



TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES

PROJECT CODE: 02029

F	22/10/15	Final Issue for Secretary of State Approval	DS	IM	IM
E	02/09/15	Re-Issued to incorporate comments and for formal review	DS	IM	IM
D	14.08.14	Re-Issued to incorporate comments and for formal review	DS	IM	AE
C	14.08.14	Re-Issued to incorporate comments and for formal review	DS	IM	AE
B	15/07/14	Issued to incorporate comments and for formal review	DS	IM	AE
A	12/3/14	Issued for DECC Informal Review	IM	DS	AE
Rev	Date	Reason for Issue	Prepared	Checked	Approved
			DOCUMENT NUMBER : 02029-TLW-PM-PRG-0001		
Contract Number		Area Code	System Code	Responsible Party	
				Tullow Oil SK Ltd	
This document is the property of (TULLOW). It is furnished to establish requirements for a specific item or activity and solely for that purpose. This document is not intended for general circulation and shall not be reproduced or distributed without written permission from TULLOW or its representative.					

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 2 of 39	

REVISION CONTROL

Revision:	Para /Sect	Change Description

This sheet must be completed in detail, at each revision once this document has been approved. Details must include revision number, description and indication of which pages and paragraphs have been revised, date of revision approval and approval indication.

CONTENTS				
	Inst. = Installations. P/L = Pipelines		Inst.	P/L.
1	Executive Summary	6		
1.1	Combined Decommissioning Programmes	6	√	√
1.2	Requirement for Decommissioning Programme(s)	6	√	√
1.3	Introduction	7	√	√
1.4	Overview of Installation(s)/Pipeline(s) Being Decommissioned	8	√	√
1.5	Summary of Proposed Decommissioning Programme(s)	10	√	√
1.6	Field Location/Layout and Adjacent Facilities	12	√	√
1.7	Industrial Implications	16	√	√
2	Description of Items to be decommissioned	17		
2.1	Surface Facilities (Topsides/Jacket(s)/FPSO etc.)	17		
2.2	Subsea Installations and Stabilisation Features	17	√	
2.3	Pipelines/Flowlines/Umbilicals	18		√
2.4	Wells	20	√	
2.5	Drill Cuttings	20	√	
2.6	Inventory Estimates	21	√	√
3.	Removal and Disposal Methods	22		
3.1	Topsides	22		
3.2	Jacket(s)	22		
3.3	Subsea Installations and Stabilisation Features	22	√	
3.4	Pipelines/Flowlines/Umbilicals	24		√
3.5	Wells	25	√	
3.6	Drill Cuttings	25	√	
3.7	Waste Streams	26	√	√
4	Environmental Statement/Environmental Impact Assessment	27		
4.1	Environmental Sensitivities (Summary)	27	√	√
4.2	Potential Environmental Impacts and their Management	30	√	√
5	Interested Party Consultations	35		
6	Programme Management	36		
6.1	Project Management and Verification	36	√	√
6.2	Post-Decommissioning Debris Clearance and Verification	36	√	√
6.3	Schedule	36	√	√
6.4	Costs	37	√	√
6.5	Close Out	37	√	√
6.6	Post-Decommissioning Monitoring and Evaluation	37	√	√
7	Supporting Documents	38		
8	Partners Letters of Support	39	√	√

TABLE OF TERMS AND ABBREVIATIONS

Abbreviation	Explanation
CoP	Cessation of Production
DECC	Department of Energy and Climate Change
DPS	Decommissioning Programmes
DSV	Diving Support Vessel
ES	Environmental Statement
ESDV	Emergency Shut Down Valve
HLV	Heavy Lift Vessel
LAT	Lowest Astronomical Tide
m	Meters
MEG	Monoethylene Glycol
NUI	Normally Unattended Installation
OGUK	Oil & Gas UK
OPEP	Oil Pollution Emergency Plans
ORSL	Oil Spill Response Ltd
OSPAR	Oslo and Paris Convention
Perenco	Perenco (UK) Ltd
P & A	Plug and Abandonment
PL	Pipe Line
QRA	Quantitative Risk Assessment
SLV	Sheer Leg Vessels
SNS	Southern North Sea
SWAT	Suspended Well Abandonment Tool
UKCS	UK Continental Shelf

A. TABLE OF FIGURES AND TABLES

Table Number	Description	Page
Table 1.1	Installation(s) Being Decommissioned	8
Table 1.2	Installation(s) Section 29 Notice Holders Details	8
Table 1.3	Pipeline(s) Being Decommissioned	9
Table 1.4	Pipeline(s) Section 29 Notice Holders Details	9
Table 1.5	Summary of Decommissioning Programmes	10
Table 1.6	List of Adjacent Facilities	14
Table 2.1	Surface Facilities Information	17
Table 2.2	Subsea Installations and Stabilisation Features	17
Table 2.3	Pipeline/Flowline/Umbilical Information	18
Table 2.4	Subsea Pipeline Stabilisation Features	19
Table 2.5	Well information	20
Table 3.1	Subsea Installation and Stabilisation Features Decommissioning	23
Table 3.2	Pipeline or Pipeline Groups Decommissioning	24
Table 3.3	Outcomes of Comparative Assessment	25
Table 3.4	Well Plug and Abandonment	25
Table 3.5	Waste Stream Management Methods	26
Table 3.6	Inventory Disposition	26
Table 4.1	Environmental Sensitivities	27
Table 4.2	Environmental Impact Assessment	31
Table 5.1	Summary of Consultee Comments	35
Table 6.1	Provisional Decommissioning Programme(s) Costs	37
Table 7.1	Supporting Documents	38

Figure Number	Description	Page
Figure 1.1	Field Location in UKCS	12
Figure 1.2	Field Layout	13
Figure 1.3	Adjacent Facilities and crossings	15
Figure 2.1	Pie Chart of Estimated Inventories (Installations)	21
Figure 2.2	Pie Chart of Estimated Inventories (Pipelines)	21
Figure 6.1	Gantt Chart of Project Plan	36

B. TABLE OF APPENDICES

Appendices Number	Description
None	

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 6 of 39	

1.0 EXECUTIVE SUMMARY

1.1 Combined Decommissioning Programmes

This document contains two Decommissioning Programmes (DPs). (1) A single Wissey subsea installation and (2) the Wissey pipelines (as described in Para 1.2). A separate programme for each set of associated notices under Section 29 of the Petroleum Act 1998 is incorporated within this document.

1.2 Requirement for Decommissioning Programmes

Installation: In accordance with the Petroleum Act 1998, the Section 29 notice holders of Wissey field in 53/4d (see Table 1.2) are applying to the Department of Energy and Climate Change to obtain approval for decommissioning the installations detailed in Section 2 of this programme. (See also Section 8 - Partner(s) Letter(s) of Support).

Pipelines: In accordance with the Petroleum Act 1998, Tullow Oil SK Ltd (hereinafter referred to as Tullow Oil) as operator of the Wissey pipelines PL2491 and PLU2492 (see Table 1.4) and on behalf of the Section 29 notice holders are applying to DECC to obtain approval for decommissioning the pipelines detailed in Section 2 of this document. (See also Section 8 – Partner Letters of Support).

In conjunction with public, stakeholder and regulatory consultation, the decommissioning programmes are submitted in compliance with national and international regulations and DECC guidelines. The schedule outlined in this document is for a 48 month decommissioning project plan due to begin in Quarter 4 2014.

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 7 of 39	

1.3 Introduction

The Wissey field is located in block 53/4d in the Southern North Sea approximately 100km off the coast of Norfolk, northeast of Bacton and 10km south east of the Horne and Wren NUI platform to which the Wissey pipeline delivers untreated wet gas for onward transmission to the Thames AW platform 25km to the North West. The Wissey field is produced by one subsea well.

The Wissey field was discovered in 1967 by Signal Oil & Gas the Wissey field reservoir holds and estimated GIIP resource of 28 BSc. Cumulative productions to date has totalled 18.2 BSc, yielding an estimated recovery rate of about 65%. Production from the Wissey field started in August 2008. The field was produced via a subsea development tied back the Horne and Wren platform. The Wissey field last produced in August 2012.

Wissey is a single subsea well tie-back to the Horne and Wren Platform with an integrated protection structure. The 8" flowline connecting the well back to Horne and Wren is buried for the majority of its length and covered with protective concrete mattresses where it sits on the surface of the seabed at the ends. Controls to Wissey are providing an umbilical from the Horne and Wren Platform.

As part of the COP (Approved by DECC 14/05.14) considerations, TOSK have explored all options for continuing production of Wissey but concluded none are viable, therefore the Wissey field is ready for decommissioning.

To optimise efficiency and realise synergies, the Wissey Decommissioning Programme activities will be integrated with the Thames Area that comprise the Arthur, Thames Complex (including Thurne), Horne and Wren, Orwell and Gawain fields. The operator for the Thames Complex, Arthur and Gawain is Perenco UK (PUK).

Similarly, each of the Thames Area fields have reached their end of economic production and due to the interdependencies of the subsea wells on the Thames platform it was agreed with DECC to submit joint single COP and EIA documents to capture all fields and further promote integration into a single project where practicable. However, it should be noted that each operator will submit individual DPs for each field that can be undertaken independently.

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 8 of 39	

1.4 Overview of Installation(s)/Pipeline(s) Being Decommissioned

1.4.1 Installations

Table 1.1: Installation(s) Being Decommissioned					
Field Name	Wissey	Quad/Block	53/4d	Number of Platforms	None
Distance from nearest UK coastline (km)	100	Distance to median (km)	245	Platform type	N/A
Number of Subsea Installation(s)	1	Number of Drill Cuttings Pile(s):	None	Topsides Weight (Te): Jacket Weight (Te):	N/A
Number of Wells: Platform: Subsea:	1 Subsea well	Production Type (Oil / Gas /Conde)	Gas	Water Depth (m)	N/A

Table 1.2 Installation(s) Section 29 Notice Holders Details		
Section 29 Notice Holder(s)	Registration Number	Equity Interest (%)
Tullow Oil SK Limited.	05287330	62.5
Faroe Petroleum (U.K.) Limited	04848017	18.75
First Oil Expro Limited	01021486	18.75
Tullow Oil Plc.	03919249	0

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 9 of 39	

1.4.2 Pipeline(s)

Table 1.3: Pipeline Being Decommissioned		
Number of Pipeline/ Umbilical	1/1	(See Table 2.3)

Table 1.4: Pipeline Section 29 Notice Holders Details		
Section 29 Notice Holder(s)	Registration Number	Equity Interest (%)
Tullow Oil SK Limited.	05287330	62.5
Faroe Petroleum (U.K.) Limited	04848017	18.75
First Oil Expro Limited	01021486	18.75
Tullow Oil Plc.	03919249	0

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 10 of 39	

1.5 Summary of Proposed Decommissioning Programmes

Table 1.5: Summary of Decommissioning Programmes		
Selected Option	Reason for Selection	Proposed Decommissioning Solution
1. Topsides		
N/A		
2. Jackets		
N/A		
3. Subsea Installation		
Wellhead protection frame will be removed by HLV or crane vessel	To remove all seabed structures and leave a clean seabed. To comply with OSPAR requirements.	Wellhead protection frame will be removed along with the top sections of piles. Piles will be severed 3m below the seabed level. To ensure that any remains are unlikely to become uncovered. A PETS DCA application will be prepared and a MCAA licence application submitted to cover to removal of the Wellhead Protection Frame.
4. Pipelines & Umbilical		
Flush and leave buried in situ	Minimal seabed disturbance, lower energy usage, reduced risk to personnel engaged in the activity; pipelines are sufficiently buried and are stable.	The pipeline (PL2491) and umbilical (PLU2492) will be left in situ, with the cut ends re-buried below the seabed level at such a depth to ensure that any remains are unlikely to become uncovered. Surveys indicate pipelines and umbilicals will remain buried once flooded. Degradation will occur over a long period within seabed sediment and are not expected to represent a hazard to other users of the sea. A PETS PLA application will be prepared and a MCAA licence application submitted to cover the proposed pipeline cutting and burial works. Chemical SATS and Oil Discharge SATs will be submitted as required in relation to the pipeline flushing operations.
5. Well Abandonment Operations		
Abandoned in accordance with	Meets DECC regulatory requirements	A PETS WIA application will be prepared and a MCAA licence application

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 11 of 39	

Table 1.5: Summary of Decommissioning Programmes		
Selected Option	Reason for Selection	Proposed Decommissioning Solution
UKOG for the suspension and abandonment of wells		submitted to cover well abandonment and removal of the wellhead infrastructure.
6. Drill Cuttings		
There are no drill cuttings associated with Wissey	Cuttings were widely dispersed and fall below OSPAR 2006/5 thresholds.	Not applicable
7. Interdependences		
None		

1.6 **Field Location/Layout and Adjacent Facilities** Figure 1.1

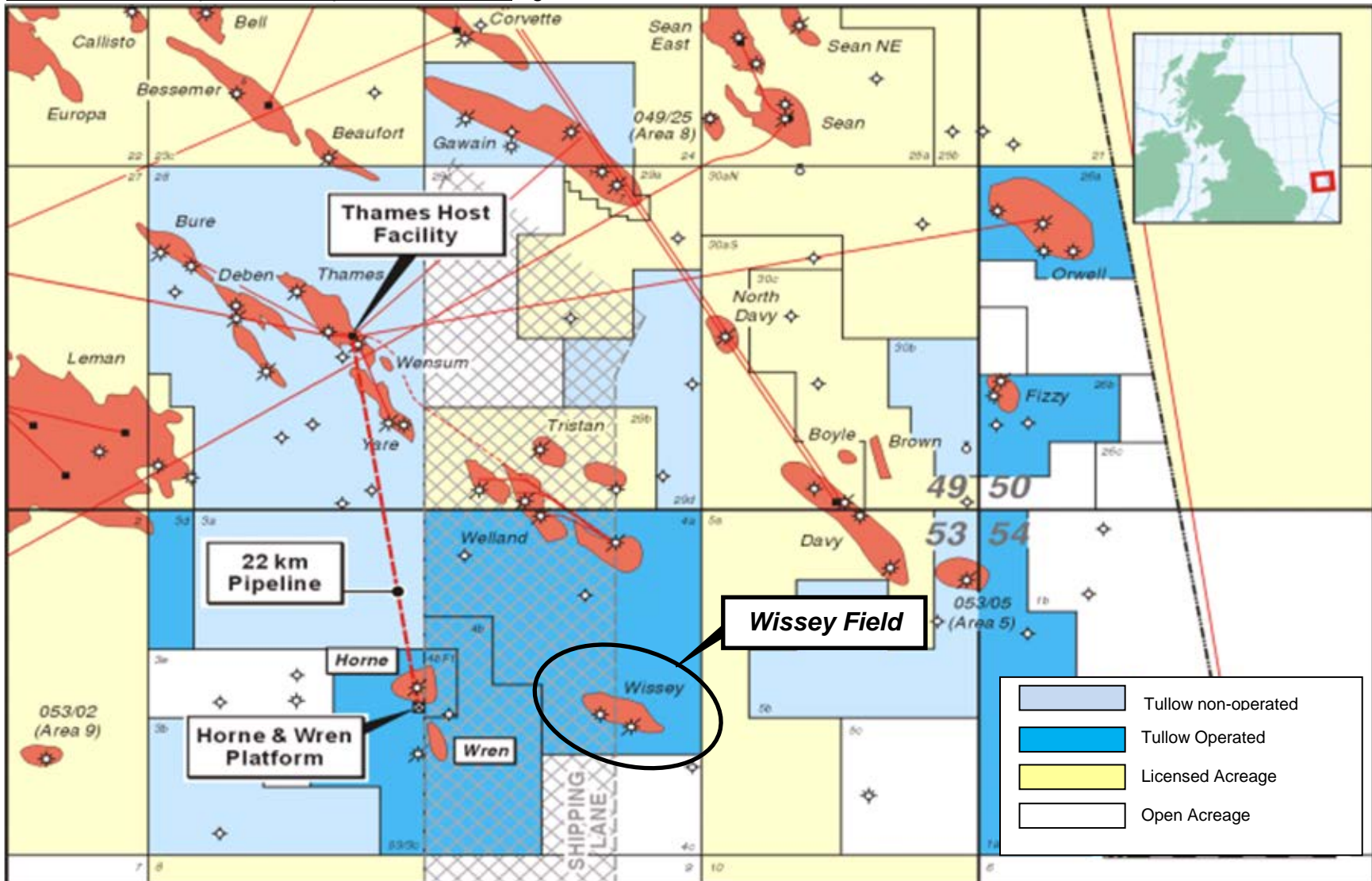
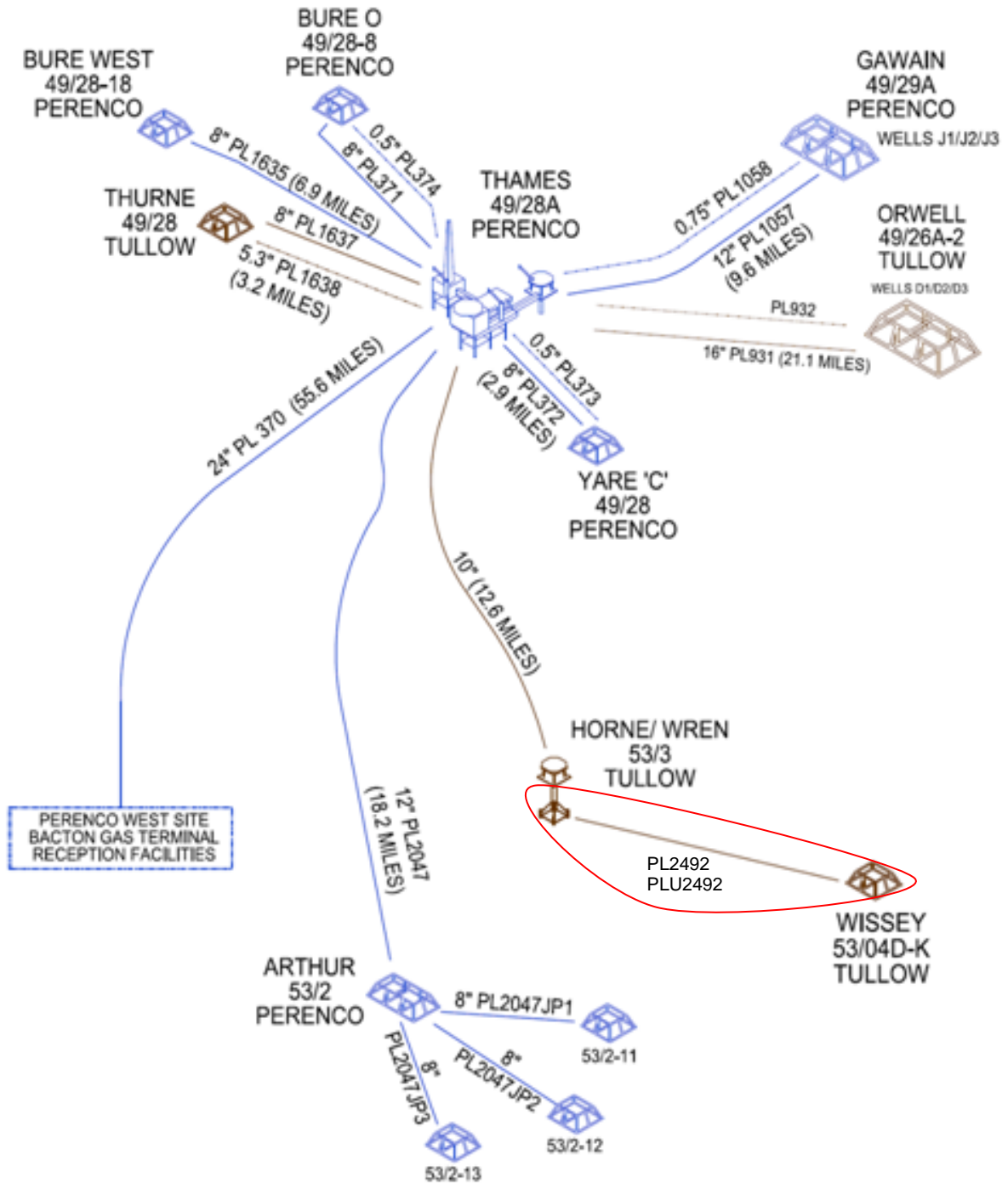


Figure 1.2: Field Layout

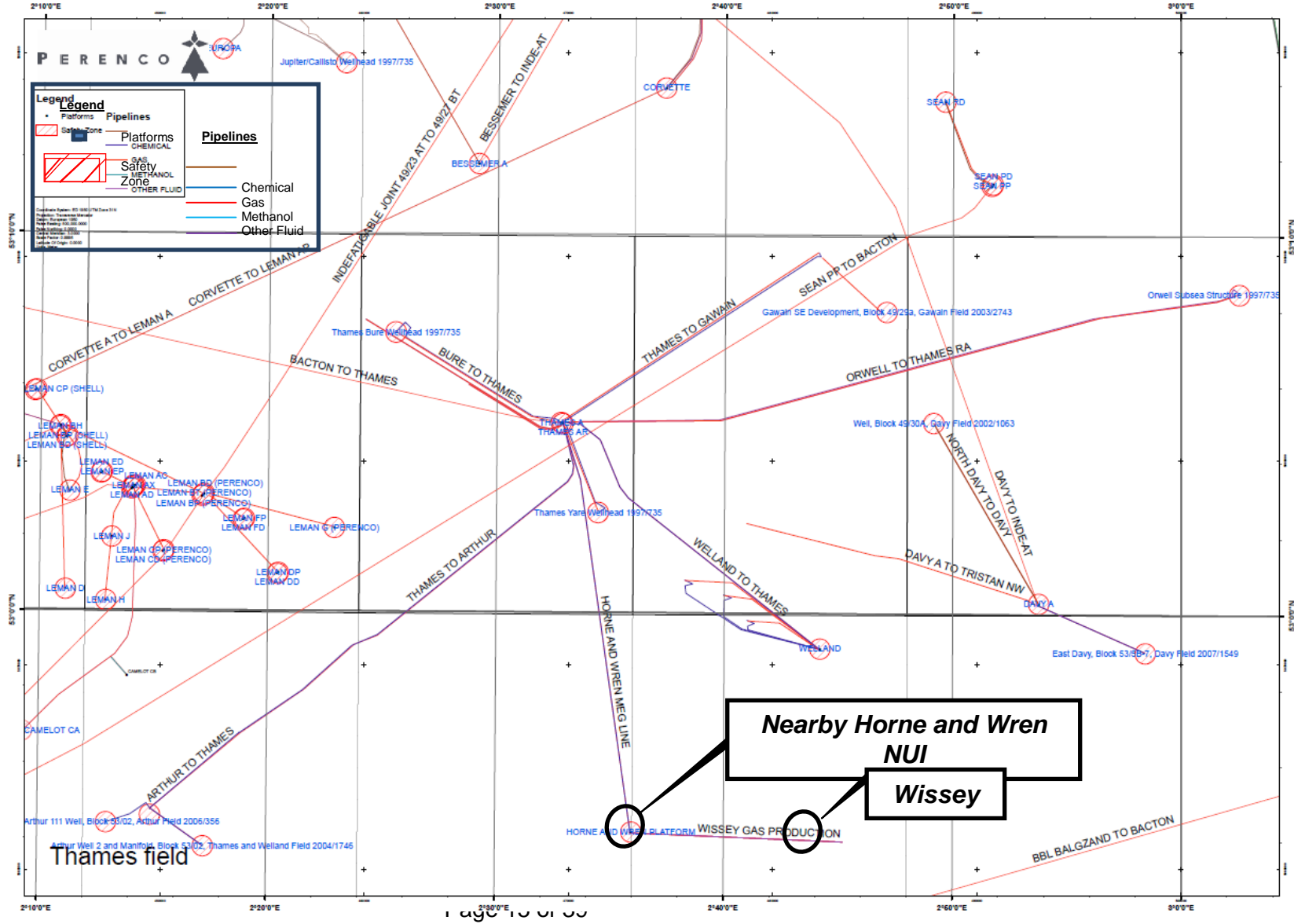


TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 14 of 39	

Table 1.6 List of Adjacent Facilities					
Owner	Name	Type	Distance/Directi	Information	Status
Tullow Oil SK Ltd	Horne and Wren	NUI Platform	From Wissey well to Horne and Wren is 10km North East.	Gas production from Wissey subsea wells flows into Horne and Wren and	All wells shut in
Perenco	Davy	NUI platform	From Wissey 15km North West	Gas production	Operational
BBL Company	Balgzand to Bacton	Pipeline	Passes approx. 20km south of Wissey	Gas pipeline	Operational
Unknown	UK-NETHE RLANDS 14	Telecommunications cable	7 km south		Operational

NOTE: All Adjacent facilities will have no impact on the Decommissioning proposals.

Figure 1.3: Adjacent Facilities and Crossings



TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 16 of 39	

1.7 INDUSTRIAL IMPLICATIONS

The intent of this Decommissioning Program is to integrate the Wissey scope of work into the wider "Thames Area decommissioning project" which encompasses all fields that tie back to the Thames complex, into discrete manageable phases.

The phases are as follows;

- Surveys
- Pipeline cleaning (base case is to flush and clean from Thames complex back to individual fields. If this is not possible, the uncompleted scopes will be included in the DSV phase).
- DSV (pipeline severance and burial, removal of stabilisation materials).
- Well Plugging & Abandonment.
- Removal of platform

The above Phases will need to be planned carefully to recognise synergies and efficiencies, however the pre engineering will be completed to allow either individual projects to be completed or to fully integrate all work scopes.

Strategically, suppliers with working vessels and assets on the UKCS will be favoured. All contracts will be competitively tendered or novated to either party.

Current operational contracts for items such as environmental permitting, rig drilling management and logistic support will be implemented to support decommissioning activities

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 17 of 39	

2 DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 Surface Facilities (Topsides/Jacket(s)/FPSO etc.)

Table 2.1: Surface Facilities Information							
Name	Facility Type	Topsides/Facilities		Jacket (if applicable)			
		Weight (Te)	No of modules	Weight (Te)	Number of Legs	Number of piles	Weight of piles (Te)
N/A							

2.2 Subsea Installations and Stabilisation Features

Table 2.2: Subsea Installations and Stabilisation Features				
Subsea installations and Stabilisation Features	Number	Size/Weight (Te)	Location(s)	Comments/ Status
Wellhead	1	15	Wissey well 53/4d-11 (WGS84 - 52° 53' 58.1995 North 2° 45' 6.973 East)	
Manifolds(s)	0	NA	NA	
Template(s)	0	NA	NA	
Protection Frame(s)	1	85	Around well	Piled
Concrete mattresses	52	250	Within 100m of Wissey well head and WPS.	from as built drawings
Grout bags	100	Approx. 1m3 ~ 2t	Within 10m of well head.	from installed drawings
Rock Dump	0	N/A	N/A	

2.3 Pipelines/Flowlines/Umbilicals

Table 2.3: Pipeline/Flowline/Umbilical Information									
Description	Pipeline No. (as per PWA)	Diameter (inches)	Length (km)	Composition ¹	Contents ²	From – To End Points	Condition	Status ³	Contents ⁴
Wissey pipeline	PL2491	8	10	Steel with concrete coating	Gas	Wissey well to Horne and Wren NUI	Trenched and buried along length covered by mattresses at ends. Refer to table 2.2. There are no freespans.	Ceased production	Hydrocarbons
Wissey umbilical	PLU249 2	4	10	Bundle	Chemicals/ Hydraulic Fluids	Horne and Wren NUI to Wissey well	Trenched and buried along length covered by mattresses at ends. Refer to table 2.2. There are no freespans.	Ceased production	Hydraulic fluids/copper

¹ e.g. Concrete; Steel; umbilical; Flexible; Bundle

² e.g. Oil; Gas; Water; Chemicals

³ e.g. Operational; Out-of-use; Interim pipeline Regime

⁴ e.g. Cleaned; Flushed; Hydrocarbons and/or Chemicals in line

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 19 of 39	

Table 2.4: Subsea Pipeline Stabilisation Features				
Stabilisation Feature	Number	Weight (Te)	Location(s)	Comments/ Status
Concrete mattresses	8	24	Within 100m H&W NUI	From As built drawings
Grout bags	40	1	Within 100m H&W NUI	From As built drawings
FronD Mats	0		N/A	
Rock Dump	0	N/A	N/A	

2.4 Wells

Table 2.5 Well Information			
Platform Wells	Designation 1	Status	Category of Well
N/A			
Subsea Wells			
53/4d-11	Production	Shut in	3/3/1

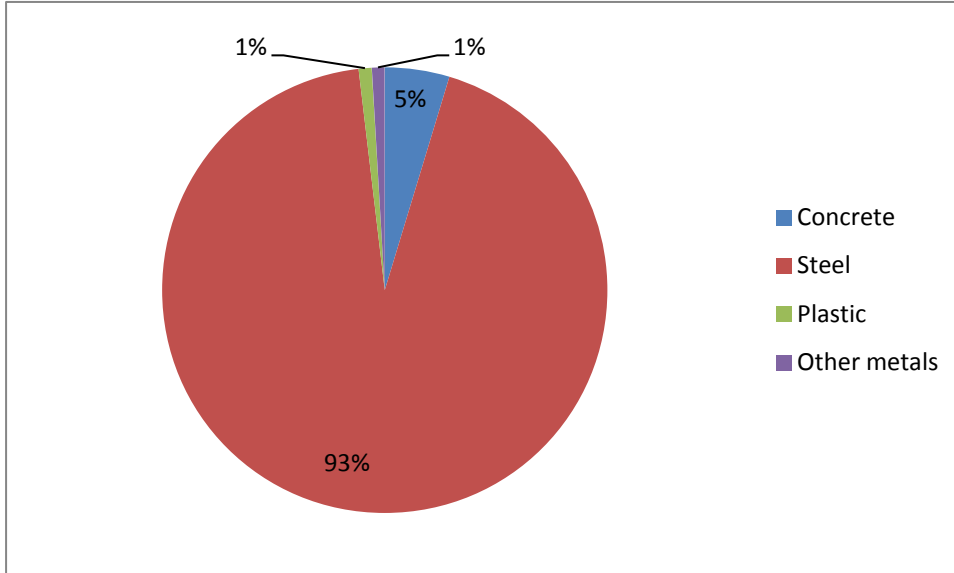
Category of well as per OGUK Guidelines for the suspension and abandonment of wells, Issue 4, July 2012.

2.5 Drill Cuttings

There are no drill cuttings associated with the Wissey subsea well. Drill cuttings that were generated during drilling activity are considered to have been distributed widely during drilling due to the local currents. There was no evidence of drill cuttings in the immediate vicinity of the wells when surveys were conducted in Q3 2013.

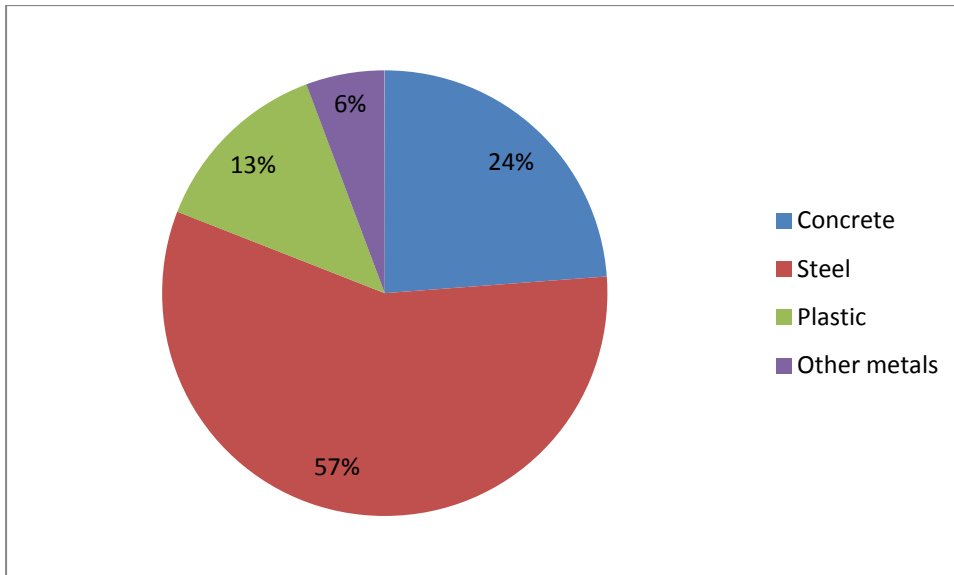
2.6 Inventory Estimates

Figure 2.1: Pie Chart of Estimated Inventories (Installations)



Total tonnes: 107

Figure 2.2: Pie Chart of Estimated Inventory (Pipelines)



Total Tonnes: 1050

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 22 of 39	

3. REMOVAL AND DISPOSAL METHODS

Wastes generated during decommissioning will be segregated and recorded by type and periodically transported to shore in an auditable manner through licensed waste contractors. Steel and other scrap metal are estimated to account for the greatest proportion of the materials inventory. The hierarchy for disposal will be:

1. Reuse
2. Reconditioning
3. Reconditioning of component parts
4. Recycling (partial or whole) components/materials
5. Disposal to landfill or other approved methods

The disposal routes for the subsea installations and pipeline infrastructure are shown in Tables 3.1 and 3.2.

Once the infrastructure is recovered to the vessels, it will be examined for the presence of NORM. If any contamination is found, the items will be sealed and delivered to specialist contractors for decontamination treatment and disposal. NORM contamination in Wissey infrastructure would require specialised waste transport and handling processes and is regulated under the Radioactive Substances Act 1993, however, the Wissey infrastructure is not expected to contain any NORM.

3.1 Topsides

N/A

3.2 Jacket(s)

N/A

3.3 Subsea Installations and Stabilisation Features

All subsea installations will be removed to shore for disposal. The pile cuts will be made below the seabed level (minimum 3m). The means of cutting will be diamond wire, high pressure water jet abrasive cutting or by explosives.

Table 3.1: Subsea Installation and Stabilisation Features Decommissioning		
Subsea installations and stabilisation features	Option	Disposal Route (if applicable)
Wellhead	Remove	Transport ashore for disposal
Protection Frame	Remove	Transport ashore for disposal
Concrete mattresses	It is intended that the mattresses should be recovered to shore, however in the event of practical difficulties DECC will be consulted and a Comparative Assessment submitted.	Transport ashore for disposal
Grout bags	Remove	Transport ashore for disposal
Formwork	Not applicable	Not applicable
Fronnd Mats	It is intended that the mattresses should be recovered to shore, however in the event of practical difficulties DECC will be consulted and a Comparative Assessment submitted.	Not applicable
Rock Dump	Not applicable	Not applicable

3.4 Pipelines/Flowlines/Umbilicals

Decommissioning Options:

Table 3.2: Pipeline or Pipeline Groups/Decommissioning Options			
Pipeline or Group (as per PWA)	Status of the line or characteristics of the pipeline group	Decommissioning Options considered	Whole or part of pipeline/group being decommissioned
PL2491	Trenched, buried	1,2,3,4,5	Whole pipeline
PLU2492	Trenched, buried	1,2,3,4,5	Whole pipeline

*Key to Options

- 1) Completely remove the line(s);
- 2) Trench and bury the exposed / uncovered areas of the line(s);
- 3) Rock dump the line in specific areas where the line is uncovered;
- 4) Partial removal of uncovered sections of the line;
- 5) Leave in situ with periodic monitoring (frequency to be agreed with DECC).

Comparative Assessment Method:

The Comparative Assessment process involved a multi-disciplinary team participating in a Comparative Assessment workshop and a preliminary Quantitative Risk Assessment (QRA) of the available decommissioning options. At the Comparative Assessment workshop, each decommissioning option has been scored against a set of assessment criteria using categories derived from DECC guidance: 1. Safety; 2. Environmental; 3. Technical; 4. Societal; 5. Commercial. The Comparative Assessment can be found in Section 7, Supporting Documents, Document 2.

The Comparative Assessment concluded the pipelines and umbilicals will be left in situ due to difficulty and cost to remove. They are predominantly trenched and buried; the free spans are within acceptable parameters to leave. The pipelines will be periodically monitored (frequency to be agreed with DECC) and buried as required.

Outcome of Comparative Assessment:

Table 3.3: Outcomes of Comparative Assessment		
Pipeline or Group	Recommended Option*	Justification
PL2491	Option 5	Line is buried and will be safe to leave in situ (5). End sections will be removed & exposures/spans rectified as required. Monitoring will be performed to confirm pipeline remains buried. The frequency of monitoring will be agreed with DECC.
PLU2492	Option 5	Line is buried and will be safe to leave in situ (5). End sections will be removed & exposures/spans rectified as required. Monitoring will be performed to confirm pipeline remains buried. The frequency of monitoring will be agreed with DECC.

*Key to Options

- 1) Completely remove the line(s);
- 2) Trench and bury the exposed / uncovered areas of the line(s);
- 3) Rock dump the line in specific areas where the line is uncovered;
- 4) Partial removal of uncovered sections of the line;
- 5) Leave in situ with continuous monitoring

3.5 Wells

Table 3.4: Well Plug and Abandonment
The wells which remain to be abandoned, as listed in Section 2.4 (Table 2.5) will be plugged and abandoned in accordance with Oil and Gas UK Guidelines for the suspension and abandonment of wells. A PETS WIA application will be prepared and a MCAA licence application submitted to cover well abandonment and removal of the wellhead infrastructure.

3.6 Drill Cuttings

Drill Cuttings Decommissioning Options: N/A
(Please refer to Section 2.5)

Comparative Assessment Method: N/A

Outcome of Comparative Assessment: N/A

3.7 Waste Streams

Table 3.5: Waste Stream Management Methods	
Waste Stream	Removal and Disposal method
Bulk liquids	Removed and discharged to disposal wells or sent to Bacton via the export line for disposal.
Marine growth	Removed offshore / onshore. Disposed of according to the Tullow Thames Field Decommissioning Waste Management Plan, and in line with relevant legislation relating to the decommissioning of offshore structures, and the management of controlled waste.
NORM/LSA Scale	Tests for NORM/LSA will occur offshore and will be dealt/disposed with according to guidelines and company policies.
Asbestos	N/A
Other hazardous wastes	Non identified
Onshore Dismantling sites	Appropriate licensed sites will be selected. Chosen facility must demonstrate proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver innovative recycling options.

Table 3.6 Inventory Disposition			
	Total Inventory Tonnage	Planned tonnage to shore	Planned left in situ
Installations	70	60	10
Pipelines	600	50	550

4 ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Environmental Sensitivities

The main features in this section are extracts from the Thames Area decommissioning Environmental Impact Assessment that has been prepared for the entire Thames Area decommissioning and is submitted in support of this Decommissioning Programme approval.

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Features
Conservation interests	<p>Marine Protected Areas (MPAs): The Wissey infrastructure lies 26.5 kilometres south east of the nearest marine protected area; North Norfolk Sandbanks and Saturn Reef cSAC/SCI, and 30 kilometres east of the Haisborough, Hammond and Winterton cSAC/SCI.</p> <p>Annex I Habitats: Annex I shallow sandbanks and discrete populations of <i>S. spinulosa</i> were identified in the side scan sonar mosaic and using seabed imagery across the Thames Area. Overall the site survey identified some areas of 'low' to 'moderate reefiness' but no areas of high reefiness which has previously been found at the Saturn Reef to the north west of the Wissey field (outside of the current working area). Given the distance of the Wissey infrastructure from the North Norfolk Sandbanks and Saturn Reef cSAC/SCI, it is unlikely that Annex I <i>S. spinulosa</i> reefs will be present.</p> <p>Annex II Species: The Annex II species that could be present in the vicinity of the Thames Decommissioning Area include:</p> <ul style="list-style-type: none"> • Harbour porpoise (<i>Phocoena phocoena</i>); • Grey seal (<i>Halichoerus grypus</i>); • The harbour (or common) seal (<i>Phoca vitulina</i>).

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Features
Seabed	<p>Seabed imagery found that much of the surveyed area comprised bare sand with some areas of gravel and shell fragments (CMACS, 2013). Side scan sonar data demonstrated that sand waves across large areas of the seabed. This indicates strong seabed and water column currents, and subsequently highly mobile sediments (CMACS, 2013) which is consistent with the southern North Sea in general.</p> <p>The results of the chemical testing indicate that the concentrations of the individual PAH compounds all fall below the laboratory detection limits.</p> <p>Similarly, the aliphatic and aromatic total petroleum hydrocarbon (TPH) compounds also fall beneath lab detection limits, along with the other organic compounds and phenols listed. The organic content of sediments was generally low, ranging from 0.47 per cent to 1.54 per cent, with no discernible trend across the survey area (CMACS, 2013).</p> <p>Of all the metal contaminants, only arsenic was present above Level 1 threshold (Cefas L1 threshold is 20 ppm) at the majority of stations. Elevated levels of arsenic can occur following geological inputs and/or industrial discharge (CMACS, 2013). Cadmium was the only other metal found at concentration above the Level 1 threshold with 0.4 ppm. Barium was detectable at all stations sampled with levels of between 6 and 36 ppm across the sites and no evidence of any 'hotspots' of barium concentration (CMACS, 2013).</p>
Fish	<p>There are potential fish spawning areas in Block 53/04 for mackerel (<i>Scomber scombrus</i>), plaice (<i>Pleuronectes platessa</i>), sandeel (<i>Ammodytes marinus</i>), sprat (<i>Sprattus sprattus</i>) and whiting (<i>Merlangius Merlangus</i>).</p> <p>In addition, the waters of Block 53/04 also act as nursery areas for mackerel, sole (<i>Solea solea</i>), sandeel, cod (<i>Gadus morhua</i>), spurdog (<i>Squalus acanthias</i>) and tope shark (<i>Galeorhinus galeus</i>) (Coull et al., 1998; Ellis et al., 2012).</p>
Fisheries	<p>Specific fishing effort and landings data for ICES Rectangles 34F2 indicated that annual fish landings were greatest in 2011 (411.1 tonnes). Conversely, annual fishing catches by tonnage were lowest during 2008 in ICES Rectangles 34F2 (35.4 tonnes) (Marine Scotland, 2014).</p> <p>Generally, fishing activity is low throughout the year in ICES rectangle 34F2. When averaged, catches by weight (tonnes) between 2009 and 2013 were highest during December. Sprat was the most commonly caught species during 2013 in ICES Rectangle 34F2.</p>

Table 4.1: Environmental Sensitivities	
Environmental Receptor	Main Features
Marine Mammals	According to Reid et al. (2003) three species have been previously sighted in the area around Block 53/04. Harbour porpoise (Annex II species), White-beaked dolphins, and minke whale. In addition, there is the potential that harbour seals (Annex II species) and grey seals (Annex II species) may be present in the vicinity of the Wissey infrastructure.
Birds	Within Block 53/04, seabird vulnerability peaks to high (2 out of 4 on the JNCC scale) during February, March and December.
Onshore Communities	All waste produced during the Thames Area Decommissioning will be transferred to an onshore decommissioning and waste facility for processing. Tullow Oil will ensure the chosen facility is fully regulated and licensed with current legislation.
Other Users of the Sea	<p>Shipping: Shipping movements within Block 53/04 are regarded as 'High' throughout the year. Block 53/04 is located adjacent to an International Maritime Organisation (IMO) two-way deep water routing measure that controls and monitors the navigation of vessels in the area.</p> <p>Oil & Gas: In the area surrounding the Wissey infrastructure (Block 53/04); there are nine wells which have been P&A, one suspended well, and one completed well.</p> <p>Military Activity: Block 53/04 does not lie within any marine military exercise areas.</p> <p>Dredging and Dumping Activity: No commercial or capital dredging is undertaken, nor are there sites licensed for disposal of dredged material within Block 53/04.</p> <p>Wind Farms: There are no active wind farms within Block 53/04, however it falls within the East Anglia round three search area, and the south eastern corner of Block 53/04 lies in the East Anglia Four Offshore wind development site. The East Anglia Four Offshore wind development site was awarded in the round 3 offshore wind licensing round to East Anglia Four Ltd (The Crown Estate, 2014)..</p> <p>Archaeology: No chartered wrecks are located in the vicinity of Block 53/04 (<i>Hydrographer of the Navy, 2006</i>).</p>
Atmosphere	Atmospheric emissions will be generated during the Wissey Field Decommissioning operations. However, it is expected that the emissions will be localised to the area of release.

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 30 of 39	

4.2 Potential Environmental Impacts and their Management

Environmental Impact Assessment Summary:

Decommissioning project activities with the potential to cause environmental impacts were identified from discussions with the Tullow project team, a scoping exercise with key stakeholders and from the EIA team's previous oil and gas EIA project experience.

Impacts associated with the Wissey field which is included in the Thames Area Decommissioning project have been grouped within the EIA under the following headings:

- Physical Presence;
- Seabed Impacts;
- Noise;
- Atmospheric Emissions;
- Marine Discharges;
- Unplanned Releases;
- Solid Wastes;
- Trans boundary Impacts;
- Cumulative Impacts.

Any relevant social-economic issues have been assessed within these sections.

In summary, all residual impacts are considered to be of minor significance, provided the proposed mitigation and management measures, as identified within the ES, are implemented during the Thames Area Decommissioning.

The exception to this is in the event of an accidental spill, where there would be a release of condensate from the pipeline or diesel fuel loss from the drilling rig / SLV; here the residual impact has been assessed as moderate. In addition, the assessment of potential cumulative impacts indicated that there would be no significant impacts and no significant transboundary impacts are expected to occur as a result of the decommissioning operations.'

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 31 of 39	

Table 4.2 Environmental Impact Assessment Summary		
Activity	Main Impacts	Management
Topsides Removal	Not applicable	Not applicable
Jackets Removal	Not applicable	Not applicable

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 32 of 39	

Table 4.2 Environmental Impact Assessment Summary

Activity	Main Impacts	Management
Subsea Installations Removal	<p>Energy use and atmospheric emissions</p> <p>Underwater noise</p> <p>Dropped object</p> <p>Accidental hydrocarbon release</p> <p>Production of Waste</p> <p>Damage or loss of fishing gear</p> <p>Disturbance to the Seabed</p>	<p>Vessels will be audited as part of selection and pre-mobilisation.</p> <p>Work programmes will be planned to optimise vessel time in the field. A post decommissioning debris survey will be conducted and any debris recovered.</p> <p>Materials are reused and recycled where possible. Compliance with UK waste legislation and duty of care.</p> <p>Underwater cutting could be a potential source of sound, the operation of well-maintained equipment during decommissioning will ensure noise of operating machinery is kept as low as possible.</p> <p>Use of explosives underwater is expected to cause a significant source of sound. Use of explosives underwater is expected to cause a significant source of sound. Consultation with JNCC and DECC will occur before agreement on any operation. Tullow Oil will also conform to 'JNCC guidelines for minimising the risk of injury to marine mammals from using explosives.'</p> <p>If applicable a MMO will be onboard the vessel during cutting and/or explosive operation.</p> <p>UK Hydrographical Office and Kingfisher will be informed of all activities. Tullow Oil will establish lines of communication to inform other sea users, including fishermen, of vessel operations during decommissioning.</p> <p>Tullow Oil will prepare an MCAA licence application to cover the removal of the Wellhead Protection Frame.</p> <p>Any dropped objects will be reported to DECC OGED using the PON2 reporting form.</p>

Table 4.2 Environmental Impact Assessment Summary

Activity	Main Impacts	Management
Decommissioning Pipelines (left in situ)	<p>Energy use and atmospheric Emissions</p> <p>Underwater noise</p> <p>Damage or loss of fishing gear</p> <p>Disturbance to Seabed</p> <p>Dropped object</p> <p>Accidental hydrocarbon release</p>	<p>Pipelines have been pre-flushed with seawater and risk assessments will indicate the potential for any environmental impact.</p> <p>Pipeline ends and exposed areas will be buried in situ preventing the release of pipeline contents into the marine environment</p> <p>Rock placement will be deposited from a dedicated rock placement vessel. This will be applied for under a DEPCON application.</p> <p>Tullow Oil will prepare an MCAA licence application to cover the proposed deposits, removal works, and potential disturbance of the seabed. Tullow Oil will ensure that disturbance is kept to a minimum during the operations.</p> <p>A post decommissioning debris survey will be conducted and any debris recovered. Underwater cutting could be a potential source of sound, the operation of well-maintained equipment during decommissioning will ensure noise of operating machinery is kept as low as possible.</p> <p>If applicable MMO will be onboard the vessel during cutting and/or explosive operation.</p> <p>UK Hydrographical Office and Kingfisher will be informed of all activities. Tullow Oil will establish lines of communication to inform other sea users, including fishermen, of vessel operations during decommissioning.</p> <p>Any dropped objects will be reported to DECC OGED using the PON2 reporting form.</p>

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 34 of 39	

Table 4.2 Environmental Impact Assessment Summary

Activity	Main Impacts	Management
Decommissioning Stabilisation Features	<p>Energy use and atmospheric Emissions</p> <p>Underwater noise</p> <p>Damage or loss of fishing gear</p> <p>Disturbance to Seabed</p> <p>Dropped object</p> <p>Accidental hydrocarbon release</p>	<p>It is intended that the mattresses and grout bags should be recovered to shore, however in the event of practical difficulties DECC will be consulted and a Comparative Assessment submitted (as per Para 3.3 Table 3.4).</p> <p>Tullow Oil will prepare an MCAA licence application to cover the removal of mattresses and grout bags from the seabed.</p> <p>Any dropped objects will be reported to DECC OGED using the PON2 reporting form.</p>
Decommissioning Drill Cuttings	<p>Long-term presence of hydrocarbons in sediments</p> <p>Leaching of hydrocarbons into the surrounding sediments and water column</p>	<p>There are no drill cuttings associated with the Wissey installation in the area. Should any evidence of drill cuttings be discovered, Tullow Oil will contact DECC to review findings and extent and agree any necessary remedial actions.</p> <p>Any dropped objects will be reported to DECC OGED using the PON2 reporting form.</p>

5 **INTERESTED PARTY CONSULTATIONS**

Consultations Summary:

Table 5.1 Summary of Consultee Comments		
Who	Comment	Response
INFORMAL CONSULTATIONS		
TBA	None	
TBA	None	
TBA	None	
STATUTORY CONSULTATIONS		
NFFO	None received	
SFF	None received	
NIFPO	None received	
Global Marine Systems	None received	

6 PROGRAMME MANAGEMENT

6.1 Project Management and Verification

A Tullow Oil Project Management team will be appointed to manage suitable sub-contractors for the removal of the Wissey installation and execution of the Decommissioning Programme work scopes. Tullow Oil standard procedures for operational control and hazard identification and management will be used. Where possible the work will be coordinated with other decommissioning operations in the SNS. Tullow Oil 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 discussed with DECC.

6.2 Post-Decommissioning Debris Clearance and Verification

A post decommissioning site survey will be carried out around 500m radius of the Wissey installation, and a 200m corridor along each existing pipeline route. Oil and gas seabed debris will be recovered for onshore disposal or recycling in line with existing disposal methods. Independent verification of seabed state will be obtained by trawling the installation and pipeline areas. This will be followed by a statement of clearance to all relevant governmental departments and non-governmental organisations.

6.3 Schedule

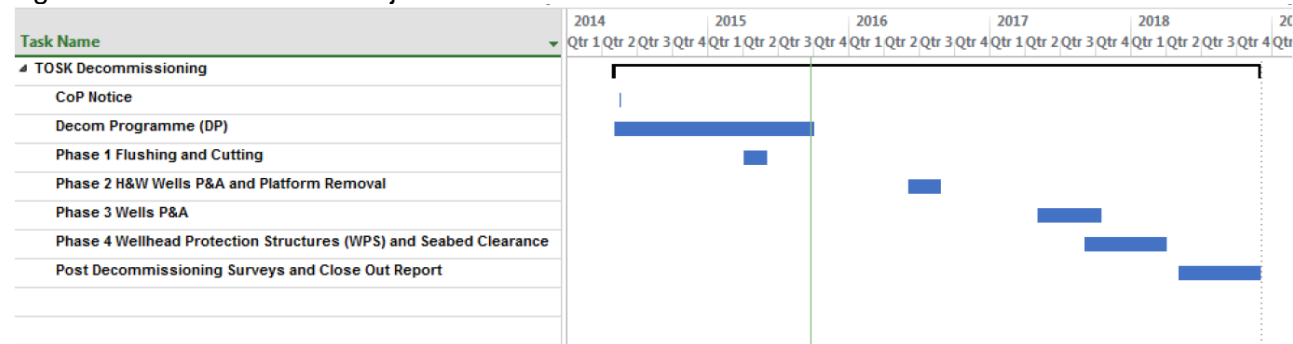
Project Plan:

The Tullow Oil plan for decommissioning Wissey and its other two operated installations in the Thames area Horne and Wren and Orwell is expected to be 48 months duration.

The plan below takes into account regulatory approvals and time to procure long lead items and equipment. Economic and operational benefits identified in detailed engineering through integration with the Perenco UK Ltd decommissioning of the Thames Area installations may require some future adjustment to the Tullow Oil planning. The market availability of key vessels including a heavy lift vessel for removing structures and rigs for wells plugging and abandonment will ultimately drive the dates for completion.

Note that Horne and Wren will require remedial works in order to facilitate the programme. This activity is shown as H&W Enabling in the level 0 Gantt Chart.

Figure 6.1: Gantt chart of Project Plan



TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 37 of 39	

6.4 Costs

Table 6.1 – Provisional Decommissioning Programme(s) costs	
Item	Estimated Cost (£m)
Platform(s) /Jacket(s) - Preparation / Removal and Disposal	NA
Pipeline(s) and Umbilical(s) Infrastructure Decommissioning	Inc. in subsea
Subsea Installation(s) and Stabilisation Feature(s)	3.0
Well Abandonment	5.0
Continuing Liability – Future Pipeline and Environmental Survey Requirements	0.5
TOTAL	8.5

6.5 Close Out

In accordance with the DECC Guidelines, a close out report will be submitted to DECC explaining any variations, from the Decommissioning Programme (normally within 4 months of the completion of the offshore decommissioning scope) including debris removal and 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 sites of the Wissey subsea installation, will be carried out. The survey will focus on chemical and physical disturbances of the decommissioning and compared with the pre-decommissioning survey, conducted by OSIRIS Ltd in Q3 2013 (Osiris 02029-OSI-PL-RPT-001). Results of this survey will be available once the work is complete, with a copy forward to DECC. All pipeline routes and structure sites will be the subject of surveys when decommissioning activity has concluded. The survey will include the 200 metre corridor along the pipeline routes and 500 metre radius around the installation. After the surveys have been sent to DECC and reviewed, the post-decommissioning monitoring regime to be discussed and agreed with DECC.

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 38 of 39	

7 **SUPPORTING DOCUMENTS**

Table 7.1: Supporting Documents	
Document Number	Title
PER-SNS-DECOM-THA-005	Environmental Impact Assessment
PER-SNS-DECOM-THA-001	Comparative Assessment
02029-OSI-PL-RPT-001	Environmental Survey
02029-XOD-SU-RPT-RPT001	Xodus report – Facilities and pipeline removal conceptual report
02029-INR-EG-RPT-0001	Interact report – Wells plug and abandonment conceptual report

TULLOW OIL SK LTD - WISSEY FIELD DECOMMISSIONING PROGRAMMES	Doc No: 02029-TLW-PM-PRG-0001	
	Rev: F	Date: 22/10/15
	Page 39 of 39	

8. PARTNERS LETTERS OF SUPPORT