in situ</i>.</p>

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 Premier’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 impacts to commercial fisheries. 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.

The EA concludes that the recommended options to decommission the Caledonia Field subsea installations and pipelines can be completed without causing significant impact to environmental or societal receptors.

Overview:

Table 4.2: Environmental Impact Management		
Activity	Main Impacts	Management
Subsea Installations Removal (incl. Stabilisation Features)	Seabed impacts from: <ul style="list-style-type: none"> • Deburial and recovery of infrastructure; • excavation of protection and stabilisation materials; and • removal of grout bags and stabilisation materials. Impacts to commercial fisheries from project activities limiting access to fishing grounds.	Vessel use will be optimised/minimised for the decommissioning activities and managed per Premier’s existing vessel management procedures, including a vessel work programme. The 500m safety exclusion zone will remain in operation during the decommissioning activities reducing risk of non-project related vessels entering into the area where decommissioning activities are taking place. This safety exclusion zone will be removed 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 500m safety zones surrounding the existing substructures are re-assessed. 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 and Premier keeps manned bridges.

		<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.</p> <p>All pipeline routes and installation sites will be the subject of oilfield debris clearance and as-left verification surveys when decommissioning activity has concluded.</p>
<p>Decommissioning Rigid Flowlines (incl. Stabilisation Features)</p>	<p>Seabed impacts from decommissioning of rigid flowlines <i>in situ</i>:</p> <ul style="list-style-type: none"> • cutting ends and recovery of lengths of flowlines; and • deposition of new rock armour to protect ends and previously cut exposures (where required). <p>Snagging risk to commercial fisheries associated with pipelines decommissioned <i>in situ</i>.</p>	<p>Operations will be conducted as carefully as possible to minimise sediment disturbance, avoiding dragging of items on the seabed where possible. No sediment will be removed from the seabed as a result of the proposed activities.</p> <p>Rock dumping will be carefully managed (e.g. through use of an ROV to limit the areas covered) thereby reducing unnecessary spreading and depth of coverage to that required to ensure no snagging hazards remain. Where possible, rock bags will be reused as stabilisation materials during decommissioning.</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.</p> <p>Any snagging risk to other sea users 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> <p>All pipeline routes and installation sites will be the subject of oilfield debris clearance and as-left verification surveys when decommissioning activity has concluded.</p>

5. INTERESTED PARTY CONSULTATIONS

Consultations Summary:

Table 5.1 Summary of Stakeholder Comments		
Who	Comment	Response
Informal Consultations		
Scottish Fishermen's Federation National Federation of Fishermen's Organisations Joint Nature Conservation Committee Health and Safety Executive OPRED EMT OPRED ODU (observers) Premier Oil UK Limited	<p>Premier Oil has engaged with interested parties and stakeholders who participated in Comparative Assessment workshops, as detailed in the column on the left.</p> <p>Furthermore, CA workshop invites were issued to the Environment Agency, the Scottish Environment Protection Agency, Marine Scotland and the Oil and Gas Authority, but these organisations were unable to attend.</p>	N/A
Statutory Consultations		
Various Statutory Consultees	<p>Following statutory consultation (26th August 2021 – 24th September 2021), Premier received a number of guidance notes, questions and actions relating to the Caledonia Decommissioning Programmes and supporting documents from the consultees.</p>	<p>All consultee comments have been satisfactorily addressed throughout OPRED's process, and minor updates to the Decommissioning Programmes and supporting documents have been implemented where appropriate.</p>
Public	No comments received	N/A

6. PROGRAMME MANAGEMENT

6.1 Project Management and Verification

A Project Management team will be appointed to manage suitable contractors for the decommissioning of the Caledonia infrastructure. Standard procedures for operational control and hazard identification and management will be used. The Project Management team 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 the Premier Oil Management of Change processes and discussed and agreed with OPRED.

6.2 Post-Decommissioning Debris Clearance and Verification

During site clearance activities, reasonable endeavours will be made to recover any dropped objects and items subject to any outstanding Petroleum Operations Notices. All recovered seabed debris related to offshore oil and gas activities will be returned for onshore disposal or recycling in line with existing disposal arrangements. A post decommissioning site survey, to verify decommissioning activities have been completed, will be carried out across the designated 500m safety zones of installation sites and a 100m corridor (50m either side) along each pipeline over its length.

The clear seabed will be validated by an independent verification trawl over the installation sites and pipeline corridors, non over-trawl techniques such as Side Scan Sonar (SSS) / ROV or by the post decommissioning survey. 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

Project Plan

The high level Gantt chart Figure 6.1 provides the overall schedule for Caledonia programme of decommissioning activities. Activities outside of the Britannia Platform’s 500m safety zone will be executed as part of the Greater Balmoral Area decommissioning project. Infrastructure within the Britannia Platform’s 500m safety zone will be decommissioned at a later date, as described in Tables 1.6, 2.1, 2.2 and 2.3.

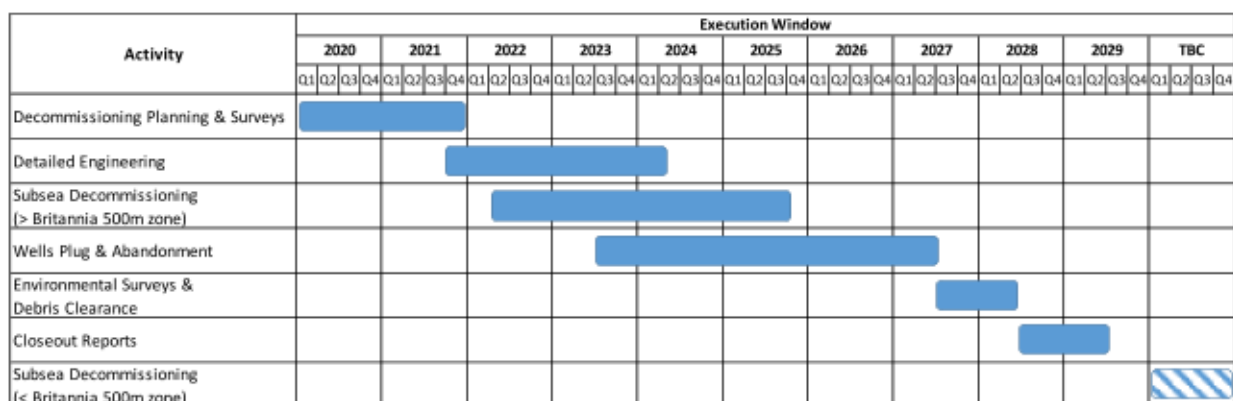


Figure 6.1: Gantt Chart of Project Plan

6.4 Costs

An overall cost estimate following UK Oil & Gas Guidelines on Decommissioning Cost Estimation (Issue 3, October 2013) has been provided to OPRED.

6.5 Close Out

In accordance with the OPRED Guideline Notes, a close out report will be submitted to OPRED and posted on the Premier Oil website reconciling any variations from the Decommissioning Programme within one year of the completion of the offshore decommissioning scope. This will include debris removal and, where applicable, independent verification of seabed clearance, and the first post-decommissioning environmental survey.

6.6 Post-Decommissioning Monitoring and Evaluation

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.

All pipeline routes and installation sites will be the subject of oilfield debris clearance and as-left verification surveys when decommissioning activity has concluded. All snag hazards created by drilling and/or production related activities will be removed or mitigated as part of the execution of the decommissioning programmes.

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, 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 and FishSafe system.

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.

7. SUPPORTING DOCUMENTS

Document Number	Title
AB-CA-XGL-LL-SU-RP-0003	Caledonia Decommissioning Environmental Appraisal
AB-CA-XGL-LL-SU-RP-0001	Comparative Assessment Report – Caledonia

8. PARTNER LETTER(S) OF SUPPORT

Chrysaor Production (U.K.) Limited



CHRYSAOR

Chrysaor Production (U.K.) Limited
Rubislaw House
Hill of Rubislaw
Aberdeen
AB15 6FZ

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

FAO: Mrs. Debbie Taylor

24 December 2021

Dear Sirs,

Letter of Support: Caledonia Decommissioning Programmes

Chrysaor Production (U.K.) Limited hereby confirm that Premier Oil UK Limited ("Premier") is authorised to submit, on our behalf, the abandonment programmes relating to the Caledonia Field subsea installations and pipelines, as detailed in document no. AB-CA-PMO-LL-PM-PG-0001 revision B03, dated December 2021 and titled "Caledonia Decommissioning Programmes", as directed by the Secretary of State in your letter of 20 December 2021.

We confirm our agreement to the proposals detailed in the Caledonia Decommissioning Programmes dated 21 December 2021, which is to be submitted by Premier, in so far as they relate to those facilities in respect of which we are instructed to submit a programme under Section 29 of the Petroleum Act 1998.

Yours faithfully



Michael Burnett (Dec 24, 2021 11:09 GMT)

Mike Burnett
Manager, Decommissioning Strategy & Integration

For and on behalf of Chrysaor Production (U.K.) Limited (Company Number 00524868)

Chrysaor (U.K.) Theta Limited



CHRYSAOR

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Rubislaw House
Hill of Rubislaw
Aberdeen
AB15 6FZ

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

FAO: Mrs. Debbie Taylor

24 December 2021

Dear Sirs,

Letter of Support: Caledonia Decommissioning Programmes

Chrysaor (U.K.) Theta Limited hereby confirm that Premier Oil UK Limited ("Premier") is authorised to submit, on our behalf, the abandonment programmes relating to the Caledonia Field subsea installations and pipelines, as detailed in document no. AB-CA-PMO-LL-PM-PG-0001 revision B03, dated December 2021 and titled "Caledonia Decommissioning Programmes", as directed by the Secretary of State in your letter of 20 December 2021.

We confirm our agreement to the proposals detailed in the Caledonia Decommissioning Programmes dated 21 December 2021, which is to be submitted by Premier, in so far as they relate to those facilities in respect of which we are instructed to submit a programme under Section 29 of the Petroleum Act 1998.

Yours faithfully



Mike Burnett (Dec 24, 2021, 11:11 GMT)

Mike Burnett
Manager, Decommissioning Strategy & Integration

For and on behalf of Chrysaor (U.K.) Theta Limited (Company Number 01491002)

Chrysaor Petroleum Company U.K. Limited



CHRYSAOR

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Rubislaw House
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Aberdeen
AB15 6FZ

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

FAO: Mrs. Debbie Taylor

24 December 2021

Dear Sirs,

Letter of Support: Caledonia Decommissioning Programmes

Chrysaor Petroleum Company U.K. Limited hereby confirm that Premier Oil UK Limited ("Premier") is authorised to submit, on our behalf, the abandonment programmes relating to the Caledonia Field subsea installations and pipelines, as detailed in document no. AB-CA-PMO-LL-PM-PG-0001 revision B03, dated December 2021 and titled "Caledonia Decommissioning Programmes", as directed by the Secretary of State in your letter of 20 December 2021.

We confirm our agreement to the proposals detailed in the Caledonia Decommissioning Programmes dated 21 December 2021, which is to be submitted by Premier, in so far as they relate to those facilities in respect of which we are instructed to submit a programme under Section 29 of the Petroleum Act 1998.

Yours faithfully



Michael Burnett (Dec 24, 2021 11:10 GMT)

Mike Burnett
Manager, Decommissioning Strategy & Integration

For and on behalf of Chrysaor Petroleum Company U.K. Limited (Company Number 00792712)

Mitsui E&P UK Limited



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

FAO: Mrs. Debbie Taylor

5 January 2022

Dear Sirs,

Letter of Support: Caledonia Decommissioning Programmes

Mitsui E&P UK Limited hereby confirm that Premier Oil UK Limited ("Premier") is authorised to submit, on our behalf, the abandonment programmes relating to the Caledonia Field subsea installations and pipelines, as detailed in document no. AB-CA-PMO-LL-PM-PG-0001 revision B03, dated December 2021 and titled "Caledonia Decommissioning Programmes", as directed by the Secretary of State in your letter of 20 December 2021.

We confirm our agreement to the proposals detailed in the Caledonia Decommissioning Programmes dated 21 December 2021, which is to be submitted by Premier, in so far as they relate to those facilities in respect of which we are instructed to submit a programme under Section 29 of the Petroleum Act 1998.

Yours faithfully

Naoki Ishii

Naoki Ishii
Director and General Manager

For and on behalf of Mitsui E&P UK Limited (Company Number 07652477)

Premier Oil ONS Limited

DocuSign Envelope ID: BBC6DFDF-F405-4ED6-853A-E68A04F66F2A

Premier Oil ONS Limited
Upper Denburn House
Prime Four Business Park
Kingswells
Aberdeen AB15 8PU



harbourenergy.com

f.a.o. Pieter voor de Poorte
Decommissioning Lead
Premier Oil UK Limited

Sent by e-mail to: PvoordePoorte@PREMIER-OIL.com

4 January 2022

Dear Sirs,

Letter of Support

Abandonment Programme for Caledonia Installations and Caledonia Field Pipelines

We refer to the correspondence between the Offshore Petroleum Regulator for Environment & Decommissioning and Premier Oil UK Limited ("POUK") dated 20th December 2021 whereby the Secretary of State directed POUK to submit an abandonment programme for (i) the abandonment of the Caledonia Installations; and (ii) the abandonment of the Caledonia Field Pipelines (the "Decommissioning Programme").

Premier Oil ONS Limited ("PONS"), as holder of a notice under section 29 of the Petroleum Act 1998, hereby authorises POUK to submit the Decommissioning Programme to the Secretary of State on our behalf.

We further confirm that we support the proposals detailed in the Decommissioning Programme insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Yours faithfully,

DocuSigned by:

Signed.....
For and on behalf of Premier Oil ONS Limited

Ithaca Oil and Gas Limited

Pieter voor de Poorte

From: Michelle Smith <...@ithacaenergy.com>
Sent: 19 January 2022 15:53
To: Pieter voor de Poorte
Subject: [EXTERNAL] FW: [EXT] Caledonia Decommissioning Programmes

*** EXTERNAL E-MAIL : Beware links and/or attachments ***

Pieter,

**LETTER OF SUPPORT
CALEDONIA DECOMMISSIONING PROGRAMMES**

We, Ithaca Oil and Gas Limited, acknowledge receipt of your communication dated 16 December 2021 in which you shared the post-consultation Draft of the Caledonia Decommissioning Programmes.

Ithaca Oil and Gas Limited hereby confirms that we authorise Premier Oil UK Limited to submit on our behalf the Caledonia Decommissioning Programmes as directed by the Secretary of State.

We further confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Kind regards,
Michelle.



Michelle Smith | Commercial Advisor

T: +44 1224 XXXXXX | M: +44 7XXXXXXX | E: ...@ithacaenergy.com

Ithaca Energy (UK) Limited | Hill of Rubislaw, Aberdeen, AB15 6XL, United Kingdom

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Dana Petroleum (North Sea) Limited



Dana Petroleum (North Sea)
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t: +44 (0) 1224 616 000
f: +44 (0) 1224 616 001
www.dana-petroleum.com

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

Attn. Debbie Taylor

20th January 2022

Dear Ms Taylor,

PETROLEUM ACT 1998

Abandonment of the Caledonia Installations

Dana Petroleum (North Sea) Limited (Company No. 02338195) ("Dana") confirm that we authorise Premier Oil UK Limited (Company No. SC048705) ("Premier") to submit on our behalf abandonment programmes relating to the Caledonia Installations as directed by the Secretary of State on 20th December 2021.

We confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes dated 3rd November 2021 which will be submitted by Premier, insofar 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 sincerely,
Dana Petroleum (North Sea) Limited

Eiko van Dalen

[Eiko van Dalen \(Jan 20, 2022 15:19 GMT+1\)](#)

Eiko van Dalen
Director

Registered in England and Wales, Company No. 02338195
Registered Office: 78 Cannon Street, London, England EC1N 6AF

Dana Petroleum (North Sea) Limited



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

Attn: Debbie Taylor

20th January 2022

Dear Ms Taylor,

PETROLEUM ACT 1998

Abandonment of the Caledonia Field Pipelines

Dana Petroleum (North Sea) Limited (Company No. 02336195) ("Dana") confirm that we authorise Premier Oil UK Limited (Company No. SC048705) ("Premier") to submit on our behalf abandonment programmes relating to the Caledonia Field Pipelines as directed by the Secretary of State on 20th December 2021.

Specifically these Pipelines comprise PL1919 (from, and including, the Disconnection Point adjacent to Caledonia Well 16/26-30y to and including the Britannia Platform Riser Tie-in Flange), PL1920 (from, and not including the Caledonia SSIV Gas Lift Pipework (as detailed in PWA consent 183W/19) to and including the Disconnection Point adjacent to Caledonia Well 16/26-30y and PLU1921 (Pipeline and any associated apparatus).

We confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes dated 3rd November 2021 which will be submitted by Premier, insofar 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 sincerely,
Dana Petroleum (North Sea) Limited

Eiko van Dalen

[Eiko van Dalen \(Jan 20, 2022 15:19 GMT+1\)](#)

Eiko van Dalen
Director

Registered in England and Wales, Company No. 02336195
Registered Office: 78 Cannon Street, London, England EC1N 6AF

Waldorf Production UK Limited

Pieter voor de Poorte

From: Aaditya Chintalapati <...@waldorf-production.com>
Sent: 19 January 2022 13:06
To: Pieter voor de Poorte
Subject: [EXTERNAL] RE: Caledonia Decommissioning Programmes

***** EXTERNAL E-MAIL : Beware links and/or attachments *****

**LETTER OF SUPPORT
CALEDONIA DECOMMISSIONING PROGRAMMES**

We, Waldorf Production UK Limited, acknowledge receipt of your communication dated 16 December 2021 in which you shared the post-consultation Draft of the Caledonia Decommissioning Programmes.

Waldorf Production UK Limited hereby confirms that we authorise Premier Oil UK Limited to submit on our behalf the Caledonia Decommissioning Programmes as directed by the Secretary of State.

We further confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Thanks and regards
Aaditya

Aaditya Chintalapati, CFA
Chief Financial Officer | Waldorf Production Limited
[Email](#) | [LinkedIn](#)
+44 7XX XXX XXXX

Waldorf Production North Sea Limited

Pieter voor de Poorte

From: Aaditya Chintalapati <...@waldorf-production.com>
Sent: 20 January 2022 14:21
To: Pieter voor de Poorte
Subject: [EXTERNAL] RE: Caledonia Decommissioning Programmes

***** EXTERNAL E-MAIL : Beware links and/or attachments *****

**LETTER OF SUPPORT
CALEDONIA DECOMMISSIONING PROGRAMMES**

We, Waldorf Production North Sea Limited, acknowledge receipt of your communication dated 16 December 2021 in which you shared the post-consultation Draft of the Caledonia Decommissioning Programmes.

Waldorf Production North Sea Limited hereby confirms that we authorise Premier Oil UK Limited to submit on our behalf the Caledonia Decommissioning Programmes as directed by the Secretary of State.

We further confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Thanks
Aaditya

Aaditya Chintalapati, CFA
Chief Financial Officer | Waldorf Production Limited
[Email](#) | [LinkedIn](#)
+44 7XX XXX XXXX

EnQuest Energy Limited

Pieter voor de Poorte

From: Davis, Roger <...@enquest.com>
Sent: 19 January 2022 17:05
To: Pieter voor de Poorte
Cc: Massie, Paul; Easton, Ian
Subject: [EXTERNAL] Letter of Support - Caledonia Decommissioning Programmes

EXTERNAL E-MAIL : Beware links and/or attachments

Dear Pieter,

We, EnQuest Energy Limited, acknowledge receipt of your communication dated 16 December 2021 in which you shared the post-consultation Draft of the Caledonia Decommissioning Programmes.

EnQuest Energy Limited hereby confirms that we authorise Premier Oil UK Limited to submit on our behalf the Caledonia Decommissioning Programmes as directed by the Secretary of State.

We further confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes dated November 2021 insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Best regards,

Roger Davis
Business Manager – Decommissioning and Non-Operated

T: +44 1224 XXXXXXX
M: +44 7XXX XXXXXXX

www.enquest.com

We All Play Our Part.



Level 6, Annan House, 33-35 Palmerston Road, Aberdeen, AB11 5QP

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EnQuest Production Limited

Pieter voor de Poorte

From: Davis, Roger <...@enquest.com>
Sent: 19 January 2022 17:05
To: Pieter voor de Poorte
Cc: Massie, Paul
Subject: [EXTERNAL] Letter of Support - Caledonia Decommissioning Programmes

EXTERNAL E-MAIL : Beware links and/or attachments

Dear Pieter,

We, EnQuest Production Limited, acknowledge receipt of your communication dated 16 December 2021 in which you shared the post-consultation Draft of the Caledonia Decommissioning Programmes.

EnQuest Production Limited hereby confirms that we authorise Premier Oil UK Limited to submit on our behalf the Caledonia Decommissioning Programmes as directed by the Secretary of State.

We further confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes dated November 2021 insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Best regards,

Roger Davis
Business Manager – Decommissioning and Non-Operated

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www.enquest.com

We All Play Our Part.



Level 6, Annan House, 33-35 Palmerston Road, Aberdeen, AB11 5QP

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Equinor UK Limited



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

FAO: Mrs. Debbie Taylor

03 February 2022

Dear Sirs,

Letter of Support: Caledonia Decommissioning Programmes

Equinor UK Limited hereby confirm that Premier Oil UK Limited ("Premier") is authorised to submit, on our behalf, the abandonment programmes relating to the Caledonia subsea installations and pipelines, as directed by the Secretary of State in your letter of 20 December 2021.

We confirm our agreement to the proposals detailed in the Caledonia Decommissioning Programmes dated 21 December 2021, which is to be submitted by Premier, in so far as they relate to those facilities in respect of which we are instructed to submit an abandonment programme under Section 29 of the Petroleum Act 1998.

Yours faithfully,

Nigel Gamblin (840164)

Nigel Gamblin
VP Asset Management

For and on behalf of Equinor UK Limited

Page 1 of 1

Equinor UK Limited
Registered number
01285743

Registered office address
1 Kingdom Street
London, W26BD

Telephone
+44 (0) 20 3204 3200

Internet
www.equinor.com

Fina Petroleum Development Limited

Pieter voor de Poorte

From: Gemma CATTO <...@totalenergies.com>
Sent: 19 January 2022 16:05
To: Pieter voor de Poorte
Cc: David HAMPTON; Beth NICKLESS
Subject: [EXTERNAL] Caledonia Decommissioning Programmes - FPDL letter of support

***** EXTERNAL E-MAIL : Beware links and/or attachments *****

Dear Pieter,

Subject – FPDL letter of support re submission of Caledonia Decommissioning Programmes

We, Fina Petroleum Development Limited ("FPDL"), acknowledge receipt of your communication dated 16 December 2021 in which you shared the post-consultation draft (Revision B02) of the Caledonia Decommissioning Programmes.

FPDL hereby confirms that we authorise Premier Oil UK Limited to submit on our behalf the Caledonia Decommissioning Programmes as directed by the Secretary of State.

We further confirm that we support the proposals detailed in the Caledonia Decommissioning Programmes insofar as they relate to those facilities in respect of which we are required to submit an abandonment programme.

Kind regards,

Gemma Catto



Gemma Catto
Business Negotiation Lead
TotalEnergies E & P UK – Strategy & Business

TotalEnergies E & P UK Limited
TotalEnergies House, Tait and Road, Westhill,
Aberdeenshire, AB32 6JZ
M.: +44 (0)7XXX XXXXXX

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APPENDIX I – COPIES OF THE PUBLIC NOTICES

The Press and Journal:

PUBLIC NOTICE
The Petroleum Act 1998
Decommissioning Programmes for the
Caledonia subsea installations and
pipelines

In accordance with the provisions of the Petroleum Act 1998, Premier Oil UK Limited (a Harbour Energy company) has submitted, for the consideration of the Secretary of State for Business, Energy & Industrial Strategy, the draft Decommissioning Programmes for the Caledonia subsea installations and pipelines. It is a requirement of the Act that interested parties be consulted on such decommissioning proposals.

The Caledonia Field is located in block 16/26 of the Central North Sea, approximately 220km northeast of Aberdeen. The Caledonia Field was developed as a subsea tieback to the Britannia platform.

The facilities covered by the Caledonia Decommissioning Programmes are:

- All subsea installations, and
- All subsea pipelines associated with the Caledonia Field.

Harbour Energy hereby gives notice that the Caledonia Decommissioning Programmes are available on its website at www.harbourenergy.com, or alternatively a hard copy of the document may be requested by contacting Harbour Energy during office hours on 01224 618900.

Representations regarding the Caledonia Decommissioning Programmes should be submitted in writing to the person named at the address below, or via email to abzdecommissioning@premier-oil.com by the consultation closing date of 24th September 2021. Submissions should state the grounds upon which any representations are being made.

Pieter voor de Poorte
Harbour Energy,
Upper Denburn House, Prime Four Business Park,
Kingswells Causeway, Kingswells,
Aberdeen, AB15 8PU
Dated: 26th August 2021

The Daily Telegraph:

PUBLIC NOTICE
The Petroleum Act 1998
Decommissioning Programmes for the Caledonia subsea installations and pipelines

In accordance with the provisions of the Petroleum Act 1998, Premier Oil UK Limited (a Harbour Energy company) has submitted, for the consideration of the Secretary of State for Business, Energy & Industrial Strategy, the draft Decommissioning Programmes for the Caledonia subsea installations and pipelines. It is a requirement of the Act that interested parties be consulted on such decommissioning proposals.

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- All subsea pipelines associated with the Caledonia Field.

Harbour Energy hereby gives notice that the Caledonia Decommissioning Programmes are available on its website at www.harbourenergy.com, or alternatively a hard copy of the document may be requested by contacting Harbour Energy during office hours on 01224 618900.

Representations regarding the Caledonia Decommissioning Programmes should be submitted in writing to the person named at the address below, or via email to abzdecommissioning@premier-oil.com, by the consultation closing date of 24th September 2021. Submissions should state the grounds upon which any representations are being made.

Pieter voor de Poorte
Harbour Energy,
Upper Denburn House, Prime Four Business Park,
Kingswells Causeway, Kingswells,
Aberdeen, AB15 8PU
Dated: 26th August 2021

APPENDIX II – DEPTH OF BURIAL PROFILES

