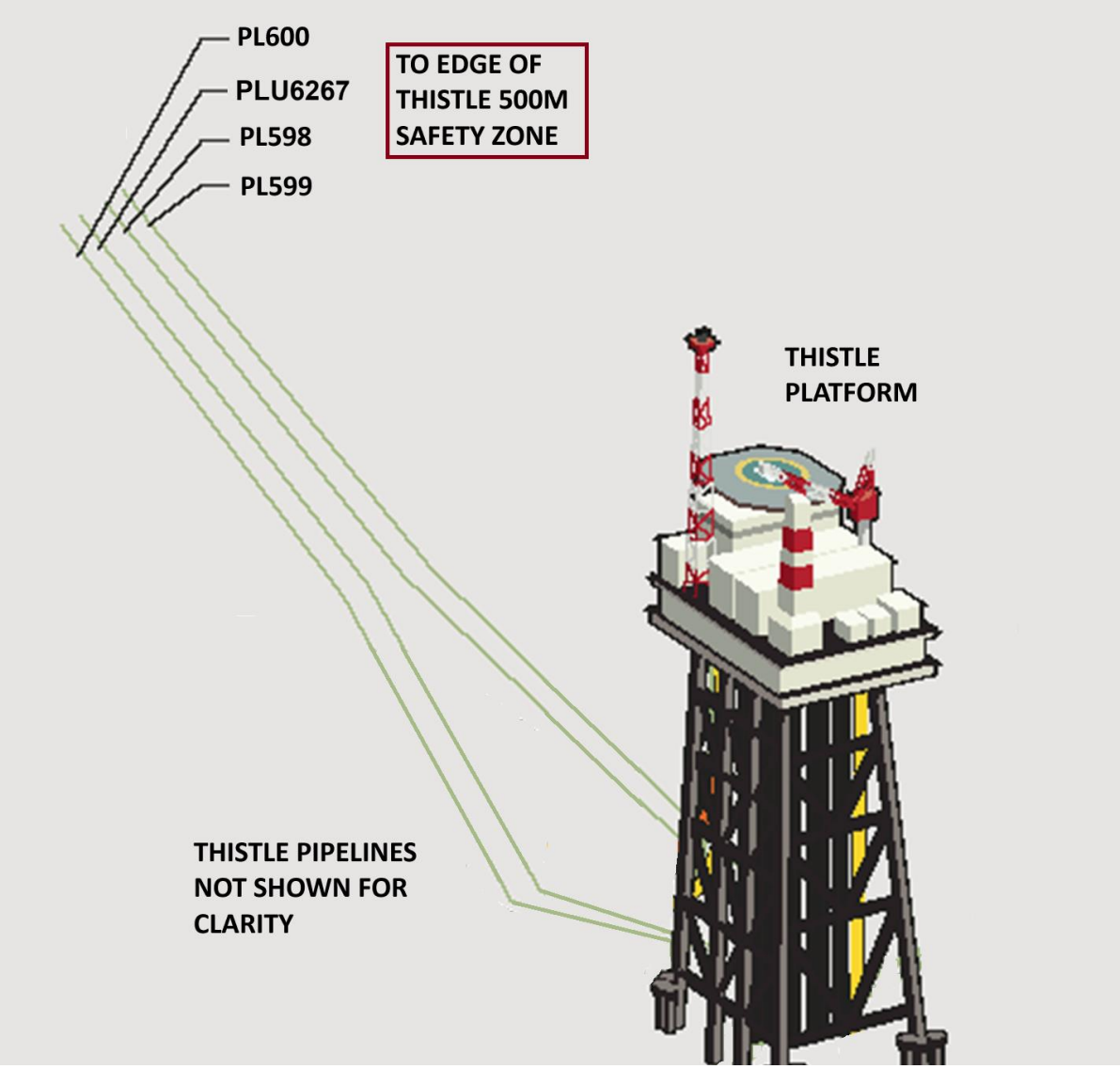
Don Decommissioning Programme for pipelines in Thistle 500m zone



DON DECOMMISSIONING PROGRAMME FOR PIPELINES IN THISTLE 500M ZONE

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Consultation Draft

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DOCUMENT CONTROL

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TABLE OF ABBREVIATIONS

ABBREVIATION	EXPLANATION
~	Approximately
BP	bp. Capital letters used to differentiate the term from the surrounding text.
Britoil	Britoil Limited. Formerly Britoil Public Limited Company. A subsidiary of BP.
CA	Comparative Assessment
Chrysaor	Chrysaor Production (U.K.) Limited (refer Table 1.6.1)
CI	Chemical Injection
CNRI	CNR International (UK) Limited (refer Table 1.6.1)
DFGI	Dunlin Fuel Gas Import
DP	Decommissioning Programme(s)
EA	Environmental Appraisal
EnQuest	EnQuest Heather Limited
ENVID	Environmental Identification
EPDM	Ethylene Propylene Diene Monomer
ESDV	Emergency Shutdown Valve
FPU	Floating Production Unit (refer Table 1.6.1)
GBS	Gravity base Structure (concrete) (refer Table 1.6.1)
GMG	Global Marine Group
Jacket	substructure that supports topsides
Jacket footings	Part of jacket or substructure resting on the seabed up to the highest point of the piles, or a part of the steel installation that is so closely connected as to present major engineering problems in being severed.
KP	Kilometre Point, usually measured from point of origin, the start of the pipeline at the pipeline flange. A negative KP means that the features (e.g. tie-in spools) lie between the riser flange and the start of the pipeline.
LAT	Lowest Astronomical Tide
MCX	MCX Dunlin (UK) Limited (refer Table 1.6.1)
No	Number (of)
NSTA	North Sea Transition Authority
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo Paris Convention. (The Convention for the Protection of the Marine Environment of the North-East Atlantic (the 'OSPAR Convention').
PL, PLU	Pipeline or umbilical Identification Number as defined by NSTA using the PWA application process or Pipeline (refer Table 2.2.1).
PWA	Pipeline Works Authorisation
SALM base	Single Anchor Leg Mooring base
SDC	Subsea Decommissioning Collaboration (Figure 6.3.1)
SPM	Single Point Mooring (Base). Also referred to in the documentation as SALM
TAQA	TAQA Europa B.V. (refer Table 1.6.1)
UKCS	United Kingdom Continental Shelf
UTM	Universal Transverse Mercator
WNAS	Wintershall Norsk AS (refer Table 1.6.1)

1. EXECUTIVE SUMMARY

1.1 Decommissioning Programme

This document presents the Decommissioning Programme (DP) for the sections of the Don pipelines inside the Thistle 500m zone. As the pipelines are within the Thistle 500m zone, the DP is supported by a Comparative Assessment ('CA') and Environmental Appraisal ('EA'). The assessments for the Don pipelines are combined with those conducted for the Thistle pipelines [4], [7].

The Don pipelines include:

- PL598, trenched and buried except for surface laid sections near Thistle, ~0.567 km long (17.44 km)
- PL599, trenched and buried except for surface laid sections near Thistle, 0.570 km long (17.34 km)
- PL600, trenched and buried except for surface laid section near Thistle, ~0.56 km long (17.73 km)
- PLU6267 trenched and buried, except for surface laid section near Thistle, ~0.50 km long (17.73 km)

and,

- the pipe bridge supporting these pipelines as they approach the riser sections.

Riser caisson 930 along with the risers for PL598, PL599, PL600 and PLU6267 contained within are all out of scope and addressed in the Thistle upper jacket Decommissioning Programme [5].

The rest of the Don installations and pipeline infrastructure are subject to separate Decommissioning Programmes [1]. Although decommissioning of the Don pipelines is being treated in this document as a separate project, the intention is that the Don pipelines inside the Thistle 500m zone will be decommissioned at the same time as the Thistle pipelines to reduce environmental impacts and cost.

1.2 Requirement for Decommissioning Programme

Pipelines: In accordance with the Petroleum Act 1998, Britoil Limited as former operator responsible for decommissioning the Don field, and on behalf of the Section 29 notice holders (Table 1.4.2), is applying to the Offshore Petroleum Regulator for Environment and Decommissioning ('OPRED') to obtain approval for decommissioning the Don pipelines as detailed in Section 2 of this document. Partner letters of support will be provided directly to OPRED.

In conjunction with public, stakeholder and regulatory consultation, this Decommissioning Programme is submitted in compliance with national and international regulations and OPRED guidance notes [9]. The schedule outlined in this document is for a twelve-year period[1] to decommission the pipelines beginning in 2026.

1.3 Introduction

The Don North-East (NE) and Don South-West (SW) Fields are comprised of four operating licences, Don North-East (P104, P236 and P296) and Don South-West (P236). The Fields were operated by BP and are located approximately 230 km north-east of the Shetland Islands in Block 211/18a in the United Kingdom sector of the northern North Sea, in a water depth of 160 m. The Fields were discovered in 1976. Oil was first produced in October 1989, and exported via the Thistle installation to the Sullom Voe oil terminal on Shetland. The original combined Don Fields (Don NE and SW) Fields are illustrated in Figure 1.3.1.

[1] Activity window extended as per North Sea Transition Authority ('NSTA') strategy which aspires to combine multiple scopes in a single campaign.

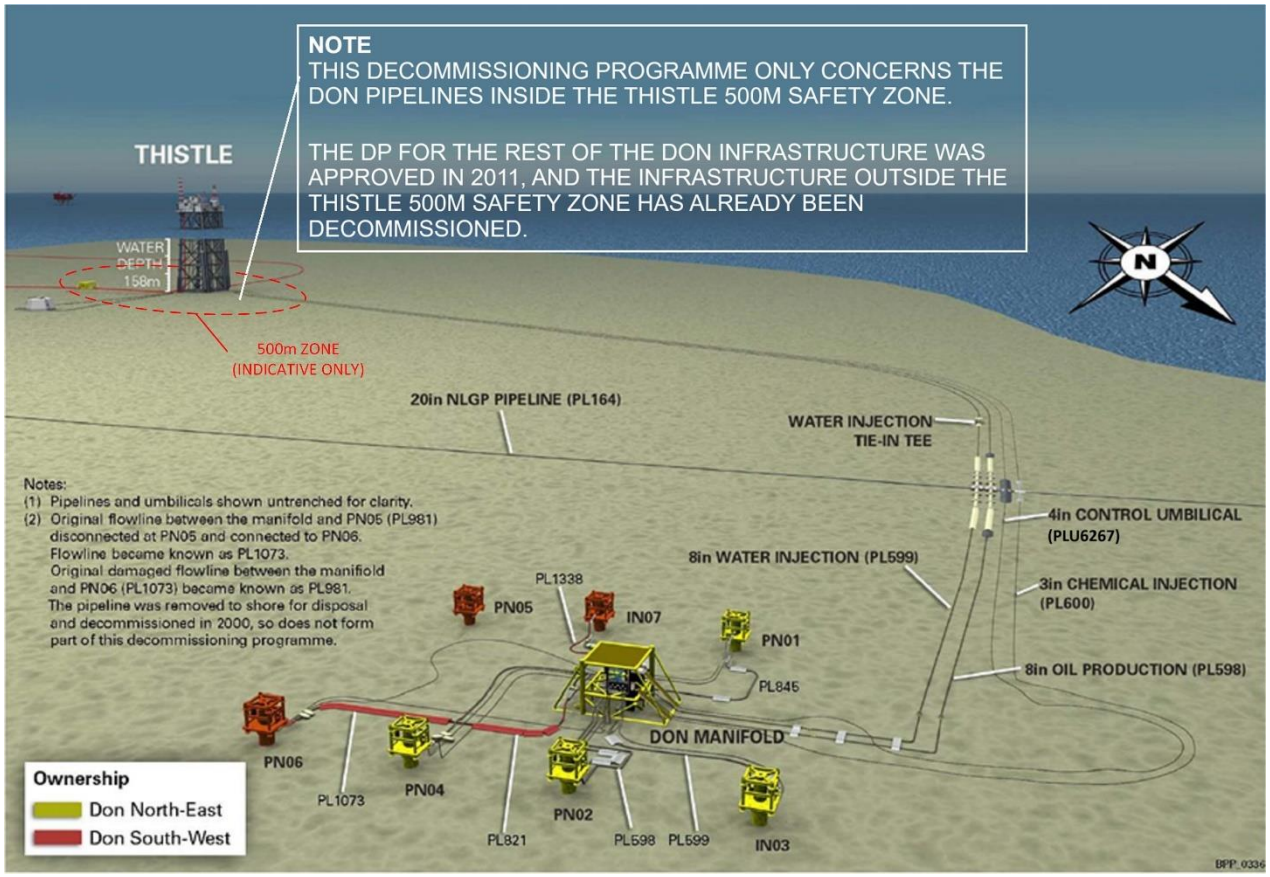

Figure 1.3.1: Don North-East and Don South-West Fields tied back to Thistle

The Thistle installation is in block 211/18a of the UKCS and operated by EnQuest Heather Limited. The Thistle field is located ~201 km North-East of Shetland, in a water depth of ~162 m.

The Decommissioning Programme explains the principles of the decommissioning activities and are supported by a comparative assessment for the pipelines [4] and an environmental appraisal [7] combined with the documents produced in support of the Thistle pipeline DP [6].

1.4 Overview of Pipelines being Decommissioned

1.4.1 Pipelines

Table 1.4.1: Don pipelines being decommissioned		
Number of Pipelines, Cables, Umbilicals	4	Refer Table 2.2.1

1.4.2 Section 29 notice holders

Table 1.4.2: Pipeline Section 29 notice holder details			
Section 29 Notice Holder	**Registration Number**	**Equity Interest**	
		Don North-East	**Don South-West**
Britoil Limited	SC077750	80.30%	58.30%
Chrysaor (UK) Theta Limited	01491002	19.70%	41.70%
NOTE: PLU6267 requires allocation to Section 29 Notice Holders. This will be done prior to formal approval of the Decommissioning Programme.			

1.5 Summary of proposed Decommissioning Programme

Table 1.5.1: Summary of Decommissioning Programme	
Proposed Decommissioning Solution	**Reason for Selection**
1. Pipelines	
Both pipelines PL598 and PL599 have been flushed and cleaned. PL600 is impaired by internal core blockages, hence flushing was not possible before the execution of prior decommissioning activities. PL600 and PLU6267 have been cut at multiple locations along their entire >17km length (i.e. from Thistle topsides to Don manifolds), and contents allowed to disperse to sea under an approved chemical permit and risk assessment. Please refer to the original Don DP [1] and Table 2.2.1 herein for more information. A new permit application will be submitted to flush these umbilicals again before they are severed inside the Thistle 500m zone. Please refer to the original Don DP [1] and Table 2.2.1 herein for more information. Leave *in situ*. As per the CA [4] all pipelines will be left *in situ* except for the short-surface laid sections near the Thistle platform. The surface laid sections of the pipelines will be removed down to trench depth. Deposit a small quantity of rock to bury cut pipeline ends inside the trench. The deposition of rock on cut pipeline ends will be kept to a practical minimum. For the purposes of the EA it is assumed that up to 15 Te of rock will be required at each location, giving an estimated total of 60 Te. Environmental permit applications required for work associated with decommissioning of the pipelines will be applied for.	These are the preferred options following comparative assessment [1], [4].
2. Pipeline structures	
The pipebridge will be fully removed. Environmental permit applications required for work associated with decommissioning of the pipe bridge will be applied for.	As per mandatory requirements.
3. Interdependencies	
In order of preference, materials that have been removed will be returned to shore for reuse, recycling, or disposal as appropriate. Riser caisson 930 along with the risers for PL598, PL599, PL600 and PLU6267 contained within are all out of scope and addressed in the Thistle upper jacket Decommissioning Programme [5]. The Don fields have already been partly decommissioned. The Don pipeline infrastructure inside the Thistle 500 m zone will be decommissioned at the same time as the Thistle pipeline infrastructure. Some of the Thistle pipelines cross over the Don pipelines inside the Thistle 500 m zone. However, the decommissioning proposals described in this document are not affected. No third-party infrastructure will be directly affected by the decommissioning proposals.	

1.6 Field Location including field layout and adjacent facilities

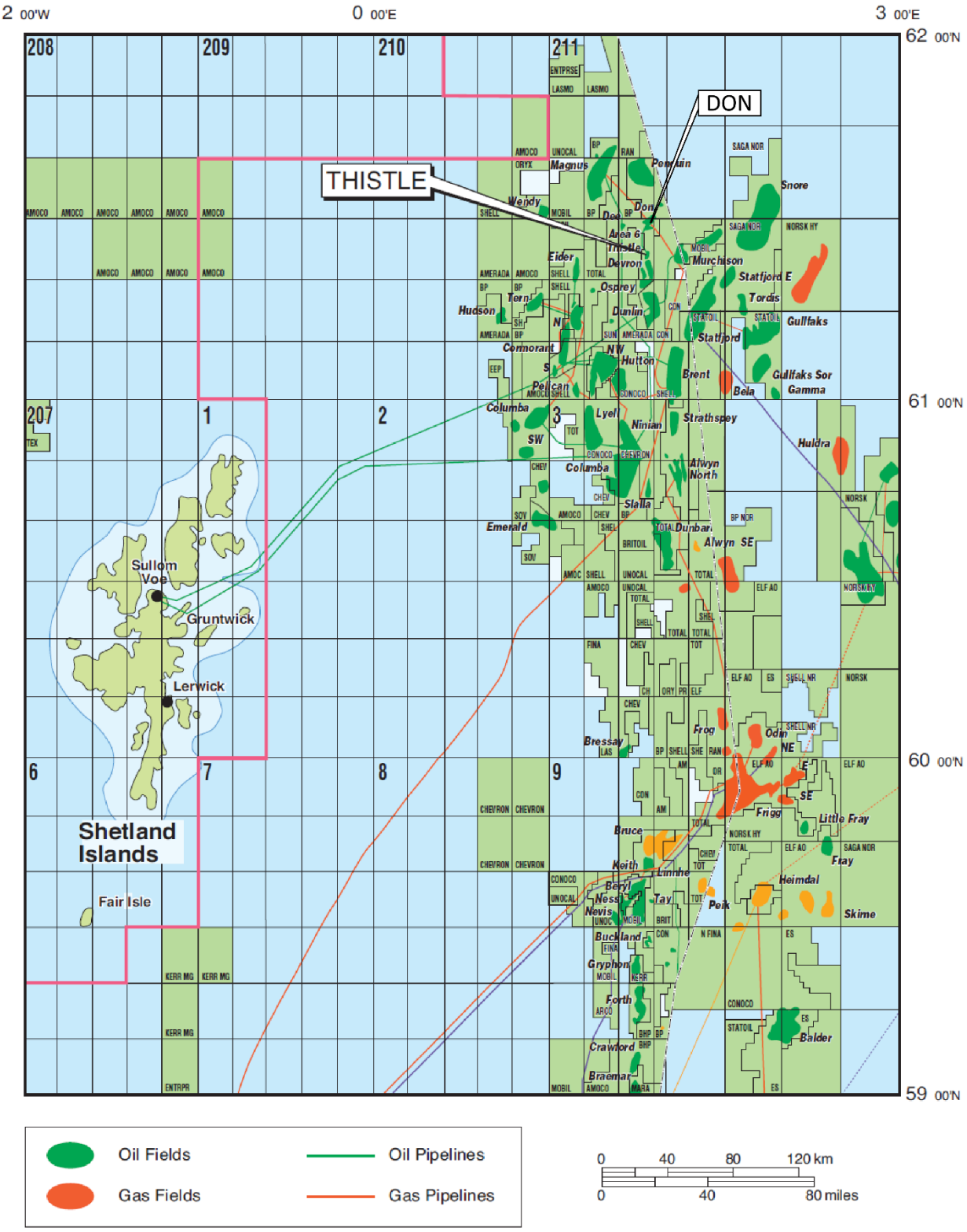

Figure 1.6.1: Thistle & Don field location in UKCS[2]

[2] Includes Don infrastructure inside the Thistle 500m zone.

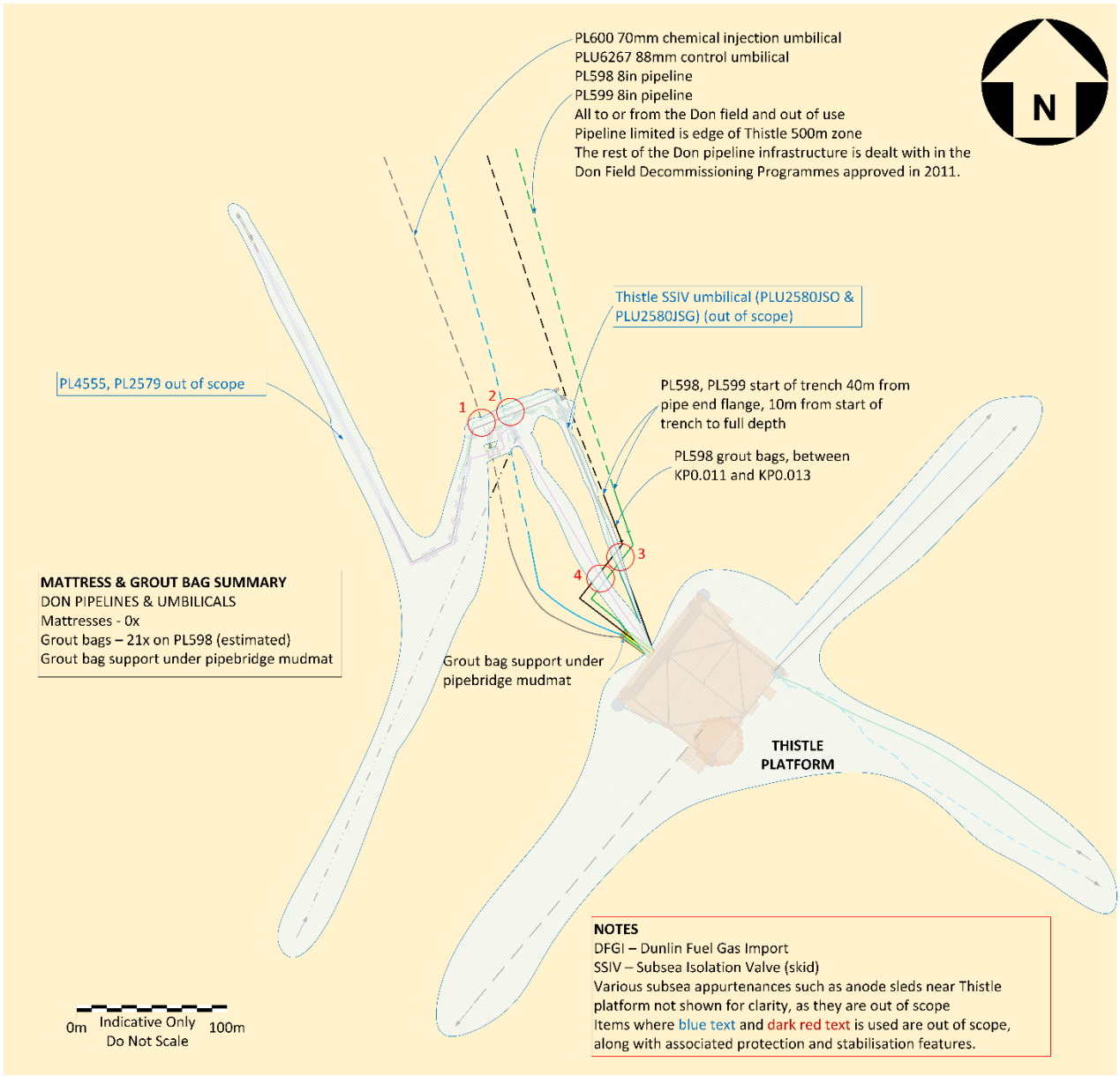

Figure 1.6.2: Don pipelines at Thistle

Table 1.6.1: Adjacent facilities (relative to Don pipelines in Thistle 500m zone)					
Operator	**Name**	**Type**	**Direction & distance**	**Information**	**Status**
CNRI & WNAS	Murchison	Jacket footings	NE, 9.5km		Decommissioned
MCX	Dunlin A	GBS	S, 9.7km		Decommissioned
TAQA	Eider A	Steel jacket	W, 22.5km		Out of use
EnQuest	Thistle	SALM base	NE, 2.4km		Out of use
EnQuest	Northern Producer	FPU	NNW, 5.1km		Decommissioned
Britoil	PL598	8in PL	All within Thistle 500m zone	Don, tied back to Thistle.	Out of use, partially decommissioned. Refer DP [1] for original scope
Britoil	PL599	8in PL			
Britoil	PL600	70mm CI umbilical			
Britoil	PLU6267	88mm control umbilical			
EnQuest	Magnus	Fixed steel platform	~32.2km NNW	Connected to Wye structure via PL4556	Operational
EnQuest	PL2579	3in PL	Piggybacked with PL4555	Refer [3]	Out of use
Fairfield Betula Limited, MCX	PL2852	4in PL	Thistle to Dunlin Platform		Decommissioned
Impacts of decommissioning proposals					
There are no direct impacts on adjacent facilities from the work associated with the Don pipeline decommissioning activities, except for decommissioning works required at Thistle and inside the Thistle 500 m zone.					

1.7 Industrial Implications

For and on behalf of the Don Section 29 notice holders, as operator of the Don pipeline infrastructure it is Britoil's intention to develop a contract strategy and Supply Chain Action Plan that will result in an efficient and cost-effective execution of the decommissioning works. This will be achieved by liaising directly with EnQuest, the operator of the Thistle facilities and pipeline infrastructure.

The Don pipeline Decommissioning Programme for pipelines inside the Thistle 500 m zone will be managed by EnQuest on behalf of the Section 29 notice holders to ensure safe, efficient, and legally compliant delivery of the various elements of the decommissioning scope. The intention is to make efficient use of the supply chain to generate value through the application of knowledge, innovation, and technology, explore collaboration opportunities and to employ best practice in the management of the supply chain to deliver a cost effective and reliable service. Where appropriate existing framework agreements may be used for decommissioning activities.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 Installations

n/a

2.2 Pipelines including stabilisation features

Table 2.2.1: Pipeline information									
Description	**Pipeline Number (as per PWA)[5]**	**Diameter (NB) (inches)[1]**	**Length (km)[2]**	**Description of component parts**	**Product conveyed[3]**	**From – to end points[4]**	**Burial Status**	**Pipeline Status**	**Current Content**
Oil production pipeline	PL598	8	0.57 (17.44)	Carbon steel pipeline coated with 13mm thick EPDM. Tie-in pipespools (85 m long excluding 25 m length on pipe bridge) are provided with 50mm CWC (81 m).	Oil, condensate	From edge of Thistle 500 m zone to base of riser caisson 930 at the Thistle platform (From Don manifold to base of riser caisson 930 at the Thistle platform)	Trenched and buried, surface laid at ends	Partly decommissioned	Inhibited seawater
Water injection pipeline	PL599	8	0.57 (17.34)	Carbon steel pipeline coated with 13mm thick EPDM. Tie-in pipespools (85 m long) excluding 25 m length on pipe bridge are provided with 50mm CWC (81 m).	Seawater	From base of riser caisson 930 on the Thistle platform to edge of Thistle 500 m zone (From base of riser caisson 930 on the Thistle platform to the Don manifold)	Trenched and buried, surface laid at ends	Partly decommissioned	Inhibited seawater

Table 2.2.1: Pipeline information									
Description	**Pipeline Number (as per PWA)[5]**	**Diameter (NB) (inches)[1]**	**Length (km)[2]**	**Description of component parts**	**Product conveyed[3]**	**From – to end points[4]**	**Burial Status**	**Pipeline Status**	**Current Content**
Chemical injection umbilical	PL600	70mm	0.56 (17.73)	Steel armoured chemical injection umbilical, 2x6.3mm, 2x9.5mm bore	Corrosion inhibitor chemicals	Same as PL599	Trenched and buried, surface laid at ends	Partly decommissioned	Surflo SI6772, Surflo 6442, Surflo H356, Methanol
Control & monitoring umbilical	PLU6267	88mm	0.54 (17.73)	Steel armoured electrohydraulic and hydraulic fluids umbilical	Electrical power, signals, and hydraulic fluid	Same as PL599	Trenched and buried, surface laid at ends	Partly decommissioned	Oceanic HW540, a water based hydraulic fluid

NOTES

1. If diameter is expressed in mm it refers to outside diameter of umbilical or flexible flowline
2. All pipeline lengths are estimated to the edge of the Thistle 500 m zone, with the full length of the pipelines given in brackets. The Don Decommissioning Programmes quotes the full length of the pipelines and does not explicitly define the length of pipeline inside the 500 m zone.
3. Quantities of chemicals remaining in the full length of Don pipelines before the sections outside the Thistle 500m zone were decommissioned are as follows: PLU6267, Oceanic HW540, 6.9te, PL600,Surflo SI677, 1.8Te, PL600, Surflo 6422, 1.3Te, PL600, Surflo H356, 1.1Te, PL600, Methanol, 1.3Te. These quantities represent the maximum inventories in umbilicals PL600 and PLU6267, including the elements within Thistle 500m zone and jacket. Refer Don Field Decommissioning Programme, DON-BP-001, May 2011 Table 9.2, page 9-7 [1]. The fluid quantities for the sections within the 500m zone addressed in this DP are approximately 3.2% of the quantities noted here.
4. The 30in riser caisson 930 at the Thistle platform is out of scope and will be dealt with in the Thistle pipeline DP [6].
5. Reference Pipeline Works Authorisation (PWA) 16/W/88.

Table 2.2.2: Pipeline protection & stabilisation features				
Stabilisation Feature	**Total Number**	**Total Mass (Te)**	**Location**	**Exposed/Buried/Condition**
THISTLE APPROACHES (INSIDE 500 M ZONE)				
Grout bags (25 kg)	21	0.53	Between KP0.011 and KP0.013	Exposed. Burial status to be confirmed during decommissioning operations.

2.3 Pipeline structures

Table 2.3.1: Pipeline structure information					
Pipeline structure incl. stabilisation features	**No**	**Mass (Te)**	**Location**		**Comments / status**
		Size (m)	**WGS84 Decimal**	**WGS84 Decimal Minute**	
Pipebridge	1	10	61.362533° N	61°21.7520' N	Pinned to base of riser caisson 930 with the other end resting on a grout bag support on the seabed. Refer Figure 2.3.1.
		22.35x4x1.5	1.578017° E	1°34.6810' E	
Grout bag support under mudmat	1	1	As above	As Above	Exposed. Burial status to be confirmed during decommissioning operations. Size not specified. Estimated. Figure 2.3.1.
		4.5 x 4.5 x 0.3			

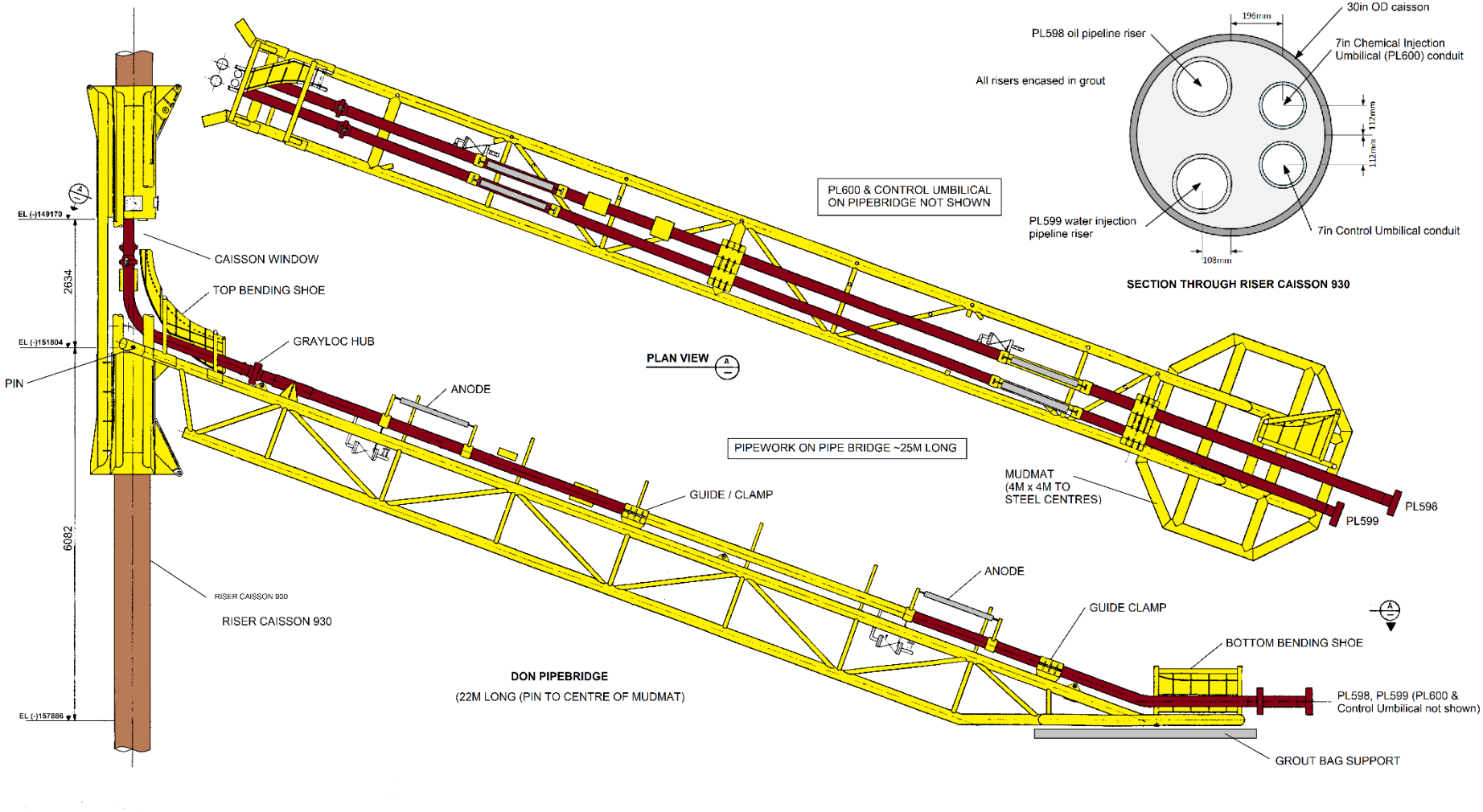

Figure 2.3.1: Don pipebridge (next to riser caisson 930 on Thistle jacket)

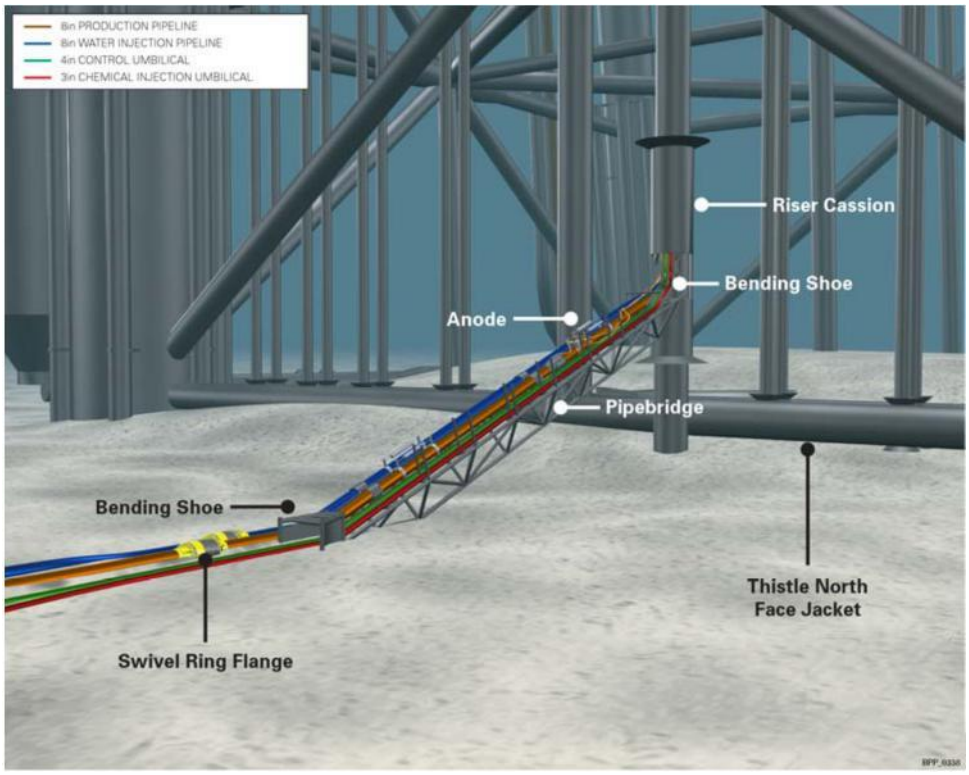

Figure 2.3.2: Don pipebridge at Thistle jacket

2.4 Pipeline crossings

Table 2.4.1: Don pipeline crossing information			
ID	**Pipeline, umbilical or cable description**	**Location**	**Protection**
THISTLE 500 M ZONE			
1	PL4555, PLU2580JSO and PLU2580JSG all cross over PL600	Inside Thistle 500 m zone.	None. Refer Figure 1.6.2.
2	PL4555, PLU2580JSO and PLU2580JSG all cross over PLU6267	Inside Thistle 500 m zone.	Concrete mattress. Refer Figure 1.6.2.
3	The PL4555 flexible catenary riser and the PLU2580 umbilical riser theoretically cross over PL598 & PL599 but at this location the risers are likely suspended in the water column.	Inside Thistle 500 m zone.	None. Refer Figure 1.6.2.
4	The PL2579 catenary umbilical theoretically crosses over PL598 & PL599 but at this location the umbilical is likely suspended in the water column.	Inside Thistle 500 m zone.	None. Refer Figure 1.6.2.
NOTES 1. For ID (location) refer Figure 1.6.2. 2. All these crossings are third-party crossings that are outside of the scope of this Decommissioning Programme. For PL2579, PLU2580, PLU2580JSO and PLU2580JSG refer Conrie, DSW, WD and Ythan DP [3] & for PL4555 refer the Thistle pipeline DP [6].			

2.5 Inventory Estimates

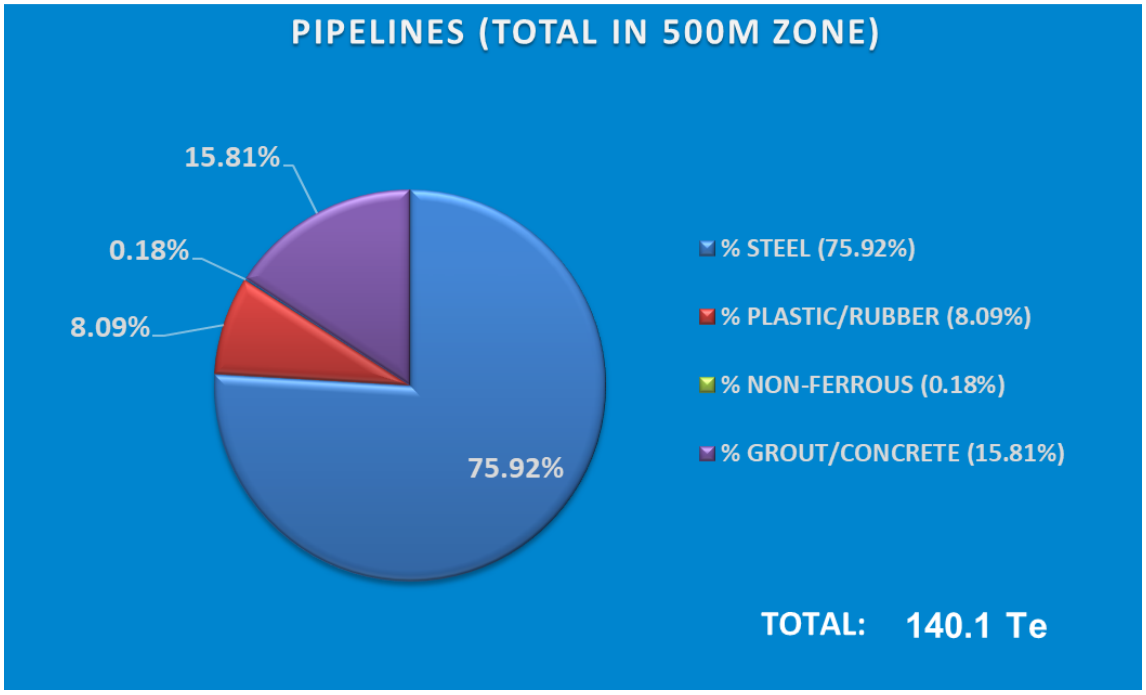

Figure 2.5.1: Pie-chart of estimated material inventory (inside Thistle 500 m zone)

There is some ambiguity as to the extent of pipeline contained within the material inventory included in the original Don DP [1]. In section 1 (page 54 of 174) it is stated that the inventory includes pipeline materials up to the edge of the Thistle 500 m zone, whereas in section 5.1 (Page 110 of 174) it states that the weight and materials of the risers, Don topsides equipment and the pipebridge have not been accounted for. Therefore, the mass of the pipebridge and pipelines on it is included for information (Figure 2.5.2).

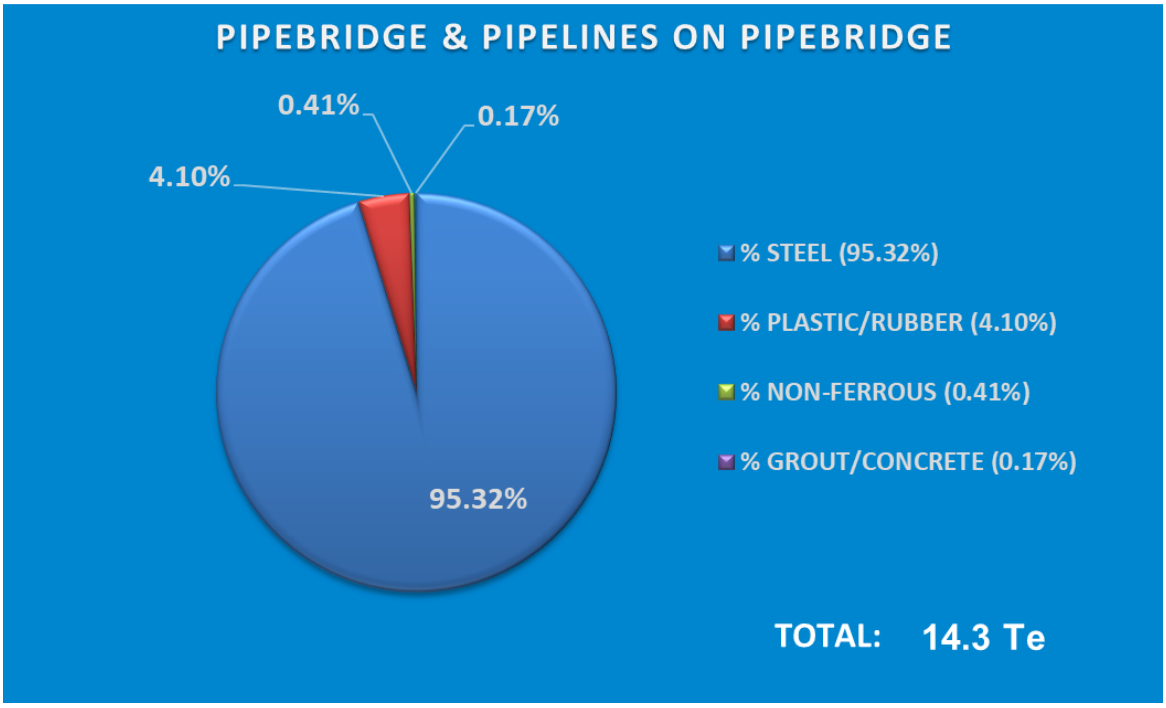

Figure 2.5.2: Estimated material inventory (pipebridge only)

3. REMOVAL AND DISPOSAL METHODS

3.1 Use of Waste Framework Directive

Waste will be dealt with in accordance with the Waste Framework Directive. The re-use of an installation, pipeline, or umbilical pipeline or parts thereof, is first in the order of preferred decommissioning options and such options are currently under investigation. Waste generated during decommissioning will be segregated by type and periodically transported to shore in an auditable manner through licensed waste contractors. Steel and other recyclable metals are estimated to account for the greatest proportion of the materials inventory.

Geographic locations of potential disposal yard options may require the consideration of Transfrontier Shipment of Waste ('TFSW'), including hazardous materials. Early engagement with the relevant waste regulatory authorities will ensure that any issues with TFSW are addressed.

3.2 Pipelines

3.2.1 Decommissioning options

None of the pipelines are candidates for carbon capture, use and storage. BP has assessed options for re-use of the pipelines and none have been found. The re-use option has been excluded from the comparative assessment. The three decommissioning options considered are:

- **Complete removal** – This involves the complete removal of the pipelines by whatever means would be most practicable and acceptable from a technical perspective.
- **Partial removal or remediation** – PL599 only. This would involve removing exposed or potentially unstable sections of pipelines or carrying out remedial work such as the deposition of rock to make the remaining pipeline safe for leaving *in situ*. This option is relevant for pipelines that are known to have exposures or spans. There will be a need to verify their status via future surveys.
- **Leave *in situ*** – This involves leaving the pipeline(s) *in situ* with no remedial works, but possibly needing to verify their status via future surveys.

The method for decommissioning of the surface laid sections of pipelines and pipeline approaches is the same irrespective of which option is pursued. Therefore, decommissioning of these parts of the pipelines are not included in the assessment. All options include removal of features such as pipespools, surface laid sections of pipelines and grout bags in accordance with mandatory guidelines if they are exposed.

There are three decommissioning options presented in Table 3.2.1 for the exposed section in PL599. The reason for this is that at the time of writing the DP it is a decade since a survey was last conducted and the length and/or extent of exposure may have changed, and this may dictate which of the options may be more appropriate. For example, if the length of exposed section has reduced there may be a case for leaving the exposure 'as is' and subject the pipeline to further monitoring. Conversely if the length of the exposure has increased, or the span has become reportable to FishSAFE remedial work may be required.

The pipelines and umbilicals housed inside riser caisson 930 as well as the caisson itself are out of scope and dealt with in the Thistle pipeline DP [6].

3.2.2 Outcome of the comparative assessment

Table 3.2.1: Pipeline decommissioning proposals		
Pipeline or group	**Recommended option**	**Justification**
Pipelines		
PL598	Leave the pipeline *in situ* and remove surface laid ends. Refer Figure 3.2.1. Remove the surface laid sections from the bottom of riser caisson 930 to the point when the pipeline(s) is buried at end of the transition at trench depth. Estimated length – ~150 m, including length of product(s) on the pipe bridge (25 m long). Bury the end with up to 15 Te of deposited rock. Total ~15 Te of deposited rock. Thereafter, the burial status of the pipeline should be monitored using a Risk Based Inspection regime to a frequency and timescale agreed with OPRED.	Complies with OPRED guidance notes [9]. Recommended outcome of the comparative assessment(s) [1], [4].
PL599	Leave the pipeline *in situ* and remove the surface laid ends. Assess remediation options should a short-section be found to be exposed. Refer Figure 3.2.1. Remove the surface laid section from the bottom of riser caisson 930 to the point when the pipeline is buried at end of the transition at trench depth. Estimated length ~150 m, including length of product(s) on the pipe bridge (25 m long). Bury the ends with up to 15 Te of deposited rock. Total ~15 Te of deposited rock. Confirm via survey if there is an exposed section starting at KP0.427 (KP measured from pipeline ends flange near Thistle 18.3 m long, including a span 2.5m long, noted in 2013 pipeline survey). The options are: 1) Leave 'as is', 2) remove the exposed section and bury the cut ends under deposited rock, or 3) bury the exposed length under deposited rock). From an environmental perspective the preference would be to leave the exposure *in situ* and subject the pipeline to monitoring as part of a wider survey strategy. Deposition of rock along PL599 would result in ~63 Te being required to bury the exposed length. Following the survey of PL599 the final decommissioning solution will be discussed and agreed with OPRED. Thereafter, the burial status of the pipeline should be monitored using a Risk Based Inspection regime to a frequency and timescale agreed with OPRED.	Complies with OPRED guidance notes [9]. Recommended outcome of the comparative assessment(s) [1], [4].
PL600, PLU6267	Leave the umbilical *in situ* Refer Figure 3.2.1. Remove the surface laid sections from the bottom of riser caisson 930 to the point when the umbilical(s) is buried at end of the transition at	Complies with OPRED guidance notes [9]. Recommended outcome of the comparative assessment(s) [1], [4].

Table 3.2.1: Pipeline decommissioning proposals		
Pipeline or group	**Recommended option**	**Justification**
	trench depth. Estimated lengths of PL600 and PLU6267 – 160m including length of product on the pipebridge (25m long). Bury the ends in trench with up to 15 Te of deposited rock. Total ~30Te of deposited rock. Thereafter, the burial status of both umbilicals should be monitored using a Risk Based Inspection regime to a frequency and timescale agreed with OPRED.	
NOTES: 1. Where the pipelines have been cut, for example where they enter the seabed, remedial work may be required to bury the end of the pipeline. As a contingency measure, small deposits of rock up to 15 Te may need to be used to make sure that the pipeline ends remain buried.		

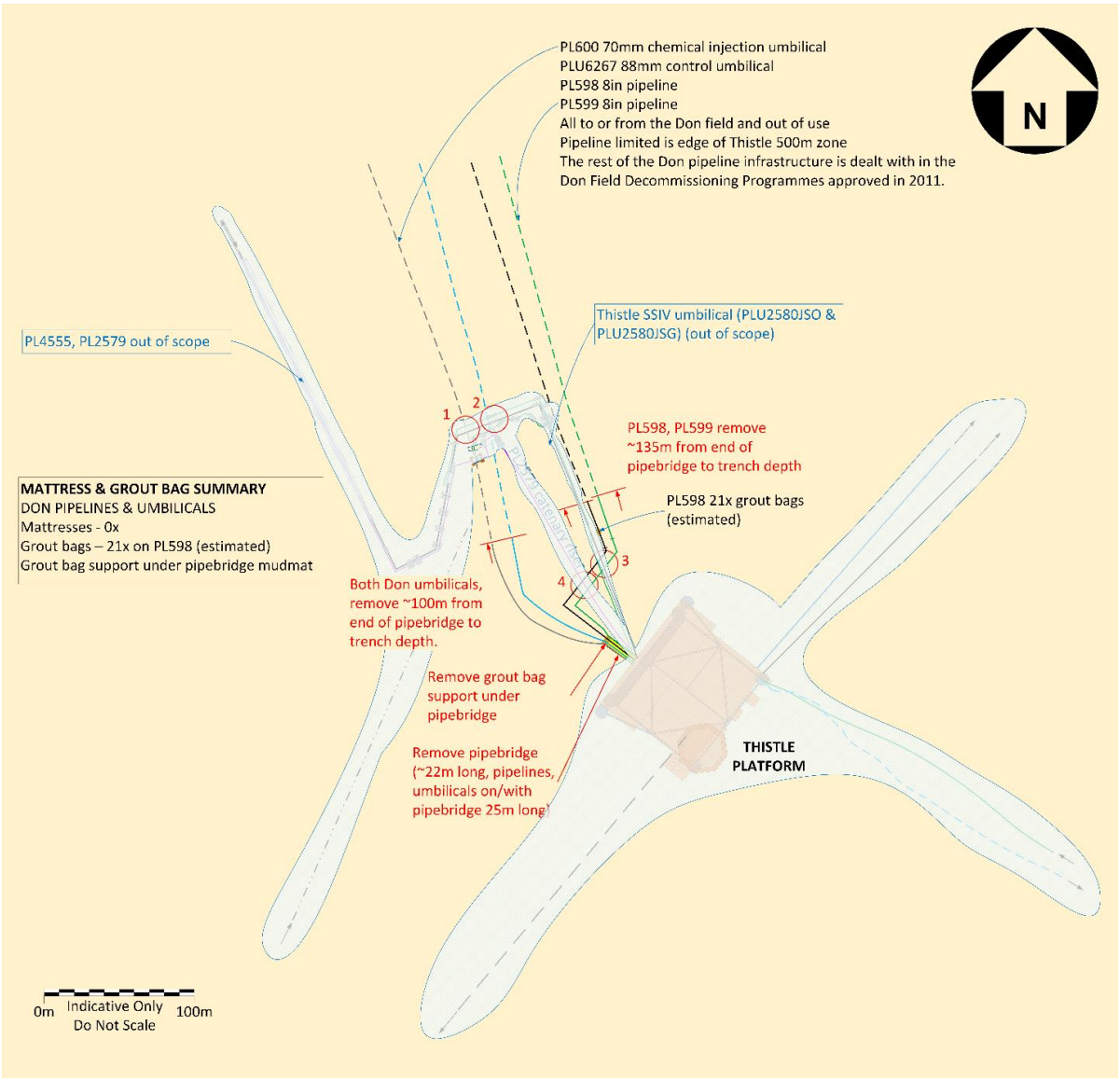

Figure 3.2.1: Don pipelines at Thistle decommissioning proposals

3.3 Pipeline protection and stabilisation features

Table 3.3.1: Pipeline protection & stabilisation features			
Stabilisation Feature	**Total No.**	**Option**	**Disposal route (if applicable)**
THISTLE APPROACHES (INSIDE 500 M ZONE)			
Grout bags (25 kg) on PL598	21	Complete removal.	Return to shore for reuse or recycling.

3.4 Pipeline structures

Table 3.4.1: Subsea pipeline structures & stabilisation features			
Subsea pipeline structure and stabilisation features	**No**	**Option**	**Disposal Route (if applicable)**
Pipebridge	1	Complete removal.	Return to shore for reuse or recycling.
Grout bag	1	Complete removal	Return to shore for reuse or recycling.

3.5 Pipeline crossings

The decommissioning proposals will not affect any pipeline crossing infrastructure. However, the expectation is that the owners of the third -party crossings (e.g. EnQuest) will liaise with Britoil regarding any future decommissioning proposals and such proposals will also be discussed and agreed with OPRED.

3.6 Waste streams

Table 3.6.1: Waste stream management method	
Waste stream	**Removal and disposal method**
Marine growth	Where necessary and practicable, to allow access some marine growth will be removed offshore. The remainder will be brought to shore and disposed of according to guidelines and company policies and under appropriate permit.
NORM	Tests for Normally Occurring Radioactive Material ('NORM') will be undertaken offshore on the recovery vessel by the Radiation Protection Supervisor and recorded. Any NORM encountered onshore will be dealt with and disposed of in accordance with guidelines and company policies and under appropriate permit.
Other hazardous wastes	Other hazardous waste will be recovered to shore and disposed of according to guidelines and company policies and under appropriate permit.
Onshore dismantling sites	Appropriate licensed sites will be selected. The dismantling site must demonstrate proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver re-use and recycling options.

Table 3.6.2: Inventory disposition			
Inventory	**Total inventory (Te)**	**Planned tonnage to shore (Te)**	**Planned left *in situ* (Te)**
Don pipelines to edge of 500 m zone	140.1	61.0	79.1
Pipebridge only	14.3	14.3	0.0
NOTE As noted previously, the material inventory included in the original Don DP [1], included an inventory of pipeline materials up to the edge of the Thistle 500 m zone.			

Table 3.6.3: Re-use, recycle & disposal aspirations for recovered material			
Inventory	**Re-use**	**Recycle**	**Disposal (e.g. Landfill)**
Don pipelines (part)	<5%	>90%	<10%

All recovered material will be transported 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 3.6.3 are aspirational.

4. ENVIRONMENTAL APPRAISAL OVERVIEW

4.1 Environmental sensitivities

More details of the environmental sensitivities are discussed in the Environmental Appraisal [7].

Thistle is in Block 211/18a of the NNS in water depth of approximately 162 m. Mean residual currents for the field are 0.12m/s, with direction of residual water movement generally to the south or east. Prevailing winds are from the south-west or north-north-east.

The environmental characteristics and sensitivities are listed in [8]. Sediments in the NNS are predominantly sand and muddy sand and in the vicinity of Thistle comprise of sand and gravelly sand. They are such that the seabed area is generally stable with relatively homogenous community. The results of the environmental survey in the Thistle pipeline area suggested a generally uniform background with metal concentrations typical of sediments in this area of the NNS. Moreover, concentrations of hydrocarbons and metals were below recognised toxicity thresholds and were not found to have exerted any notable influence on the macrofaunal community structure.

There are no offshore conservation sites within 40 km of the Thistle 500 m zone (Figure 4.2.1). The North-East Faroe-Shetland Channel Nature Conservation Marine Protected Area ('MPA (NC)') is located approximately 143 km north-west, the Hermaness Saxa Vord and Valla Field Special Protection Area ('SPA') is located approximately 140 km west and the Pobie Bank Reef Special Areas of Conservation ('SAC') is located approximately 103 km southwest of the Thistle platform respectively.

This information is supported by a full pre-decommissioning Environmental Baseline Survey conducted in May 2021 by GEOxyz [8].

4.2 Potential environmental impacts and their management

An EA has been prepared in accordance with the OPRED Decommissioning Guidance Notes [9]. It focusses on the key issues related to the specific activities proposed and the narrative is proportionate to the scale of the project and the environmental sensitivities of the area.

It has been informed by several different processes, including the identification of potential environmental issues through project engineer and marine environmental specialist review in an Environmental Identification ('ENVID') screening workshop and consultation with key stakeholders.

The impact assessment screening identified ten potential impact areas based on the proposed decommissioning activities:

- Atmospheric emissions
- Seabed disturbance
- Physical presence of infrastructure decommissioned *in situ*
- Physical presence of vessels in relation to other sea users
- Underwater noise
- Discharges to sea
- Resource use
- Waste
- Disturbance to seabirds; and,
- Accidental events.

Of these, two were taken forward for assessment based on the potential severity and/or likelihood of their respective environmental impact: seabed disturbance and physical presence of infrastructure decommissioned *in situ*.

- Impact due to physical presence of infrastructure decommissioned *in situ*
- Seabed disturbance

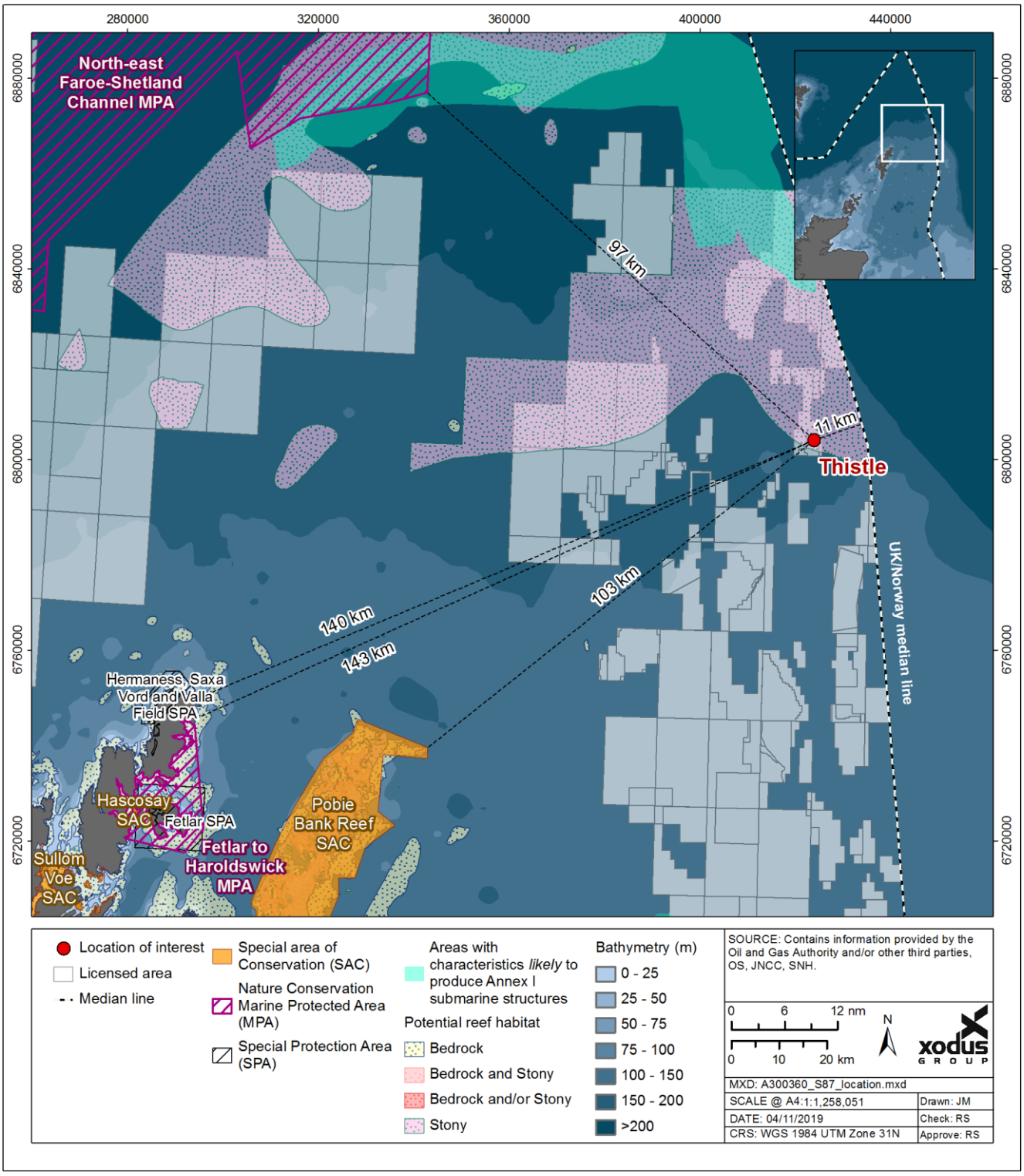

Figure 4.2.1: Protected sites around Thistle and 500 m zone

The environmental impact assessment of these aspects is summarised below.

Impact on physical presence of infrastructure decommissioned *in situ*

Physical presence of infrastructure decommissioned *in situ* was investigated as a potential impact on commercial fisheries. Understanding the use of the Thistle areas for commercial fisheries purposes and the risk posed by exposed infrastructure decommissioned *in situ* as a gear snagging risk was of key importance.

Following full assessment of this aspect, taking into consideration fishing, vessel, and shipping activity

within ICES Rectangle 51F1, along with industry and implementation of mitigation measures, the overall assessment was reduced to 'Low'. While the Magnitude of this aspect could not be lowered, both Consequence (spatial extent) and Probability were reduced to 'Low'.

Seabed disturbance

Following full assessment of this aspect, taking into consideration the benthic environment, seabed characteristics, commercial fishing, relatively small size of disturbance area along with industry and implemented mitigation measures, the overall assessment was reduced to 'Low'. While the Probability of this aspect could not be lowered, both Magnitude and Frequency were reduced to 'Low'.

The Environmental Appraisal has considered the relevant Marine Plans, adopted by the UK and Scottish Governments to help ensure sustainable development of the marine area. BP considers that the proposed decommissioning activities are in alignment with its objectives and policies.

Having reviewed the project activities within the wider regional context and taking into consideration the mitigation measures to limit any potential impacts, the findings of the Environmental Appraisal conclude that the activities do not pose any significant threat to environmental or societal receptors within the UKCS.

There will be some planned environmental impacts arising from decommissioning of the Don pipelines. The Long-term environmental impacts from the decommissioning operations are expected to be low. Incremental cumulative impacts and trans-boundary effects associated with the planned decommissioning operations are also expected to be low.

5. INTERESTED PARTY CONSULTATIONS

5.1 Consultation summary

Table 5.1.1 will be updated when the statutory consultation is completed.

Table 5.1.1: Summary of stakeholder comments		
Stakeholder	**Comment**	**Response**
GMG		
NFFO		
NIFPO		
SFF	The decommissioning proposals were presented to SFF as part of a wider presentation concerning the combined Thistle -Don pipeline comparative assessment on 15 November 2023.	No adverse feedback was received.
CONSULTATIONS		
Stakeholder	**Comment**	**Response**
GMG		
NFFO		
NIFPO		
SFF		
NSTA	NSTA have requested, in their consultation of 29th August 2024, ongoing engagement with S29(2)(a) Notice Holders in respect of decommissioning planning.	Consultation with the appropriate Regulators and stakeholders, in respect of Don field infrastructure, was undertaken as part of the Don Field Decommissioning Programme [1] which was approved in May 2011. No potential commercial use due to integrity concerns was identified and all decommissioning scope outside the Thistle 500m zone has been completed. The remaining portion of infrastructure inside the Thistle 500m zone will be executed as part of the EnQuest Thistle subsea campaign, hence providing a cost effective and efficient execution solution. Engagement with NSTA, on this residual scope, occurs at quarterly EnQuest Thistle joint decommissioning committee meetings.
Public		

6. PROGRAMME MANAGEMENT

6.1 Project Management and Verification

For and on behalf of the Section 29 notice holders, on behalf of BP, an EnQuest project management team will manage the operations of competent contractors selected for all decommissioning activities. The team will ensure the decommissioning is executed safely, in accordance with legislation and EnQuest HSEA Policy and Principles.

6.2 Post-decommissioning debris clearance and verification

This Decommissioning Programme covers Don pipelines PL598, PL599, PL600 and PLU6267 within the Thistle 500 m zone. A post-decommissioning site survey will be carried out after the decommissioning of the Don and Thistle pipeline infrastructure has been completed.

It is proposed that on behalf of BP, EnQuest will work with OPRED and SFF on behalf of the Section 29 notice holders to investigate use of an evidence-based approach to establish an acceptable clear seabed for the sections of pipeline within the 500 m safety zone. As the seabed is not in an environmentally sensitive area, where it is safe to do so, an overtrawl will be carried out to verify the pipeline corridor and condition of the seabed after decommissioning activities have been completed. The overtrawl will be supported by a Certificate of Clearance. Evidence of a clear seabed will also be included in the Close Out Report and sent to the Seabed Data Centre (Offshore Installations) at the Hydrographic office.

Any oil related debris that is found with the pipeline corridor will be recovered and returned to shore for recycling or appropriate disposal.

The post-decommissioning survey results will be notified to the UK Fisheries Offshore Oil and Gas Legacy Trust Fund Limited for inclusion in the FishSAFE System, and to the United Kingdom Hydrographic Office for notification and marking on Admiralty charts and notices to mariners.

6.3 Schedule

A proposed schedule is provided in Figure 6.3.1. The activities are subject to the acceptance of the Decommissioning Programme presented in this document and any unavoidable constraints (e.g. vessel availability) that may be encountered while executing the decommissioning activities. Therefore, activity schedule windows have been included to account for this uncertainty.

The commencement of offshore decommissioning activities will depend on commercial agreements and commitments.

Don - Activity/Milestone	2024				2025				2026				2027-'33							2034				2035				2036				2037			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	27	28	29	30	31	32	33	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Detailed engineering & proj. management																																			
Don pipeline decommissioning inside Thistle 500 m zone																																			
Onshore disposal																																			
Post-decommissioning surveys[1] & close out report[2]																																			

Notes / Key

Earliest potential activity

Activity window extended as per NSTA strategy which aspires to combine multiple scopes in a single campaign;

A wide activity window is proposed in order to increase the opportunity to capture cost efficiencies by decommissioning at scale (a strategic priority of the North Sea Transition Authority ('NSTA') Decommissioning Strategy) e.g. via EnQuest's commitment to explore scope aggregation opportunities as a member of the Subsea Decommissioning Collaboration (SDC)

1. Post decommissioning surveys to follow completion of decommissioning activities;
2. Close out report within 1 year of completion of offshore activities.

Figure 6.3.1: Gantt-chart of project plan

6.4 Interim Monitoring and Evaluation

Monitoring of the Don pipelines will continue until the pipelines are decommissioned. They were last surveyed in 2013, and the next survey is scheduled for 2026 to coincide with other pipeline surveys in the area. Thereafter, subject to agreement with OPRED the pipelines will next be surveyed after they have been decommissioned. The frequency of surveys will not prejudice the ability to decommission these pipelines in future.

6.5 Costs

Decommissioning costs will be provided separately to OPRED.

6.6 Close Out

After the pipelines have been decommissioned, OPRED will be notified, and a decommissioning close out report will be submitted within 1 year following the completion of the offshore scope including debris removal, an independent verification of seabed clearance and the first post-decommissioning environmental survey.

Any variances from the approved Decommissioning Programme will be explained in the close out report.

6.7 Post-decommissioning monitoring and evaluations

For and on behalf the Section 29 notice holders and on behalf of BP, EnQuest will carry out a post-decommissioning environmental survey, centred on the Don pipelines. A survey of the status of the pipelines and adjacent seabed will be undertaken at the end of the decommissioning activities. As it is proposed to leave the pipelines *in situ*, they will be subject to a monitoring programme agreed between BP and OPRED.

A copy of the survey results will be provided to OPRED. After these have been reviewed, a future monitoring regime will be agreed by all parties and take account of ongoing liability, the status and findings of previous surveys and a risk-based approach to frequency and scope.

Residual liability for the pipelines will remain with the Section 29 notice holders identified in section 1.4. Unless agreed otherwise in advance with OPRED, BP will remain the focal point for this including any change in ownership.

Once the wider Thistle area has been decommissioned the plans for legacy and liability management will be documented and described in more detail in the final close out report.

7. REFERENCES

Please note the link names presented below have been abbreviated.

[1] BP (2011) Don Field Decommissioning Programme, DON-BP-001, May 2011. Weblink last accessed 10 June 2023: DON-BP-001.pdf

[2] Decom North Sea (2018). Environmental Appraisal Guidelines: Offshore Oil and Gas Decommissioning

[3] EnQuest (2021) Conrie, Don South-West, West Don & Ythan Decommissioning Programmes, M4109-ENQ-NPR-DN-00-PRG-0002. Weblink last accessed 11 June 2023: C-DSW-WD-Y DP.pdf

[4] EnQuest (2024) Thistle & Don pipeline Comparative Assessment, M3525-ENQ-THI-DN-0000-REP-0006

[5] EnQuest (2024) Thistle upper jacket Decommissioning Programme, M3525-ENQ-THI-DN-0000-REP-0008

[6] EnQuest (2024) Thistle pipeline Decommissioning Programme, M3525-ENQ-THI-DN-0000-REP-0012

[7] EnQuest (2024) Thistle & Don pipeline Decommissioning Environmental Appraisal, M3525-XOD-THI-DN-0000-ENS-0001

[8] GeoXYZ (2022) Thistle Final Environmental Baseline & HAS Survey Results Report, M3525-GXY-THI-DN-0000-REP-0008

[9] OPRED (2018) Guidance Notes, Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998, Version 6, Department of Energy Security and Net Zero. Weblink last 19 May 2021: OPRED Guidance Notes.

APPENDIX A THISTLE BASELINE ENVIRONMENT

Appendix A.1 Summary of characteristics & sensitivities

Table A.1.1: Summary of environmental characteristics and sensitivities
Physical Environment: Thistle Alpha is in Block 211/18 and 211/19 of the NNS in water depth of approximately 162 m. Mean residual currents in the area are 0.26 m/s and are generally from the west. Prevailing winds are from the south or south-west.
Seabed Sediments and Contamination: Sediments in the NNS are predominantly sand and within the Thistle area are classified as sand, slightly gravelly sand, and gravelly sand. MBES identifies a drill cuttings pile below the platform, and historical records of Oil Based Mud discharge will likely result in elevated levels of hydrocarbon contamination in the vicinity of the platform. The pipelines are not affected.
Fish: The Thistle field lies within ICES Rectangle 51F1. Thistle is known to have spawning grounds in the area for Cod (Jan-April), Haddock (Feb-May), Norway Pout (Jan-Mar), Saithe (Jan-Apr) and Whiting (Feb-June). The area is used as nursery grounds for Blue Whiting, Haddock, European Hake, Herring, Ling, Mackerel, Norway Pout, Spurdog and Whiting.
Benthic Communities: Surveys in 2007 and 2018 identified a generally diverse homogenous faunal community associated with sandy sediments. Visible fauna observed included *annelida*, *arthopoda*, *decapoda, bryozoa, cnidaria* and *echinoidea* typical of the area. It is expected that elevated levels of hydrocarbons close to the platform will lead to modified communities of hydrocarbon tolerant species. There was no evidence from seabed imagery of any protected habitats or species.
Plankton: The phytoplankton community is dominated by the dinoflagellate genus Ceratium (*C. fusus, C. furca, C. lineatum*), along with the diatoms, *Thalassiosira spp*. and *Chaetoceros spp*. The zooplankton community comprises *C. helgolandicus* and *C. finmarchicus* as well as *Paracalanus spp*., *Pseudocalanus spp*., *Acartia spp*., *Temora spp*. and *Oithona spp*. larger zooplankton species such as euphausiids and decapod larvae are also important in the area.
Seabirds: The following species have been recorded in the wider area: Northern fulmar, Northern gannet, Great skua, Black-legged kittiwake, Arctic skua, Razorbill, European storm petrel, Great black-backed gull, Lesser black-backed gull, Herring gull, Common guillemot, Glaucous gull, little auk, and Atlantic puffin. These seabirds are present for most of the year except October with overall numbers greatest in August and September. As is typical for the North Sea breeding occurs between April and September. Seabird sensitivity in the Thistle area is low for most of the year except for winter months (Nov-Jan) where it is classed as 'high'. The Thistle field is located ~201km North-East of Shetland and is remote for sensitive seabird breeding areas on the coast.
Marine Mammals: Harbour porpoise have been sighted in moderate densities in July and low densities in May and August, whilst both killer whales and minke whales have been sighted in moderate densities in July. Atlantic white-sided dolphin, Risso's dolphin and long-finned pilot whale may be considered occasional visitors.
Conservation Designations: There are no designated conservation sites close to Thistle, with the nearest being the Pobie Bank Reef Sites of Community Importance (103 km south-west), the North-East Faroe-Shetland Channel Nature Conservation Marine Protected Area (97 km north-west).
Commercial Fisheries: The project area lies within ICES rectangle 51F1. Commercial fishing activity within this area is medium to high in comparison with other areas. Landings are a combination of demersal, pelagic and shellfish species representing 0.19% of total UK fishing value in 2018.
Shipping: Shipping density within the area is low, with any traffic associated with oil and gas developments or cargo vessels.
Other Offshore Industries: Thistle is in the northern North Sea oil and gas development area with several fields nearby.
Other Users of the Sea: The closest submarine telecommunication cable is the CANTAT-3 telecommunications cable owned by Faroese Telecom within 1km to the south-west of Thistle. There are no Ministry of Defence exercise areas or danger areas nearby that might be used for military training. There is only one wreck located within Block 211/18.

APPENDIX B PUBLIC NOTICE & CONSULTEE CORRESPONDENCE

Appendix B.1 Public Notices