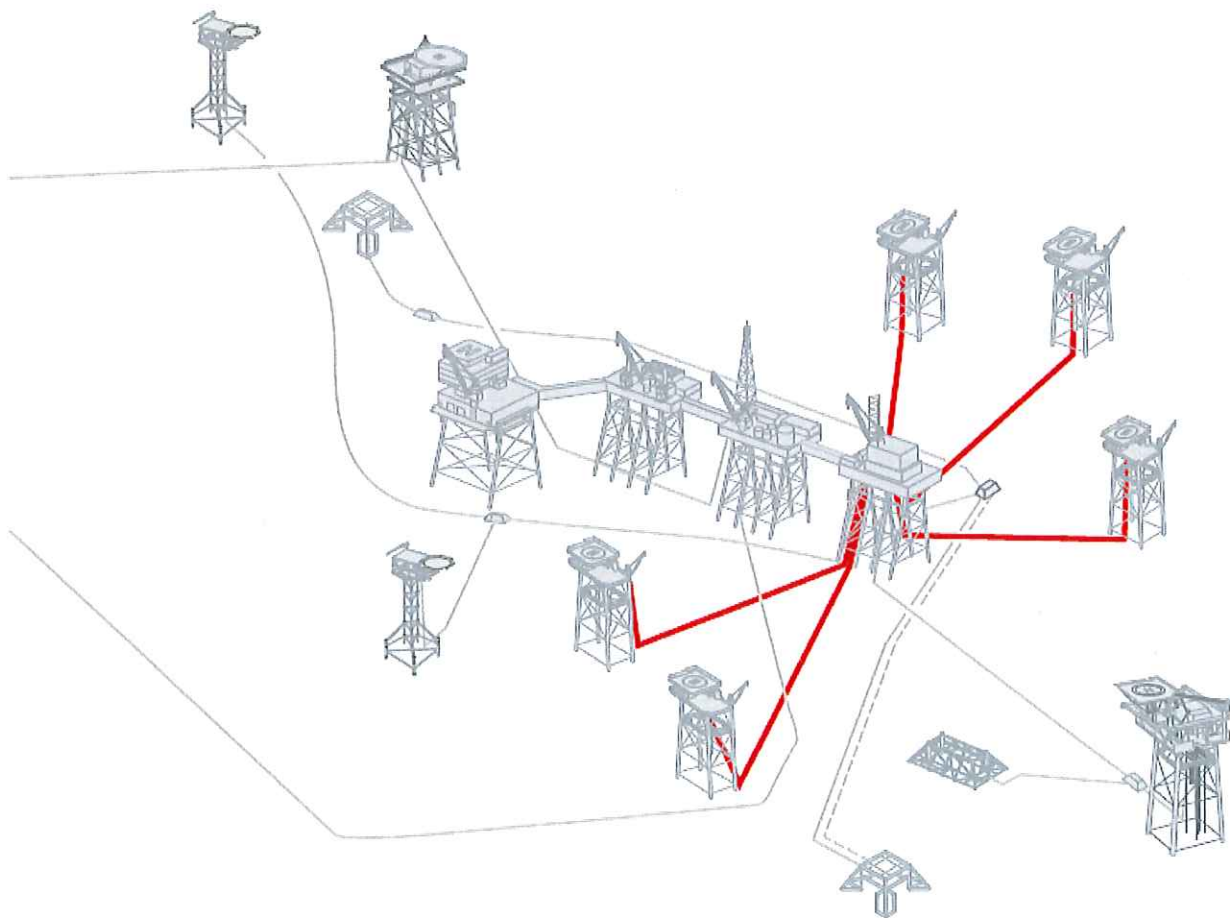


Decommissioning Programme




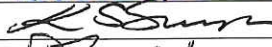


FINAL VERSION



Viking Satellites CD, DD, ED, GD, HD
Infield Pipelines

Document Control

Approvals

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Name	Company	No of Copies
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Sandra Turin	Britoil PLC / BP	1

Contents

<i>INST = Installations; P/L = Pipelines</i>		INST	P/L
CONTENTS	3		✓
A. TABLE OF TERMS AND ABBREVIATIONS	4		✓
B. TABLE OF FIGURES AND TABLES	5		✓
C. TABLE OF APPENDICES	5		✓
1. EXECUTIVE SUMMARY	6		✓
1.1 DECOMMISSIONING PROGRAMME	6		✓
1.2 REQUIREMENT FOR DECOMMISSIONING PROGRAMME	6		✓
1.3 INTRODUCTION	6		✓
1.4 OVERVIEW OF PIPELINES BEING DECOMMISSIONED	8		✓
1.4.1 FIELD INFORMATION	8		✓
1.4.2 PIPELINES	8		✓
1.5 SUMMARY OF PROPOSED DECOMMISSIONING PROGRAMME	9		✓
1.6 FIELD LOCATION INCLUDING FIELD LAYOUT AND ADJACENT FACILITIES	10		✓
1.7 INDUSTRIAL IMPLICATIONS	14		✓
2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED	15		✓
2.1 PIPELINES INCLUDING STABILISATION FEATURES	15		✓
2.2 INVENTORY ESTIMATES	18		✓
3. REMOVAL AND DISPOSAL METHODS	19		✓
3.2 PIPELINES	19		✓
3.1.1 DECOMMISSIONING OPTIONS	19		✓
3.1.2 COMPARATIVE ASSESSMENT METHOD	20		✓
3.2 PIPELINE STABILISATION FEATURES	21		✓
3.3 WASTE STREAMS	22		✓
4. ENVIRONMENTAL IMPACT ASSESSMENT	23		✓
4.1 ENVIRONMENTAL SENSITIVITIES	23		✓
4.2 POTENTIAL ENVIRONMENTAL IMPACTS AND THEIR MANAGEMENT	25		✓
4.2.1 ENVIRONMENTAL IMPACT ASSESSMENT SUMMARY	25		✓
5. INTERESTED PARTY CONSULTATIONS	27		✓
6. PROGRAMME MANAGEMENT	28		✓
6.1 PROJECT MANAGEMENT AND VERIFICATION	28		✓
6.2 POST-DECOMMISSIONING DEBRIS CLEARANCE AND VERIFICATION	28		✓
6.3 SCHEDULE	29		✓
6.4 COSTS	29		✓
6.5 CLOSE OUT	29		✓
6.6 POST DECOMMISSIONING MONITORING AND EVALUATION	29		✓
7. SUPPORTING DOCUMENTS	30		✓
8. PARTNER LETTERS OF SUPPORT	31		✓

A. Table of Terms and Abbreviations

Abbreviation	Explanation
AR	Viking A Riser Platform
CA	Comparative Assessment
CD	Viking C Satellite Platform
CoP	Cessation of Production
DD	Viking D Satellite Platform
DECC	Department of Energy and Climate Change (now BEIS)
BEIS	Department for Business, Energy and Industrial Strategy (formally DECC)
ED	Viking E Satellite Platform
EIA	Environmental Impact Assessment
EMS	Environmental Management System
ES	Environmental Statement
FD	Viking F Satellite Platform
GD	Viking G Satellite Platform
HD	Viking H Satellite Platform
HLV	Heavy Lift Vessel
KP	Kilometre Point
KPI	Key Performance Indicator
LAT	Lowest Astronomical Tide
LOGGS	Lincolnshire Offshore Gas Gathering System
MeOH	Methanol
NORM	Naturally Occurring Radioactive Material
NUI	Normally Unattended Installation
OGUK	Oil and Gas United Kingdom
P&A	Plug and Abandon
PMT	Project Management Team
PWA	Pipeline Works Authorisation
SCI	Site of Community Importance
SLV	Shear Leg Vessel
SNS	Southern North Sea
Te	Tonne
TGT	Theddlethorpe Gas Terminal
Tscf	Trillion standard cubic foot
UKCS	United Kingdom Continental Shelf

B. Table of Figures and Tables

Figure No	Description	Page
1.1	Viking Field Location in UKCS	10
1.2	Viking Field Layout	11
1.3	Adjacent Facilities	13
6.1	Gantt Chart of Project Plan	29
Table No	Description	Page
1.1	Installations Being Decommissioned	8
1.2	Pipelines Being Decommissioned	8
1.3	Pipeline Section 29 Notice Holder Details	8
1.4	Summary of Decommissioning Programme	9
1.5	List of Adjacent Facilities	12
2.1	Pipeline / Flowline / Umbilical Information	15
2.2	Subsea Pipeline Stabilisation Features	17
2.3	Pipeline and Mattress Material Functional Category Summary	18
3.1	Pipeline or Pipeline Groups / Decommissioning Options	19
3.2	Outcomes of Comparative Assessment	21
3.3	Pipeline Stabilisation Features	21
3.4	Waste Stream Management Methods	22
3.5	Inventory Disposition	22
4.1	Environmental Sensitivities	23
4.2	Environmental Impact Management	25
5.1	Summary of Stakeholder Comments	27
6.1	Provisional Decommissioning Programme Costs	29
7.1	Supporting Documents	30

C. Table of Appendices

Appendix No	Description
None	

1. Executive Summary

1.1 Decommissioning Programme

This document contains the decommissioning programme for 10 interfield pipelines (5 pairs) for notice served under Section 29 of the Petroleum Act 1998.

1.2 Requirement for Decommissioning Programme

Pipelines:

In accordance with the Petroleum Act 1998, ConocoPhillips (U.K.) Limited as Operator of the Viking Field and on behalf of the Section 29 notice holders (see Table 1.3 and Section 8) is applying to the Department for Business, Energy and Industrial Strategy to obtain approval for decommissioning of the Viking CD, DD, ED, GD and HD interfield pipelines detailed in Section 2 of this document.

In conjunction with public, stakeholder and regulatory consultation, the decommissioning programme is submitted in compliance with national and international regulations and with consideration of BEIS guidelines. The schedule outlined in this document is associated with the decommissioning project that begun in June 2014, when the Ensco 92 Jack Up Drilling Rig commenced well Plug and Abandonment (P&A) activities at the Viking GD satellite platform.

1.3 Introduction

The Viking Field was discovered in 1965 and is spread over a 24 km diameter sector in blocks 49/11d, 49/12a, 49/16a, 49/16c, 49/17a, and 49/18a in the Southern North Sea, approximately 138 km due East of Theddlethorpe on the Lincolnshire coast.

The reservoirs developed with wells from the Viking satellites are in the following Quad/blocks:

- Viking CD 49/17a,
- Viking DD 49/17a/18a,
- Viking ED 49/16a,
- Viking GD 49/17a,
- Viking HD 49/12a/17a.

Production from the Viking reservoirs commenced in 1972 from two manned multi jacket bridge linked complexes Viking A (Alpha) and Viking B (Bravo). Gas export from Viking A and B was combined at the Viking A Riser (AR) platform prior to being exported to the Theddlethorpe Gas Terminal (TGT) via a 28" export pipeline. Normally Unattended Installations (NUI) were subsequently tied back to the two manned complexes as follows:

- 1974 – 1975, Viking CD, DD, ED, GD, HD tied back to Viking B complex
- 1975 Viking FD tied back to Viking A complex
- 1984 Victor JD tied back to Viking B complex
- 1995 Victor JM (subsea) tied-back to Victor JD
- 1998 Viking KD and LD tied back to Viking B complex
- 2000 Vixen VM (subsea) tied back to Viking B complex
- 2008 Victoria SM (subsea) tied back to Viking B complex

In 1991 the reservoirs produced by the Viking A Complex and Viking FD satellite became uneconomic and were decommissioned in 1995. The Viking AR platform was re designed as a

Normally Unattended Installation (NUI) and transported export gas from the Viking B Complex to TGT until 2009. In 2009 Viking B export gas was rerouted to the Lincolnshire Offshore Gas Gathering System (LOGGS) manned Complex via a new 16" export pipeline.

The 5 Viking satellites CD, DD, ED, GD, HD have produced 1.7 Tscf of gas and depending on the satellite; last produced between 2002 and 2012. Cessation of Production applications were submitted and approved as follows:

Field	Reservoirs	Installation	Submission Date	Approval Date
Viking D Field	G	GD	01 April 2011	15 April 2011
Viking E Field	Gn	GD	22 July 2015	19 August 2015
Viking B Field	B, C, D	BD, CD, DD	15 May 2014	18 June 2014
Viking A Field	H	HD	14 August 2014	20 August 2014
Viking C Field	E	ED	25 June 2015	14 August 2015

All 5 Viking Satellites are small installations with total combined Topsides and Jacket weights ranging from 750 Te to 1358 Te; stand in 22m to 32m of water and are tied back to the Viking B complex by individual buried pipelines ranging between 4km and 12km in length. The small size, shallow water depth and design life of the 5 Viking Satellites has determined the philosophy of their decommissioning, which will be to:

- Well Plug and Abandon (P&A) – covered by a separate approved Installations Decommissioning Programme
- Remove the satellite platforms – covered by a separate approved Installations Decommissioning Programme
- Leave the cleaned pipelines in situ.

The other installations and pipelines in the Viking field will subsequently be decommissioned at an appropriate time and will be covered by their own Decommissioning Programmes.

1.4 Overview of Pipelines Being Decommissioned

1.4.1 Field Information

Table 1.1 Installations Being Decommissioned			
Field Names		Quad / Block	
Fields	Viking A,B,C,D,E	Production Type	Gas / Condensate
Water Depth	22.6m – 32.3 m	UKCS block	Quad 49 Blocks 12a/16a/ 17a and 18a

Distance to Median	Distance from nearest UK coastline
km	km
Viking DD 18 km	Viking ED 78 km

See Figure 1.1 for further details.

1.4.2 Pipelines

Table 1.2 Pipelines Being Decommissioned		
Number of Pipelines	10	See table 2.1

Table 1.3 Pipelines Section 29 Notice Holders Details		
Section 29 Notice Holders	Registration Number	Equity Interest
ConocoPhillips (U.K.) Limited	00524868	50%
Britoil Limited	SC077750	50%

1.5 Summary of Proposed Decommissioning Programme

Table 1.4: Summary of Decommissioning Programme		
Selected Option	Reason for Selection	Proposed Decommissioning Solution
1. Pipelines, Flowlines and Umbilicals		
Pipelines will be flushed and decommissioned in situ. Concrete mattresses and other pipeline stabilisation structures will be decommissioned in situ.	<p>In situ decommissioning with minimum intervention option:</p> <p>All mattresses would be left in situ to maintain pipeline stabilisation.</p> <p>Minimise disturbance of the established environment.</p> <p>Reduce the requirement for the introduction of new material (Rock Dump) to the Site of Community Importance (SCI).</p>	<p>Pipelines have been flushed of mobile hydrocarbons prior to subsea disconnection from the Satellite.</p> <p>Pipelines would be left open and flooded with seawater with cut ends only to be rock dumped with a maximum of 25Te, as required.</p> <p>Post flushing, the remaining pipeline would be left in its current state, marked on sea charts and notifications issued to fishermen/other users of the sea.</p> <p>Concrete mattresses and other pipeline stabilisation structures will be decommissioned in situ.</p>
2. Interdependencies		
Well P&A and topsides/ pipeline cleaning has been completed. Platform removal (satellite platform or Viking hub platform) can only occur after all conductors have been removed and the pipelines have been disconnected from the adjacent platform.		

1.6 Field Location including Field Layout and Adjacent Facilities

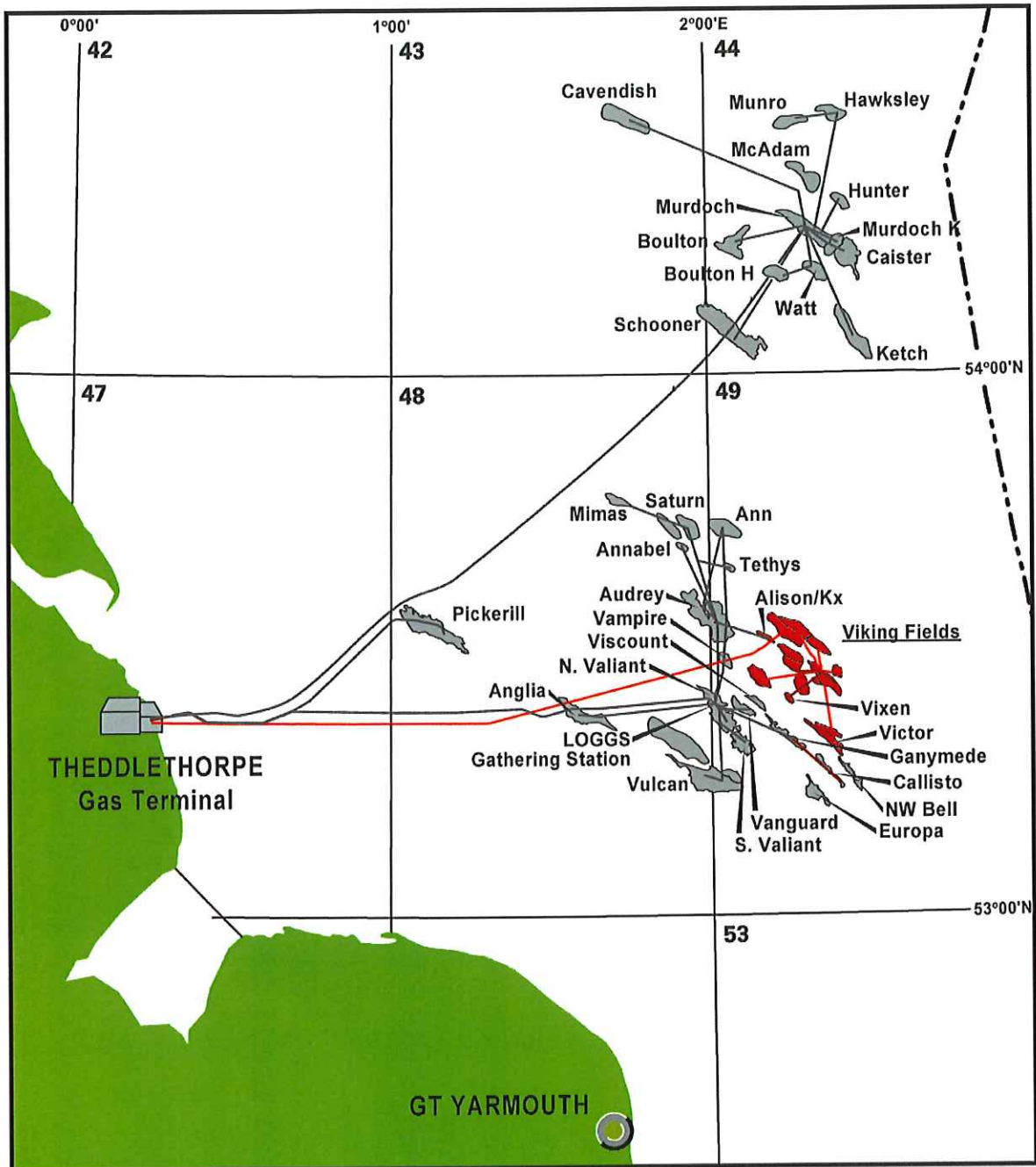


Figure 1.1 – Viking Field Location in UKCS

The Viking development is part of the ConocoPhillips Southern North Sea (SNS) Gas Operation with the pipelines covered by this decommissioning programme highlighted in the Field Layout Figure 1.2.

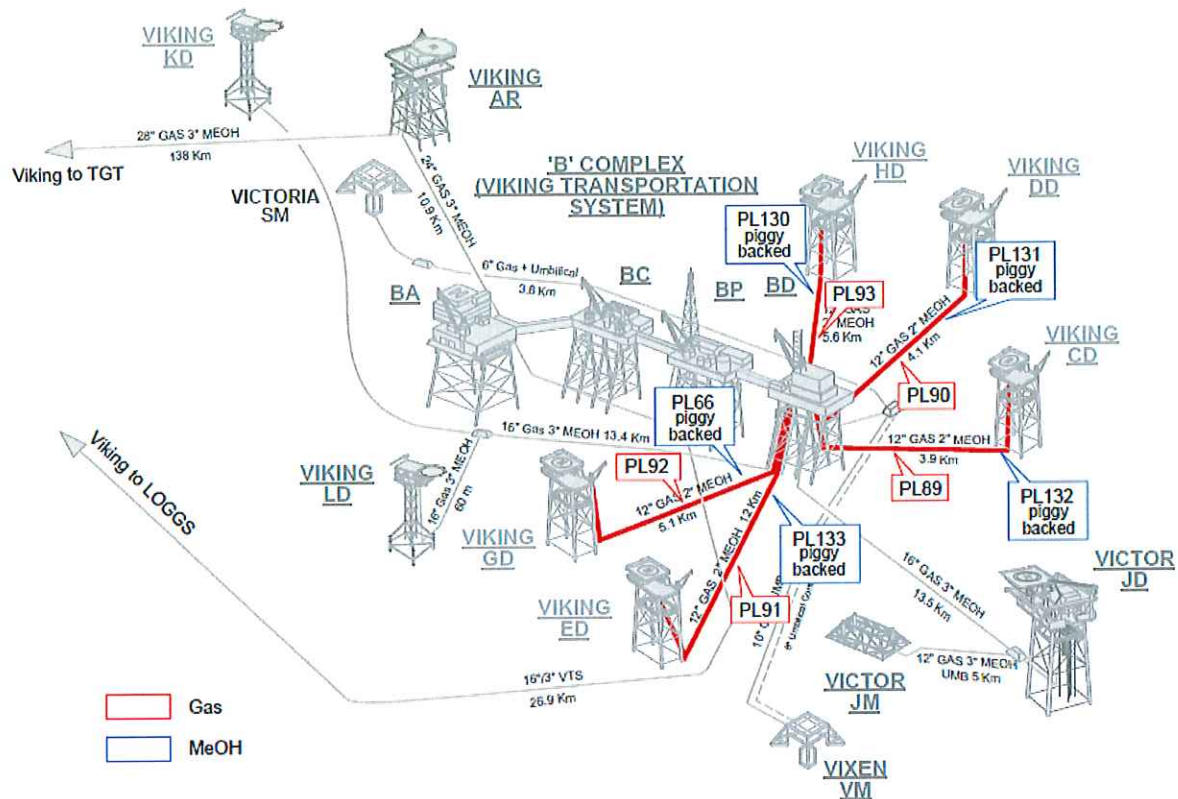


Figure 1.2 – Viking Field Layout

Facilities and infield pipelines adjacent to the Viking Satellites that are potentially impacted by this decommissioning programme are listed below in Table 1.5 and highlighted in Figure 1.3.

Table 1.5 List of Adjacent Facilities

Owner	Name	Type	Distance / Direction	Information	Status
ConocoPhillips / BP	Viking Bravo Complex	Manned 4 Jacket bridge linked complex	CD to BD 4km DD to BD 4km ED to BD 12 km GD to BD 5km HD to BD 6 km	Each of the 10 pipelines to be decommissioned interconnects to the Viking BD Platform.	Operational
ConocoPhillips / BP	Viking GD	NUI	GD to BD 5km	Satellite platform adjacent to PL92	Cold-stacked
ConocoPhillips / BP	Viking HD	NUI	HD to BD 6 km	Satellite platform adjacent to PL93	Cold-stacked
ConocoPhillips / BP	Viking DD	NUI	DD to BD 4km	Satellite platform adjacent to PL90	Cold-stacked
ConocoPhillips / BP	Viking CD	NUI	CD to BD 4km	Satellite platform adjacent to PL89	Cold-stacked
ConocoPhillips / BP	Viking ED	NUI	ED to BD 12 km	Satellite platform adjacent to PL91	Cold-stacked
ConocoPhillips / BP	PL2643	16" Gas Pipeline	Viking BP to LOGGS	Crosses over PL91 & PL92	Operational
ConocoPhillips / BP	PL2644	3" MeoH Pipeline	LOGGS to Viking BP	Piggy backed onto PL2643. Crosses over PL91 & PL92	Operational
ConocoPhillips / BP	PL1767	10" Gas Pipeline	Vixen VM to Viking BD	Crosses over PL89	Operational
ConocoPhillips / BP	PL1768	Control Umbilical	Viking BD to Vixen VM	Crosses over PL89	Operational
Verus Petroleum	PL2526	6" Gas Pipeline	Victoria SM to Viking BD	Crosses over PL90 & PL93	Operational
Verus Petroleum	PLU2527	Umbilical	Viking BD to Victoria SM	Crosses over PL90 & PL93	Operational

Impacts of Decommissioning Proposals

No anticipated impact on adjacent facilities if pipelines are decommissioned in situ.

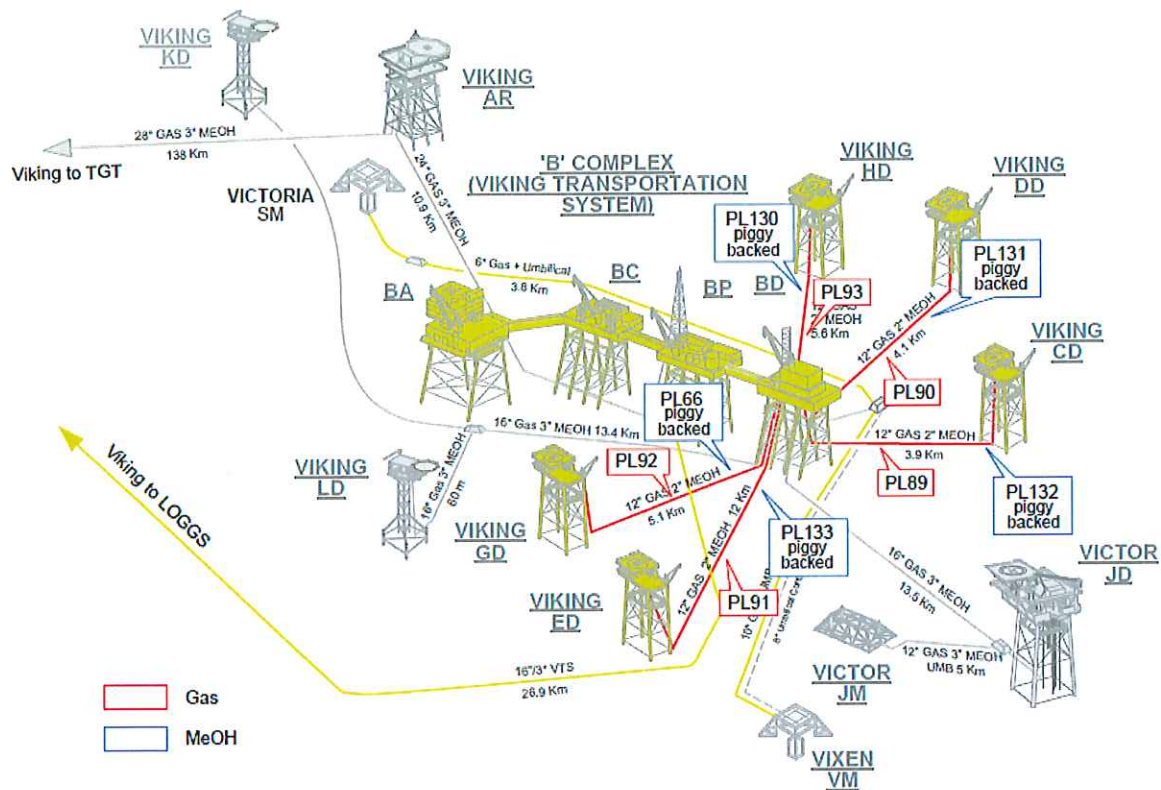


Figure 1.3 - Adjacent Facilities (highlighted in yellow)

1.7 Industrial Implications

Principles of the contracting and procurement strategies to be utilised by ConocoPhillips as operator and on behalf of the other Section 29 notice holders, for the decommissioning of the Viking Satellites Infield Pipelines are listed below:

1. Publish project information and contact details on the OGA website:
<https://www.ogauthority.co.uk/supply-chain/project-pathfinder/>
2. ConocoPhillips participated in the PILOT Share Fair event in November 2014 providing one to one sessions with the UK supply chain on the SNS decommissioning programme and timeline.
3. ConocoPhillips decommissioning representatives attended the Energy Industry Council CONNECT event held in Manchester November 2014 and provided one to one sessions for EIC members.
4. The First Point Assessment (FPAL) database is the primary source for establishing tender lists for contracts / purchases valued at US \$ 100,000 and above, although it is also used under this limit.
5. ConocoPhillips is committed to competitively bidding all of its major contracts where possible and practicable. We are supporters of the UK Supply Chain Code of Practice and our performance in this regard has been acknowledged through Excellence Awards from Oil & Gas UK.

2. Description of Items to be Decommissioned

2.1 Pipelines Including Stabilisation Features

Table 2.1 Pipeline / Flowline / Umbilical Information									
Description	Pipeline No (as per PWA)	Diameter (inches)	Length (km)	Description of Component Parts	Product Conveyed	From – To End Points	Burial Status	Pipeline Status	Current Content
Gas Pipeline	PL89	12	4.023	Steel with concrete and coal tar coatings	Gas, Condensate, produced water,	Viking CD to Viking BD	Trenched & Buried, 2.2% exposed (64m)*, no reportable spans**	Out of use	Gas, Condensate, produced water
Gas Pipeline	PL90	12	4.148	Steel with concrete and coal tar coatings	Gas, Condensate, produced water,	Viking DD to Viking BD	Trenched & Buried, 0.6% exposed (16m)*, no reportable spans**	Out of use	Gas, Condensate, produced water, MeOH, Corrosion Inhibitor
Gas Pipeline	PL91	12	12.875	Steel with concrete and coal tar coatings	Gas, Condensate, produced water,	Viking ED to Viking BD	Trenched & Buried, 33.5% exposed (3,893m)*, no reportable spans**	Operational	Gas, Condensate, produced water
Gas Pipeline	PL92	12	5.100	Steel with concrete and coal tar coatings	Gas, Condensate, produced water,	Viking GD to Viking BD	Trenched & Buried, 3.3% exposed (133m)*, no reportable spans**	Out of use	Gas, Condensate, produced water, MeOH, Corrosion Inhibitor
Gas Pipeline	PL93	12	5.592	Steel with concrete and coal tar coatings	Gas, Condensate, produced water,	Viking HD to Viking BD	Trenched & Buried, 11.3% exposed (639m)*, no reportable spans**	Out of use	Gas, Condensate, produced water

Note * As per pipeline survey length

Note ** As per FishSAFE requirements

Table 2.1 Pipeline / Flowline / Umbilical Information (cont.)									
Description	Pipeline No (as per PWA)	Diameter (inches)	Length (km)	Description of Component Parts	Product Conveyed	From – To End Points	Burial Status	Pipeline Status	Current Content
MeOH Pipeline Piggy backed onto PL89	PL132	2	4.023	Steel with Polyethylene wrap	MeOH, corrosion inhibitor	Viking BD to Viking CD	Trenched & Buried, 2.2% exposed (64m)*, no reportable spans**	Out of use	MeOH, Corrosion Inhibitor
MeOH Pipeline Piggy backed onto PL90	PL131	2	4.148	Steel with Polyethylene wrap	MeOH, corrosion inhibitor	Viking BD to Viking DD	Trenched & Buried, 0.6% exposed (16m)*, no reportable spans**	Out of use	MeOH, Corrosion Inhibitor
MeOH Pipeline Piggy backed onto PL91	PL133	2	12.875	Steel with Polyethylene wrap	MeOH, corrosion inhibitor	Viking BD to Viking ED	Trenched & Buried, 33.5% exposed (3,893m)*, no reportable spans**	Operational	MeOH, Corrosion Inhibitor
MeOH Pipeline Piggy backed onto PL92	PL66	2	5.100	Steel with Polyethylene wrap	MeOH, corrosion inhibitor	Viking BD to Viking GD	Trenched & Buried, 3.3% exposed (133m)*, no reportable spans**	Out of use	MeOH, Corrosion Inhibitor
MeOH Pipeline Piggy backed onto PL93	PL130	2	5.592	Steel with Polyethylene wrap	MeOH, corrosion inhibitor	Viking BD to Viking HD	Trenched & Buried, 11.3% exposed (639m)*, no reportable spans**	Out of use	MeOH, Corrosion Inhibitor

Note * As per pipeline survey length

Note ** As per FishSAFE requirements

Table 2.2 Subsea Pipeline Stabilisation Features

Stabilisation Feature	Total Number*	Weight (Te)*	Locations**	Exposed / Buried / Condition
Concrete mattresses	5	30	PL89 & PL132 at KP 0.002	Exposed during 2006, 2007, 2008, 2009, 2011, 2012 surveys
	10	60	PL90 & PL131 at KP 0.013	Exposed during 2009, 2011 surveys
	10	60	PL91 & PL133 at KP 0.025 and 10.807	Exposed during 2007, 2009, 2011 surveys
	3	18	PL93 & PL130 at KP 0.004	Exposed during 2009, 2011 surveys
Grout bags	0.4m length		PL90 & PL131 at KP 0.010	Exposed during 2007, 2009, 2011 surveys
	3m length		PL91 & PL133 at KP 0.029	Exposed during 2007 survey
	13m length		PL92 & PL66 at KP 0.004	Exposed during 2007, 2009, 2011 surveys
	8m length		PL93 & PL130 at KP -0.032	Exposed during 2007, 2009, 2011 surveys
Formwork	None			
Froned mats	1	6	PL89 & PL132 at KP 0.016	Exposed during 2009 survey
	1	6	PL91 & PL133 at KP 11.936	Exposed during 2008 survey
Rock Dump	9m section		PL89 & PL132 at KP 3.876	Exposed during 2008 survey
	49m section		PL91 & PL133 at KP 0.100	Exposed during 2009, 2011 surveys
	46m section		PL92 & PL66 at KP 0.044	Exposed during 2009, 2011 surveys
Other				

Note * The total number and weight for Mattresses have been estimated from the visual survey data and based on a typical mattress size of 6m by 3m and weight of 6 Te. Grout bag and Rock Dump have also been estimated from visual survey data.

Note ** KP 0.00 is at the Viking BD end of the pipeline

2.2 Inventory Estimates

Table 2.3 Pipeline and Mattress Material Functional Category Summary							
Installation	Description	Haz Mat / NORM	Concrete	Ferrous Metal	Non-Ferrous Metal	Plastics	Other Non-Haz
		Te	Te	Te	Te	Te	Te*
PL66	BD to GD MeOH piggy back	0	0	38	0	2	0
PL89	CD to BD Gas	40	253	425	0	0	0
PL90	DD to BD Gas	42	266	447	0	0	0
PL91	ED to BD Gas	120	778	1307	0	0	0
PL92	GD to BD Gas	51	330	556	0	0	0
PL93	HD to BD Gas	56	362	610	0	0	0
PL130	BD to HD MeOH piggy back	0	0	42	0	2	0
PL131	BD to DD MeOH piggy back	0	0	31	0	1	0
PL132	BD to CD MeOH piggy back	0	0	29	0	1	0
PL133	BD to ED MeOH piggy back	0	0	90	0	4	0
Mattresses	-	0	168	0	0	0	0
Total		309	2157	3575	0	10	0

*Note** Weights exclude the calculated ^{142}Te marine growth associated with all assets

3. Removal and Disposal Methods

3.2 Pipelines

3.1.1 Decommissioning Options

In recognition of the environmental sensitivities in the area where pipeline decommissioning will take place, supplementary information in support of the Comparative Assessment and associated information within this Decommissioning Programme has been provided to BEIS. This information comprises pipeline as-laid status, trends in pipeline exposure, trends in pipeline burial depth and pipeline location in relation to sandbank features.

Table 3.1: Pipeline or Pipeline Groups / Decommissioning Options			
Pipeline or Group (as per PWA)	Condition of line / group	Whole or part of pipeline / group	Decommissioning Options considered*
PL89, PL90 PL91, PL92 PL93 ,PL132 PL131, PL133 PL66, PL130	Trenched, Buried, spanning	Pipelines will be disconnected on seabed at Satellite end to facilitate Satellite Removal. Pipeline at Viking B Complex end will be disconnected as part of the Viking B complex decommissioning.	1, 2, 4, 5, 6, 7, 8, 9

* Key to Options:

- | | | |
|-----------------------------|---------------------------|-----------------------|
| 1) Remove – reverse reeling | 2) Remove – Reverse S lay | 3) Trench and bury |
| 4) Remedial removal | 5) Remedial trenching | 6) Partial Removal |
| 7) Leave in place | 8) Other ** | 9) Remedial rock-dump |

** Float and Tow i.e. expose pipelines and add buoyancy so that they can be floated and towed ashore for disposal and recycling

3.1.2 Comparative Assessment Method

A two phase process was used comprising of multidisciplinary workshops followed by the assessment compilation and option selection. The purpose of the comparative assessment being to identify the best overall option for decommissioning of each of the ten pipelines included within the scope of the decommissioning programme in view of the pipeline status, condition and environmental setting.

The independently chaired workshops comprised of an assessment of the technical feasibility and risk of major operations failure for all identified decommissioning options for the associated pipelines.

Initially 9 decommissioning options were identified and considered by ConocoPhillips for assessment of Technical Feasibility of the decommissioning of the infield pipelines; these included:

- | | |
|--------------------------------------|------------------------------------|
| ○ Leave in situ minimum intervention | ○ Leave in situ minor intervention |
| ○ Partial removal reverse lay | ○ Partial removal reverse reel |
| ○ Partial removal cut and lift | ○ Full removal reverse lay |
| ○ Full removal reverse reel | ○ Full removal cut and lift |
| ○ Full removal float and tow | |

Note:

Leave in Situ Minimum Intervention entails: Post flushing, the remaining pipeline would be left in its current state, marked on sea charts and notifications issued to fishermen / other users of the sea. All mattresses would be left in situ in their current state to maintain pipeline stabilisation, minimise disturbance of the established environment and reduce the requirement for the introduction of new material to the SCI. Pipelines would be left open and flooded with seawater.

Leave in Situ Minor Intervention entails: Post flushing, the pipelines decommissioned in situ would be left in such a manner that they do not pose a risk to other users of the sea. Reasonable attempts to remove all mattresses would be undertaken where safe to do so. Pipelines would be left open and flooded with seawater.

The decommissioning options deemed to be technically feasible were carried forwards through the comparative assessment process and compared in terms of pre-defined selection criteria namely safety, environmental impacts, energy and atmospheric emissions, socio-economic impacts and cost.

Based on technical feasibility and the risk of major operations failure, the decommissioning options progressed to the second phase of the comparative assessment were reduced to six options comprising;

- | | |
|--------------------------------------|------------------------------------|
| ○ Leave in situ minimum intervention | ○ Leave in situ minor intervention |
| ○ Partial removal cut and lift | ○ Full removal reverse lay |
| ○ Full removal reverse reel | ○ Full removal cut and lift |

Table 3.2: Outcomes of Comparative Assessment		
Pipeline or Group	Recommended Option*	Justification
PL89, PL90 PL91, PL92 PL93, PL132 PL131, PL133 PL66, PL130	Option 7 Leave in place	Pipelines and mattress were subject to a formal comparative assessment which concluded that in situ decommissioning with minimum intervention was the preferred option. Rock-placement (max. 25Te per cut pipeline end) on the cut pipeline ends only.

*Key to Options:

- | | | |
|-----------------------------|---------------------------|-----------------------|
| 1) Remove – reverse reeling | 2) Remove – Reverse S lay | 3) Trench and bury |
| 4) Remedial removal | 5) Remedial trenching | 6) Partial Removal |
| 7) Leave in place | 8) Other** | 9) Remedial rock-dump |

** Float and Tow i.e. expose pipelines and add buoyancy so that they can be floated and towed ashore for disposal and recycling

ConocoPhillips have risk assessed and understand the risk and consequences of decommissioning pipelines in situ.

3.2 Pipeline Stabilisation Features

Table 3.3 Pipeline Stabilisation features			
Stabilisation features	Number	Option	Disposal Route
Concrete mattresses	28	Pipelines and mattresses were subject to a formal comparative assessment which concluded that in situ decommissioning with minimum intervention was the preferred option	None required
Grout bags	24.4m length	Pipelines and mattresses were subject to a formal comparative assessment which concluded that in situ decommissioning with minimum intervention was the preferred option	None required
Formwork	None	NA	NA
Froned mats	2	Pipelines and mattresses were subject to a formal comparative assessment which concluded that in situ decommissioning with minimum intervention was the preferred option	None required
Rock dump	104m length	Pipelines and mattresses were subject to a formal comparative assessment which concluded that in situ decommissioning with minimum intervention was the preferred option	None required
Other			

3.3 Waste Streams

Table 3.4 Waste Stream Management Methods

Waste Stream	Removal and Disposal method
Bulk liquids	Pipeline flushing fluids will be injected into redundant gas production wells.
Marine growth	N/A
NORM	To be taken onshore with the infrastructure identified for removal and decontamination at the appropriately permitted disposal yard prior to onshore disposal. NORM not removed as part of pipeline cleaning will be left in situ and is considered to have a negligible impact on the receiving marine environment (ES Section 11).
Asbestos	N/A
Other hazardous wastes	To be taken onshore with the infrastructure identified for removal for handling at the appropriately permitted disposal yard prior to onshore disposal.
Onshore Dismantling sites	Appropriately permitted sites will be selected through the ConocoPhillips procurement process. Disposal yard selection has not yet concluded however the selection process will consider the suitability of the facility, systems in place for the safe and efficient segregation and storage of waste in accordance with operational site permits, proven materials re-use and recycling performance including the use of innovative materials management practices to minimise the quantity of materials disposed of. Trans-frontier shipment of waste will not be required.

Table 3.5 Inventory Disposition

	Total inventory Tonnage	Planned Tonnage to shore	Planned Tonnage Decommissioned in situ
Pipelines	5883	0*	5883
Mattresses	168	0	168

*The pipeline decommissioning option 'leave in situ with minimum intervention' assumes 100% of the pipelines are to be decommissioned in situ with zero tonnage to be returned to shore. It is noted that the pipeline disconnect operations requires the removal of a nominal section of pipeline (base case minimum 4m) at each cut location to provide visual confirmation of the disconnect as required by the Heavy Lift Contractor.

4. Environmental Impact Assessment

4.1 Environmental Sensitivities

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Features
Conservation interests	<p>Annex I Habitats The Viking Satellite infield pipelines are located with the North Norfolk Sandbanks and Saturn Reef Site of Community Importance (SCI), currently under consideration as a UK Special Area of Conservation (SAC).</p> <p>Annex I habitats occurring in this area include sandbanks and biogenic reef habitats formed by <i>Sabellaria spinulosa</i>.</p> <p>Annex II Species Annex II species likely to be sighted within the Viking area include harbour porpoise, grey seals and common or harbour seals (ES Section 4.3).</p>
Seabed	<p>The seabed in the vicinity of the Viking Satellite infield pipelines comprises of ripples and sand formations. The sediments are comprised of fine to coarse sands, often silty with variable amounts of shell fragments and occasional pebbles and cobbles. The highly dynamic marine environment restricts the silt and clay content to less than 15% (Fugro, 2013a) (ES Section 4.2.6). There is no evidence of bedrock, pockmarks or unusual or irregular bedforms.</p> <p>Dominant taxa are typical of the mobile sands and coarser sediments present across the decommissioning area.</p> <p>There is a high probability of <i>Sabellaria spinulosa</i> across the region. The Fugro (2013a) report identified a mosaic of small patches of <i>Sabellaria spinulosa</i> aggregations to the west of the Viking ED platform and associated pipelines PL191 and PL132. The spatial extent of these aggregations was limited and they were not elevated above the seabed and do not fit the criteria to be considered as <i>Sabellaria spinulosa</i> reef (ES Section 4.2.6).</p>
Fish	<p>The Viking infrastructure is located within the spawning grounds of mackerel, cod, whiting, plaice, lemon sole, sole, sandeel, sprat and Nephrops.</p> <p>The plaice spawning area within the vicinity of the decommissioning infrastructure is considered to be part of an important spawning area for the species, with a relative high intensity spawning recorded from the International Council for the Exploration of the Sea (ICES) fish survey data.</p> <p>The infrastructure also lies within the nursery grounds throughout the year for mackerel, herring, cod, whiting, plaice, lemon sole, sandeel, Nephrops and tope shark (ES Section 4.4)</p>

Table 4.1: Environmental Sensitivities (Cont)

Environmental Receptor	Main Features
Fisheries	<p>Fishing activity in the Viking area is described as moderate to low. Vessel Monitoring Satellite data indicates that the majority of fishing effort is targeted outside the area.</p> <p>The Netherlands have the greatest fishing interests in the area with between 30-35 vessels engaged in fishing the grounds within which the decommissioning infrastructure is situated; however this is lower than activity observed further south.</p> <p>The Dutch vessels consist predominantly of beam trawlers fishing for demersal species. However, there is shift to electric beam trawl gear which requires a clean seabed; as a result fewer vessels are fishing near the current infrastructure (ES Section 4.8.1).</p>
Marine Mammals	<p>The main cetacean species occurring in the area include white-beaked dolphin, white-sided dolphin and harbour porpoise. Additional species observed in the surrounding area include minke whale, long-finned pilot whale, bottlenose dolphin and common dolphin.</p> <p>Pinnipeds sighted in the area include grey seals and harbour or common seals. Grey seals may travel past the infrastructure towards foraging grounds, but densities generally reduce with distance offshore. Harbour seals are more likely to be sighted further offshore; travelling to this area from haul-out sites in The Wash to forage for food (ES Section 4.6).</p>
Birds	<p>Seabirds found in the North Sea waters include fulmars, gannets, auks, gulls and terns. Peak numbers of seabirds occur following the breeding season and through winter.</p> <p>The overall seabird vulnerability to surface pollution in the decommissioning area is classified as moderate. March, August, November and December are the most sensitive times of year for seabirds, with vulnerability to oil pollution classified as very high (ES Section 4.5).</p>
Onshore Communities	<p>An onshore decommissioning facility will be used that complies with all relevant permitting and legislative requirements.</p>
Other Users of the Sea	<p>Shipping Shipping density in the area of the infrastructure to be decommissioned ranges from very low to high (ES Section 4.8.4).</p> <p>Oil & Gas Industry The infrastructure is located in the SNS gas basin which is currently home to 177 installations, eight of which are currently listed as un-operational (ES Section 4.8.2).</p> <p>See table 1.6 for a list of adjacent facilities.</p> <p>Offshore Renewables The infrastructure to be decommissioned is located approximately (at their closest point) 32 km south of the Hornsea Wind farm zone and 42 km NW of the East Anglia Wind farm zone. (ES Section 4.8.3)</p>
Atmosphere	<p>Local atmospheric emissions arise from the Viking operations, vessel use and nearby oil and gas facilities (ES Section 7).</p>

4.2 Potential Environmental Impacts and their Management

4.2.1 Environmental Impact Assessment Summary

The potential environmental impacts associated with Viking Satellites decommissioning activities have been assessed and it is concluded that the proposed decommissioning of the Viking satellites can be completed without causing significant adverse impact to the environment. The results of the Environmental Impact Assessment (EIA) will be reported in an Environmental Statement (ES) accompanying the Decommissioning Programme.

The ES identifies potential environmental impacts by identifying interactions between the proposed decommissioning activities and the associated environmental receptors. The ES also describes the proposed mitigation measures designed to avoid or reduce the identified potential environmental impacts and how these will be managed in accordance with ConocoPhillips's Environmental Management System (EMS) while considering responses from stakeholders.

Table 4.2: Environmental Impact Management

Activity	Main Impacts	Management
Decommissioning Pipelines	Energy use and atmospheric emissions (ES Section 7)	All engines, generators and combustion plant on the vessels will be well maintained and correctly operated to ensure that they are working efficiently to minimise energy use and gaseous emissions.
	Underwater noise (ES Section 8)	A noise assessment has been completed to determine the likely impact of noise generated by the proposed operations on marine mammals in the surrounding area. The results of the assessment will be used during the planning of vessel operations.
	Seabed disturbance (ES Section 9)	<p>The operations to remove the pipeline ends will be carefully designed and executed so as to minimise the area of seabed that will be disturbed within the SCI.</p> <p>Any rock introduced to the SCI will be minimised and will be carefully placed using a suitable vessel.</p> <p>The resulting rock berm profile will be overtrawlable.</p>

Table 4.2: Environmental Impact Management

Activity	Main Impacts	Management
	Discharges to sea (ES Section 11)	<p>The pipelines will be flushed prior to cutting of the pipeline ends.</p> <p>A chemical risk assessment will be undertaken and operations permitted under the Offshore Chemicals Regulations 2002 (as amended).</p> <p>Residual hydrocarbons, scale and sediments will be released gradually after through-wall corrosion occurs and the integrity of the pipelines progressively fails. Through-wall degradation is anticipated to begin to occur after many decades (i.e. 60 – 100 years). Pathways from the pipelines to the receptors would be via the interstitial spaces in seabed sediments, overlying rock placement where applicable and the water column. Release would therefore be gradual and prolonged such that the effects on the receiving marine environment are considered to be negligible (ES Section 11.5.2).</p>
Decommissioning Stabilisation Features	Snagging hazard of stabilisation feature associated with pipeline	<p>Pipelines decommissioned in situ will continue to be shown on Navigational charts.</p> <p>Stabilisation features associated with pipelines will remain in situ.</p> <p>Full overtrawlability survey in 500m zones where stabilisation features predominantly exist.</p> <p>Stabilisation features inherently overtrawlable by design.</p>

Note: The overtrawlability surveys within the Viking Bravo 500m zone will be conducted at the time of decommissioning the Viking Bravo facilities.

5. Interested Party Consultations

Note A separate standalone Decommissioning Programme covering the Viking Satellite Installations will contain stakeholder comments on those aspects within that programme.

Table 5.1 Summary of Stakeholder Comments		
Stakeholder	Comment	Response
Statutory Consultees (GMS, NFFO, SFF, NIFPO/ ANIFPO)	NFFO: Concerns on the amount of rock placement were elevated to the degree that the Federation has no further issues with the Viking De com program.	The rock placement being referred to is primarily in respect of the Accommodation Work Vessel's requirements to allow vessel location alongside the satellites during the pipeline flushing and topsides disconnection. This activity has been completed.
Public	No comments received.	N/A
Other (VisNed)	Although VisNed are not a statutory consultee their views were obtained during stakeholder engagement in 2015 and no issues were raised.	N/A

6. Programme Management

6.1 Project Management and Verification

ConocoPhillips has established a UK Decommissioning organisation as a department to manage and execute decommissioning projects. ConocoPhillips existing processes for Operations, Planning, Project Management, Procurement, Health Safety and Environment, will be used and tailored to meet the specific requirements of decommissioning projects. ConocoPhillips will manage all permitting, licences, authorisations, notices, consents and consultations.

Any changes to this decommissioning document will be discussed and agreed with BEIS.

6.2 Post-Decommissioning Debris Clearance and Verification

A post decommissioning site survey will be carried out around a 500m radius of the Viking satellite installation sites. Oil and Gas seabed debris will be recovered for onshore disposal or recycling in line with existing disposal methods. The pipeline route within the Viking 500m zone will be surveyed as per the pipeline integrity inspection schedule for the Viking Bravo Complex 500m zone. Independent verification of seabed state within the 500m zones will be obtained by trawling the platform area of each Satellite where platform removal and pipeline ends remediation has taken place. This will be followed by a statement of clearance to all relevant governmental departments and statutory consultees.

Based on the findings from the Comparative Assessment the Decommission in situ – minimum intervention (in-situ decommissioning of the infield pipeline sections) is the preferred pipeline decommissioning option for VDP1. The evaluation criteria which contributed to the conclusions were safety, environment and cost. The location of the installations and pipelines in the North Norfolk Sandbanks and Saturn Reef Site of Community Importance (SCI) contributed to the scoring and results.

The chosen pipeline decommissioning methodology is to place rock on cut pipeline ends at the platforms. The pipelines and mattresses are to be left in situ to minimise the disturbance to the established environment and reduce the requirements for the introduction of new material to the SCI. Appropriate verification will be used to confirm the seabed state in the 100m corridor of the infield pipeline sections not subject to actual decommissioning works. This activity will reflect the environmental setting of the North Norfolk Sandbanks and Saturn Reef Site of Community Importance.

The outcomes of the overtrawl in the 500m zones and the alternative survey methods of the pipelines will be reported in the Close Out Report.

6.3 Schedule

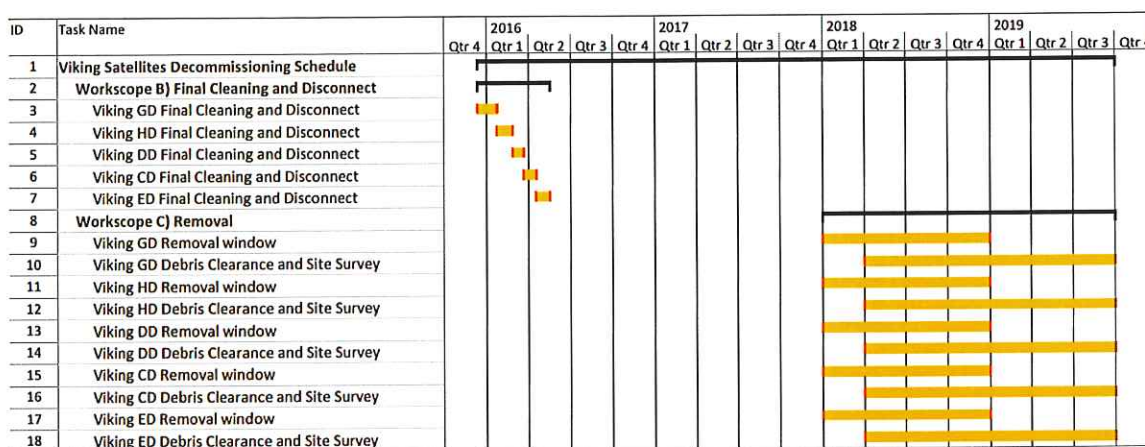


Figure 6.1: Gantt Chart of Project Plan

Note: This is an indicative schedule and is subject to change based on technical, market, and commercial factors.

6.4 Costs

Table 6.1 – Provisional Decommissioning Programme costs (installations & pipelines)												
Asset Name	TOTAL	Operator Project Management	Facility Running / Owner Costs	Wells Abandonment	Facilities/ Pipeline Making Safe	Topsides Preparation	Topsides Removal	Sub-structure Jacket Removal	Topside and sub-structure Onshore Recycling	Subsea Infrastructure (pipelines, umbilicals, mattresses, SSIV)	Site Remediation	Monitoring
Viking GD												
Viking HD												
Viking DD												
Viking CD												
Viking ED												
VDP1 Total												

*An estimate of the overall cost has been provided separately to BEIS.

Note: Provisional estimate subject to change based on technical, market, and commercial factors.

6.5 Close Out

On completion of the offshore decommissioning works covered by the scope of this document a Close Out Report will be submitted in accordance with the requirements in operation at that time. The close out report will contain debris removal and verification of seabed clearance, the first post-decommissioning environmental survey and explanation of any variations to the approved Decommissioning Programme.

6.6 Post Decommissioning Monitoring and Evaluation

A post decommissioning environmental seabed survey will be carried out when the decommissioning scope of this programme and the workscope of the associated standalone Viking Satellites Installations decommissioning programme is completed. The survey will include seabed sampling to monitor levels of hydrocarbons, heavy metals and other contaminants to allow for a comparison with the results of the pre-decommissioning survey.

Results of this survey will be available once the decommissioning document work scope is complete.

PIPELINE RISK BASED MONITORING PROGRAMME

All pipeline systems covered within this Decommissioning Document scope will be subject to survey. The post decommissioning pipeline (and associated stabilisation features) monitoring programme, to be agreed with BEIS, will

- begin with an initial baseline survey covering the full length of each pipeline;
- be followed by a risk based assessment for each pipeline (and associated stabilisation materials) which will inform the minimum agreed extent and frequency of future surveying. This will take account of pipeline burial, exposure and spanning data derived from the initial baseline survey, all available historical survey information and fisheries impact assessment;
- provide a report of each required survey (with analysis of the findings, the impact on the risk based assessment and identification of the proposed timing of the next survey in accordance with the agreed RBA approach), for discussion and agreement of BEIS;
- include provision for remediation in the framework where such a requirement is identified. Appropriate remediation will be discussed and agreed with BEIS;
- where remediation has been undertaken, a follow up survey of the remediated section(s) will be required;
- in the event of a reported snagging incident on any section of a pipeline, the requirement for any additional survey and/or remediation, will be discussed and agreed with BEIS;
- will include a further fisheries impact assessment following completion of the agreed survey programme;
- monitoring will become reactive following completion of the agreed survey programme and BEIS agreement of the analysis of the outcomes;
- require pipeline information to be recorded on Navigation charts and FishSAFE.

The monitoring programme will also include discussion with BEIS of the long-term pipeline degradation and potential risk to other users of the sea following conclusion of the planned survey programme.

7. Supporting Documents

Table 7.1 : Supporting Documents	
Document Number	Title
BMT-SNS-P-XX-X-HS-02-00006	Environmental Statement
BMT-SNS-P-XX-X-HS-02-00012	Comparative Assessment
J/1/20/2342	Fugro EMU Limited, 2013c. Decommissioning Environmental Survey Report

8. Partner Letters of Support



Sandra Turin

Decommissioning Business Manager
North Sea



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North Sea Headquarters
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Dyce
Aberdeen
AB21 7PB

20th November 2017

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

Direct 01224 934834
Main 01224 832000
Mobile 07825 675 964
sandra.turin@bp.com

Dear Fiona,

PETROLEUM ACT 1998

Decommissioning of Viking Satellite Installations CD, DD, ED, GD, and HD – Infield Pipelines

We acknowledge receipt of your letter dated 14th November 2017.

We, Britoil Limited (company number SC077750), a company incorporated in Scotland having its registered office at 1 Wellheads Avenue, Dyce, Aberdeen, AB21 7PB, as a holder of a section 29 notice relative to the Viking field and in accordance with the Guidance Notes¹ confirm that we hereby authorise ConocoPhillips (U.K.) Limited (company number 00524868), a company incorporated in England and Wales having its registered office at Portman House, 2 Portman Street, London, W1H 6DU, to submit on our behalf an abandonment programme relating to the Viking CD, DD, ED, GD, HD infield pipelines as directed by the Secretary of State on 14th November 2017.

We confirm that we support the proposals detailed in the Viking Satellites CD, DD, ED, GD, HD Decommissioning Programme for Infield Pipelines dated 15th November 2017, which is to be submitted by ConocoPhillips (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 sincerely,

Sandra Turin
Decommissioning Business Manager
For and on behalf of Britoil Limited (company number SC077750)

¹ Guidance Notes issued by the Department of Energy and Climate Change on Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998