Combined Decommissioning Programmes for Northern Producer FPF Float-off and Disconnection of Risers and Pipelines

NORTHERN OFFSHORE

EnQuest

DOCUMENT CONTROL

Document ID:		M4109-ENQ-NPR-DN-00-PRG-0001	
Document Classification:		PUBLIC	
Document Ownership:		Decommissioning	
Date of Document:	28/05/20	Signature	Date
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REVISION RECORD

Revision No.	Date of Revision	Reason for Issue
A1	16/06/20	Issued to OPRED for Review and Comment
A2	01/07/20	Updated following feedback from OPRED
A3	03/08/20	Updated following feedback from OPRED
A4	26/08/20	Updated following feedback from OPRED
A5	15/12/20	Issued for Statutory Consultation

DISTRIBUTION LIST

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Offshore Petroleum Regulator for Environment and Decommissioning	1 electronic
GMG, NFFO, NIFPO, SFF	1 electronic
Partners, etc.	1 electronic

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ABBREVIATION	EXPLANATION
~	Approximately
3LPP	3-Layer Polypropylene, coating used for carbon steel pipelines and pipework
AHV	Anchor Handling Vessel
COP	Cessation of Production
CSV	Construction Support Vessel
DBB	Double Block and Bleed (valve arrangement with vent)
DP	Decommissioning Programme(s)
DSW	Don South West
DUTU	Dynamic Umbilical Termination Unit
EMT	Environmental Management Team (OPRED)
EnQuest	EnQuest Heather Limited
ESDV	Emergency Shutdown Valve
Expansion spool	Pipespool
FPF	(Northern Producer) Floating Production Facility
FPSO	Floating Production Storage & Offloading Vessel
GMG	Global Marine Group
HSE	Health and Safety Executive
“, in	Inch; 25.4 millimetres
Ident	Pipeline identification number as used in Pipeline Works Authorisations
Installation	Offshore structure, typically comprising topsides and jacket, or a subsea wellhead protection structure, subsea manifold structure, an FPF of FPSO
IMO	International Maritime Organisation
JNCC	Joint Nature Conservation Committee
km	Kilometre
m	Metre(s)
MARPOL	International Convention for the Prevention of Pollution from Ships
MAT, SAT	Master Application Template, Supplementary Application Template
MSV	Multipurpose Support Vessel
MWA	Mid-Water Arch (acts as stabiliser for the risers)
N,S,E,W	North, South, East, West
n/a	Not Applicable
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Ireland Fish Producers Organisation Ltd
NOF	Northern Offshore Ltd
NORM	Naturally Occurring Radioactive Material
NP	Norther Producer
OGA	Oil and Gas Authority

ABBREVIATION	EXPLANATION
OPEP	Oil Pollution Emergency Plans
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo-Paris Convention
Piggybacked	Clamped or connected to another pipeline along its length
Pipeline	Pipeline or umbilical pipeline
P1, P2, WI1	Production (P) or Water Injection (WI) Tree Identifier
PL, PLU	Pipeline, Umbilical Pipeline Identification numbers (UK)
PLA	Pipeline Operations as defined in MAT Operation Types
PWA	Pipeline Works Authorisation
Q1, Q2, Q3, Q4	Quarter 1, Quarter 2, Quarter 3, or Quarter 4 of any given year
RBS	Riser Base Structure
ROV	Remotely Operated Vehicle
ROVSV	Remotely Operated Vehicle Support Vessel
SAC	Special Area of Conservation
SALB	Single Anchor Loading Buoy
SALM	Single Anchor Leg Mooring (Base)
SDU	Subsea Distribution Unit
SFF	Scottish Fishermen's Federation
SIMOPS	Simultaneous Operations
SOPEP	Shipboard Oil Pollution Emergency Plan
SPS	Subsea Protection Systems (www.subseaprotectionsystems.com)
SSIV	Subsea Isolation Valve
SUTU	Subsea Umbilical Termination Unit
TFSW	Trans Frontier Shipment of Waste
Topsides	Offshore structure typically furnished with reception and processing equipment for produced hydrocarbons, in this case the Northern Producer FPF
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
WD	West Don
WGS84	World Geodetic System 1984
WHPS	Wellhead Protection Structure
WI	Water Injection
WS	Wye Structure
x	Number of (e.g. 16x = 16 in Number)
	PWA Idents of pipelines affected by decommissioning proposals in this document. Refer Table 1.4.3, Table 1.4.5 & Table 1.4.7.

1. EXECUTIVE SUMMARY

1.1 Decommissioning Programme

This document contains the combined Decommissioning Programmes for the departure of the Northern Producer Floating Production Facility, and the removal of the associated riser systems from the Don South West, and West Don fields[1] and clearance of the 500m safety zone.

The Northern Producer vessel will be used for initial decommissioning activities such as flushing or de-oiling of the subsea infrastructure and to support implementation of positive isolations for the wells. Once these activities have been completed the vessel will depart the field.

To allow departure of the vessel the following risers and pipelines will be disconnected and recovered to a point where no snagging hazards remain within the 500m zone:

Between NP and combined Riser Base Structure:

- PL2572 8" production oil flexible riser (DSW);
- PL2573 3" gas lift flexible riser (DSW);
- PL2574 8" water injection flexible riser (combined);
- PLU2575 umbilical riser (combined);
- PL2578 8" oil export flexible riser;
- PL2579 3" gas export flexible riser;
- PL2583 8" production oil flexible riser (WD);
- PL2584 3" gas lift flexible riser (WD);
- PL4261 8" water injection pipeline (part thereof (spools within RBS));
- PL4262 8" water injection pipeline (part thereof (spools within RBS)).

Downstream of combined Riser Base Structure:

- PL2572 8" Production Oil pipeline (DSW) c/w PL2573 3" gas lift (piggybacked)
- PLU2576 4" umbilical (DSW);
- PL2578 8" oil export pipeline;
- PL2579 3" gas export pipeline (piggybacked to PL2578);
- PL2581 8" water injection (disconnected and out of use);
- PL2582 8" water injection (disconnected and out of use);
- PL2583 8" Production Oil pipeline (WD) c/w PL2584 3" gas lift (piggybacked)
- PLU2585 4" umbilical (WD);
- PL4261 replacement 8" water injection pipeline (WD);
- PL4262 replacement 8" water injection pipeline (DSW);

The Riser Base Structure itself is also to be recovered.

The remaining infrastructure on the Section 29 Notices will be subject to separate Decommissioning Programmes.

1.2 Requirement for Decommissioning Programmes

Installations: In accordance with the Petroleum Act 1998, Qualimar Shipping Company Limited (Qualimar), as owner of the Northern Producer installation, and on behalf of the Section 29 notice

[1] Note that Conrie and Ythan are not explicitly mentioned here as the associated pipelines are not affected by the proposals in this Decommissioning Programme.

holders (Table 1.4.2), is applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the installations detailed in Section 2 of this document. Partner Letters of Support will be provided directly to OPRED.

Pipelines: In accordance with the Petroleum Act 1998, EnQuest Heather Limited, as operator of the Don South West, Conrie, West Don and Ythan pipelines, and on behalf of the Section 29 notice holders (Table 1.4.4, Table 1.4.6 & Table 1.4.8), is applying to OPRED to obtain approval for decommissioning the pipelines 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, the Decommissioning Programmes are submitted in compliance with national and international regulations and OPRED guidance notes. The schedule outlined in this document is for an 18-month period with departure of the FPF possibly due to begin sometime in Q2 2021.

The removal of the facility will not prejudice any further decommissioning works in the Don South West, Conrie, West Don and Ythan fields.

1.3 Introduction

The Northern Producer is an AKER H3 semi-submersible unit originally constructed by Trosvik Framnaes in Norway in 1976. In 1996 the vessel was purchased by Northern Offshore Ltd, Norway and renamed the Northern Producer.

Since May 2009, the Northern Producer has provided the export route for the Don South West, Conrie Ythan and West Don fields that are situated within Blocks 211/13b, 211/18a, and 211/18e of the Northern North Sea sector of the United Kingdom Continental Shelf and operated by EnQuest Heather Limited. These fields are located approximately 527km north-north-east of Aberdeen in water depths between ~165m and ~178m. The Cessation of Production documentation for these fields is currently under consideration by the Oil and Gas Authority.

The Northern Producer is operated by EnQuest Heather Limited as the duty holder but owned by Qualimar Shipping Company Limited. The decommissioning programme in respect of the Northern Producer FPF has been prepared by EnQuest for and on behalf of Qualimar Shipping Company. EnQuest, as pipeline owner, has prepared the decommissioning programme in respect of relevant pipelines. This decommissioning document, containing both programmes, is submitted jointly by Qualimar and EnQuest.

The Decommissioning Programmes explain the principles of the removal activities and are supported by an examination of the key environmental impacts.

1.4 Overview

The NP FPF supports the Don South West and West Don fields under a lease contract between EnQuest Heather Limited and Sea Production Limited. As Northern Offshore's business model includes the deployment and redeployment of floating production facilities, leading up to CoP and on departure Northern Offshore and its subsidiaries Qualimar Shipping Company and Sea Production Limited will pursue and possibly secure alternative arrangements for redeployment of the FPF.

1.4.1 Northern Producer – Installation

Table 1.4.1: Installation Being Decommissioned			
Field(s):	Don South West, West Don, Conrie & Ythan	**Production Type**	Oil & Gas
Water Depth (m)	~171.9m	**UKCS Block**	211/18a
Topside Installation(s)		**Weights**	
Number	**Type**	**Weight**	**Anchor Weight (Te)**
1	FPF	11,000	1,578 (8)
Subsea Installation(s)		**Number of Wells**	
n/a	n/a	**Topsides**	**Subsea**
n/a	n/a	n/a	n/a
Drill Cuttings piles		**Distance to median**	**Distance from nearest UK coastline**
n/a		~12.6km	527km NNE of Aberdeen

Table 1.4.2: Northern Producer Installation Section 29 Notice Holders Details		
Section 29 Notice Holder	**Registration Number**	**Equity Interest (%)**
Northern Offshore Ltd	Overseas Company Registration in BERMUDA BM28861R	0.0%
Qualimar Shipping Company Limited	Overseas Company Registration in CYPRUS HE84452	100.0%

1.4.2 Don South West & West Don Fields – Pipelines

Table 1.4.3: DSW & WD Pipelines Being Decommissioned		
Number of Pipelines, Cables, Umbilicals	2	Refer Table 2.4.1

Table 1.4.4: DSW & WD Pipelines Section 29 Notice Holders Details		
Section 29 Notice Holder	**Registration Number**	**License Equity Interest (%)**
EnQuest Heather Limited	02748866	69.30%
EnQuest PLC	07140891	-
Ithaca Energy (UK) Limited	SC272009	20.00%
Ithaca Gamma Limited	05929104	10.70%
Ithaca Petroleum Limited	05223667	-

1.4.3 Don South West Field - Pipelines

Table 1.4.5: Don South West Pipelines Being Decommissioned		
Number of Pipelines, Cables, Umbilicals	7	Refer Table 2.6.1

Table 1.4.6: Don South West Pipelines Section 29 Notice Holders Details		
Section 29 Notice Holder	**Registration Number**	**License Equity Interest (%)**
EnQuest Heather Limited	02748866	60.00%
EnQuest PLC	07140891	-
Ithaca Energy (UK) Limited	SC272009	40.00%
Ithaca Gamma Limited	05929104	-
Ithaca Petroleum Limited	05223667	-

1.4.4 West Don Field - Pipelines

Table 1.4.7: West Don Pipelines Being Decommissioned		
Number of Pipelines, Cables, Umbilicals	5	Refer Table 2.8.1

Table 1.4.8: West Don Pipelines Section 29 Notice Holders Details		
Section 29 Notice Holder	**Registration Number**	**License Equity Interest (%)**
EnQuest Heather Limited	03351775	78.6%
EnQuest PLC	07140891	-
Ithaca Energy (UK) Limited	SC272009	-
Ithaca Alpha (N.I.) Limited	NI073431	21.4%
Ithaca Petroleum Limited	05223667	-

1.5 Summary of Proposed Decommissioning Programmes

Table 1.5.1: Summary of Decommissioning Programmes	
Proposed Decommissioning Solution	**Reason for Selection**
1. FPF	
Complete removal. The FPF will be removed and recovered, with its future being determined by Qualimar Shipping Company Limited. The vessel will be taken to shore, dismantled, and recycled unless alternative re-use options are found by the owner to be viable and more appropriate. Any permit applications required for work associated with the anchors will be submitted to the regulator as required.	To comply with OSPAR requirements. Allows FPF to be removed and maximises opportunity for re-use or recycling of materials.
2. Mooring & Anchors	
The anchors and anchor chains will be fully recovered. Any permit applications required for work associated with the anchors will be submitted to the regulator as required.	To comply with OSPAR requirements of leaving unobstructed seabed. Removes a potential obstruction to fishing operations and maximises recycling of materials.
3. Pipelines	
All the flexible risers and pipelines associated with the Don South West and West Don infrastructure will be cleaned and flushed, with the risers and surface laid sections of the pipelines in and around the 500m safety zone being fully removed. This will remove potential snagging hazards from the area. Any permit applications required for work associated with pipeline pigging, flushing, cutting and removal will be submitted to the regulator as required.	Removes a potential obstruction to fishing operations and maximises recycling of materials.
4. Wells	
The wells associated with the Don South West, Conrie, Ythan and West Don fields will not be decommissioned at this time and will be subject to a separate decommissioning programme. Therefore, their current status will be risk assessed to determined how they should be isolated, left and monitored until such time in future when they are decommissioned. Monitoring arrangements are being discussed with OPRED and HSE. All wells will eventually be decommissioned to comply with HSE "Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996" and in accordance with the latest version of the Oil & Gas UK Well Decommissioning Guidelines.	Meets the OGA and HSE regulatory requirements.
5. Interdependencies	
The whole of the FPF and anchor system will be removed. No third-party pipeline crossings will be disturbed as a result of the decommissioning proposals. Pipeline stabilisation features such as concrete mattresses and any grout bags found that are exposed (i.e. not buried under deposited rock) will be removed as part of the pipeline severance and recovery activities. Although some deposited rock may be disturbed during the removal activities, it will remain *in situ*. The decommissioning works will be carried out in two phases. 1) FPF departure and removal of snagging hazards in and around the 500m zone; 2) decommissioning of remaining installations and infrastructure. Phase 2 will be dealt with using separate Decommissioning Programmes.	

1.6 Field Locations including Field Layout and Adjacent Facilities

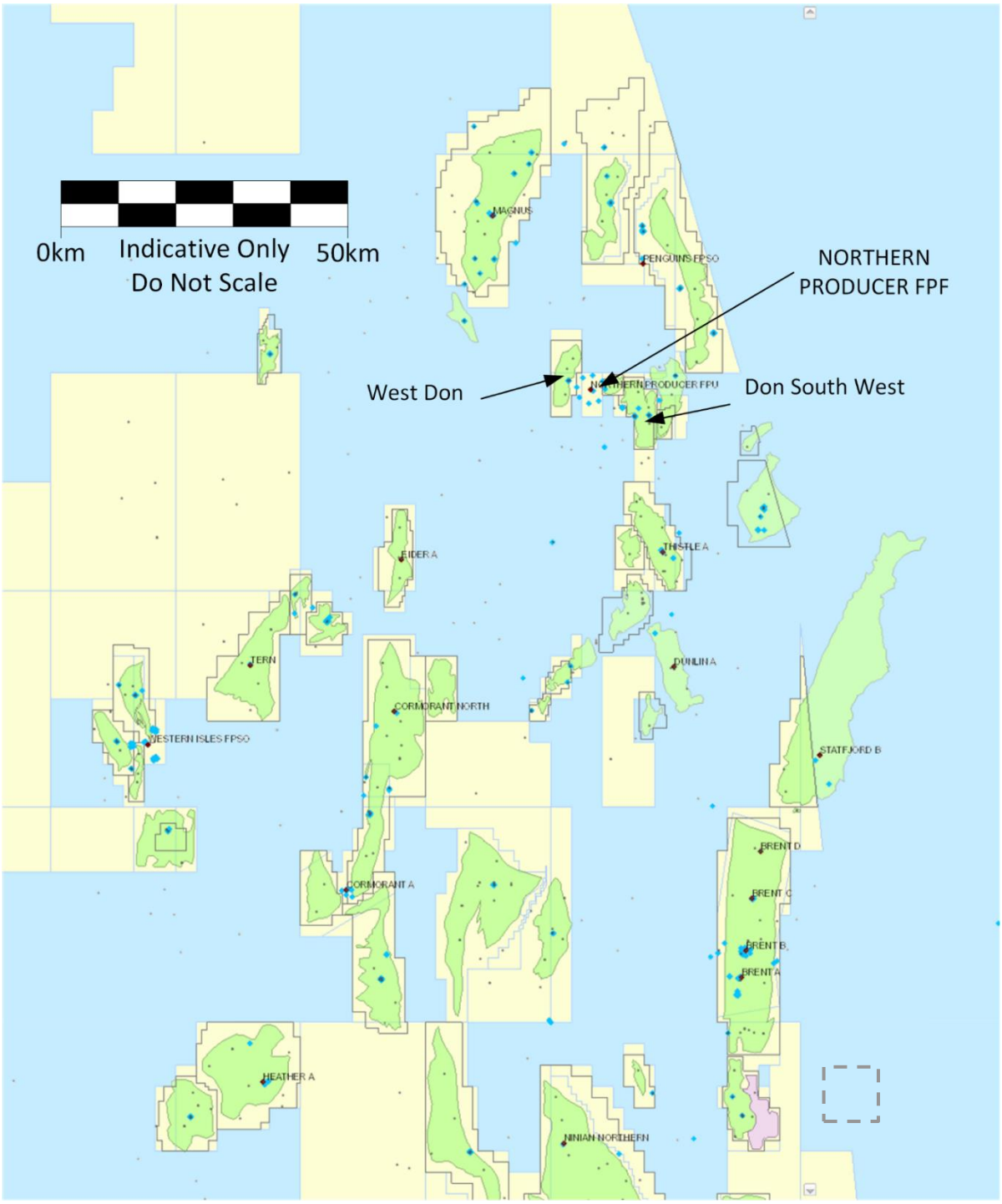


Figure 1.6.1: Northern Producer adjacent fields and surface facilities

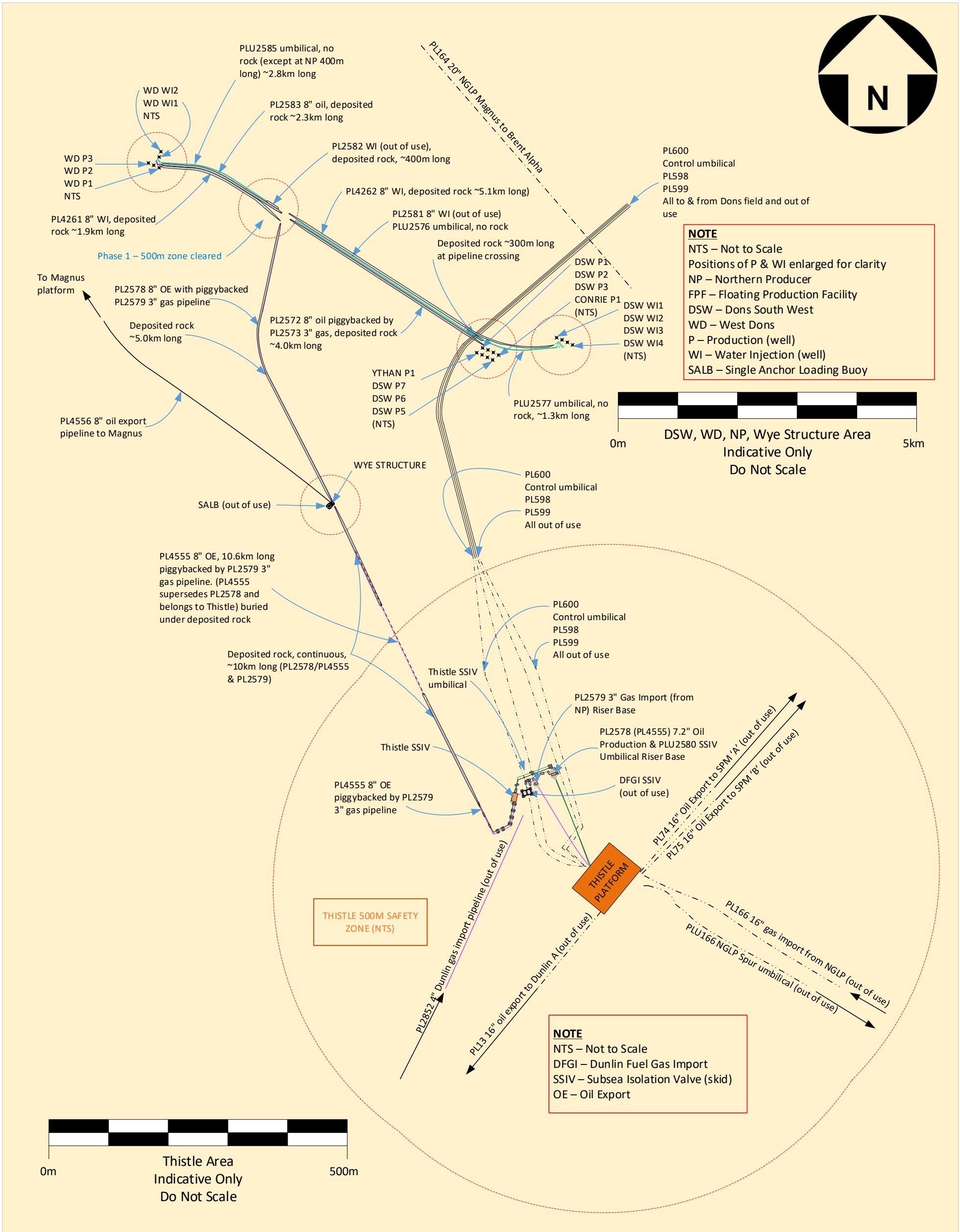


Figure 1.6.2: Overview of Northern Producer and its locality

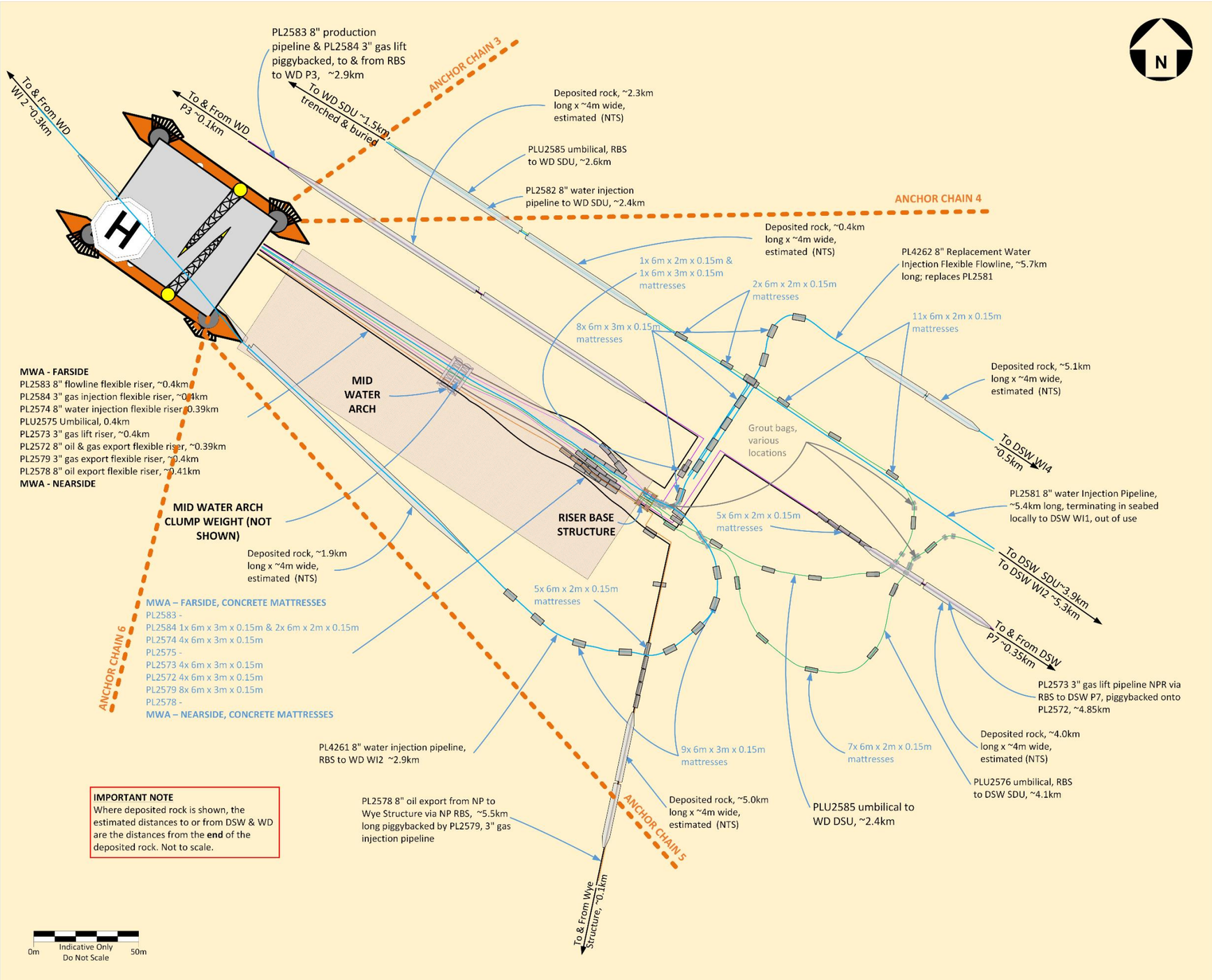


Figure 1.6.3: Northern Producer prior to departure

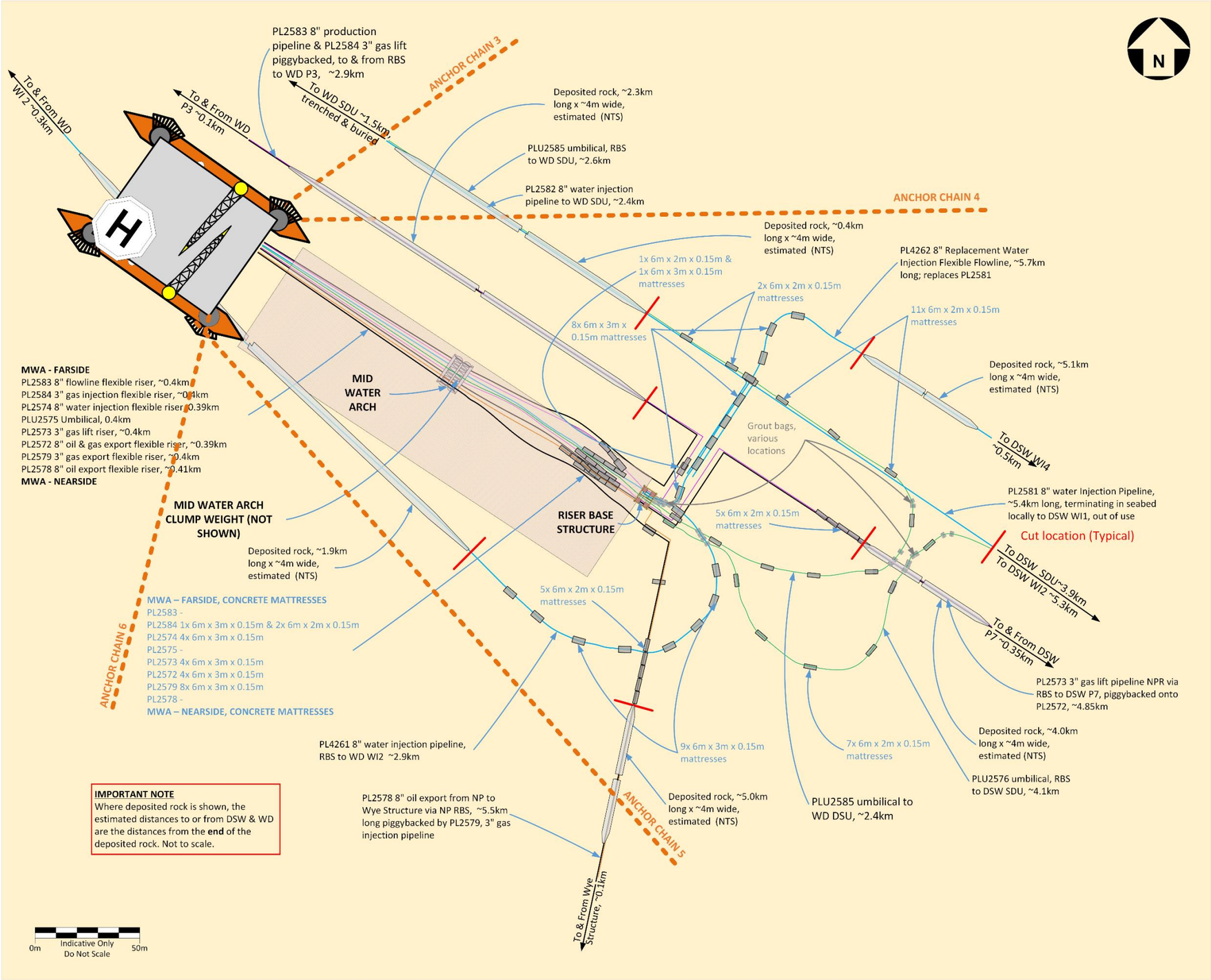


Figure 1.6.4: Northern Producer pipeline cut locations

Table 1.6.1: Adjacent Facilities					
Owner	**Name**	**Type**	**Direction & Distance from NP**	**Information**	**Status**
EnQuest	Don South West	10x WHPS	ESE, ~4.3km	Infrastructure connected to NP	Operational
EnQuest	West Don	5x WHPS	NWW, ~2.1km	Infrastructure connected to NP	Operational
EnQuest	Conrie	1x WHPS	ESE, ~4.3km	Infrastructure connected to NP via DSW	Operational
EnQuest	Ythan	1x WHPS	ESE, ~4.3km	Infrastructure connected to NP via DSW	Operational
EnQuest	SALB	SALB	SSE, ~4.9km	Former export route for NP	Non-operational
EnQuest	Wye Structure	Manifold	SSE, ~4.9km	Current export route for NP & Thistle 'A'	Operational
Shell UK Limited	Penguins	FPSO	N, ~11.5km		Operational
EnQuest	SALM	SALM Base	SE, ~14.2km	Former export route for Thistle 'A'	Out of Use
EnQuest	Thistle 'A'	Installation	SE, ~15.2km	Former export route for NP	Non-operational
EnQuest	Magnus	Installation	NW, ~16.9km	Current export route for NP & Thistle 'A'	Operational
CNR International (UK) Limited & Wintershall Norsk AS	Murchison	Jacket Footings	ESE, ~17.8km		Decommissioned
TAQA Bratani Limited	Eider	Installation	SW, ~21.8km	Topsides DP approved April 2020	Non-operational
Impacts of Decommissioning Proposals					
There are no direct impacts on adjacent facilities from the decommissioning works associated with preparations for the departure of the NP FPF and with removal of the surface laid infrastructure in and around the 500m safety zone. As part of the operational phase any potential environmental impacts will be mitigated in two ways. The first is via direct communication with the parties involved, and the other is via submission of the MATs and SATs.					

1.7 Industrial Implications

The FPF will be taken off station with the assistance of anchor handing vessels (AHV) and a ROV Support Vessel (ROVSV). The activities to disconnect or sever and recover the risers, severed pipelines and associated structures, and protection and stabilisation features will be completed using a ROVSV, Construction Support Vessel (CSV) or Multi Support Vessel (MSV).

It is the intention of the respective owners of the installation and pipelines to develop a contract strategy and Supply Chain Action Plan that will result in an efficient and cost-effective execution of the decommissioning works. Where appropriate existing framework agreements may be used for decommissioning of the pipelines and pipeline stabilisation features. EnQuest will seek to combine Northern Producer related decommissioning activities with other development or decommissioning activities to reduce mobilisation costs should the opportunity arise. The decommissioning schedule is extended to allow flexibility for when decommissioning operations are carried out and completed.

2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

2.1 NP Installations: Surface Facilities

Table 2.1.1: Northern Producer Surface Facilities Information					
Name	Facility Type	Location	Topsides/ Facilities		Mooring System
		WGS84 Decimal WGS84 Decimal Minute	Mass (Te)	No of modules	Number of mooring lines & anchors Mass (Te)
Northern Producer	FPF	61.487528° N 01.464312° E 61° 29.2517' N 01° 27.8587' E	11,000	1	8 1,578

2.2 NP Installation: Subsea including Stabilisation Features

Table 2.2.1: Northern Producer Subsea Facilities Information				
Subsea Installations Including Stabilisation Features	Number	Size / Mass (Te)	Location WGS84 Decimal WGS84 Decimal Minute	Comments/ Status
FPF mooring anchors	8	**Anchor 1** 196.39Te	61.495942° N 01.449628° E 61° 29.7565' N 01° 26.9777' E	Anchor chain ~1,280m long
		Anchor 2 196.39Te	61.504572° N 01.469100° E 61° 30.2743' N 01° 28.1460' E	Anchor chain ~1,280m long
		Anchor 3 196.39Te	61.491295° N 01.835138° E 61° 29.4777' N 01° 50.1083' E	Anchor chain ~1,280m long
		Anchor 4 196.39Te	61.489345° N 01.486963° E 61° 29.3607' N 01° 29.2178' E	Anchor chain ~1,280m long
		Anchor 5 202.97Te	61.476847° N 01.487622° E 61° 28.6108' N 01° 29.2573' E	Anchor chain ~1,280m long; includes surface uplift buoy

Table 2.2.1: Northern Producer Subsea Facilities Information					
Subsea Installations Including Stabilisation Features	**Number**	**Size / Mass (Te)**	**Location WGS84 Decimal WGS84 Decimal Minute**		**Comments/ Status**
		Anchor 6 196.39Te	61.473383° N 01.460645° E		Anchor chain ~1,280m long
			61° 28.4030' N 01° 27.6387' E		
		Anchor 7 196.39Te	61.479395° N 01.438172° E		Anchor chain ~1,280m long
			61° 28.7637' N 01° 26.2903' E		
		Anchor 8 196.39Te	61.490712° N 01.431388° E		Anchor chain ~1,280m long
			61° 29.4427' N 01° 25.8833' E		
Concrete mattresses	n/a	n/a	n/a	n/a	n/a
Grout bags	n/a	n/a	n/a	n/a	n/a
Formwork	n/a	n/a	n/a	n/a	n/a
Deposited rock	n/a	n/a	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a

2.3 NP Material Inventory Estimates

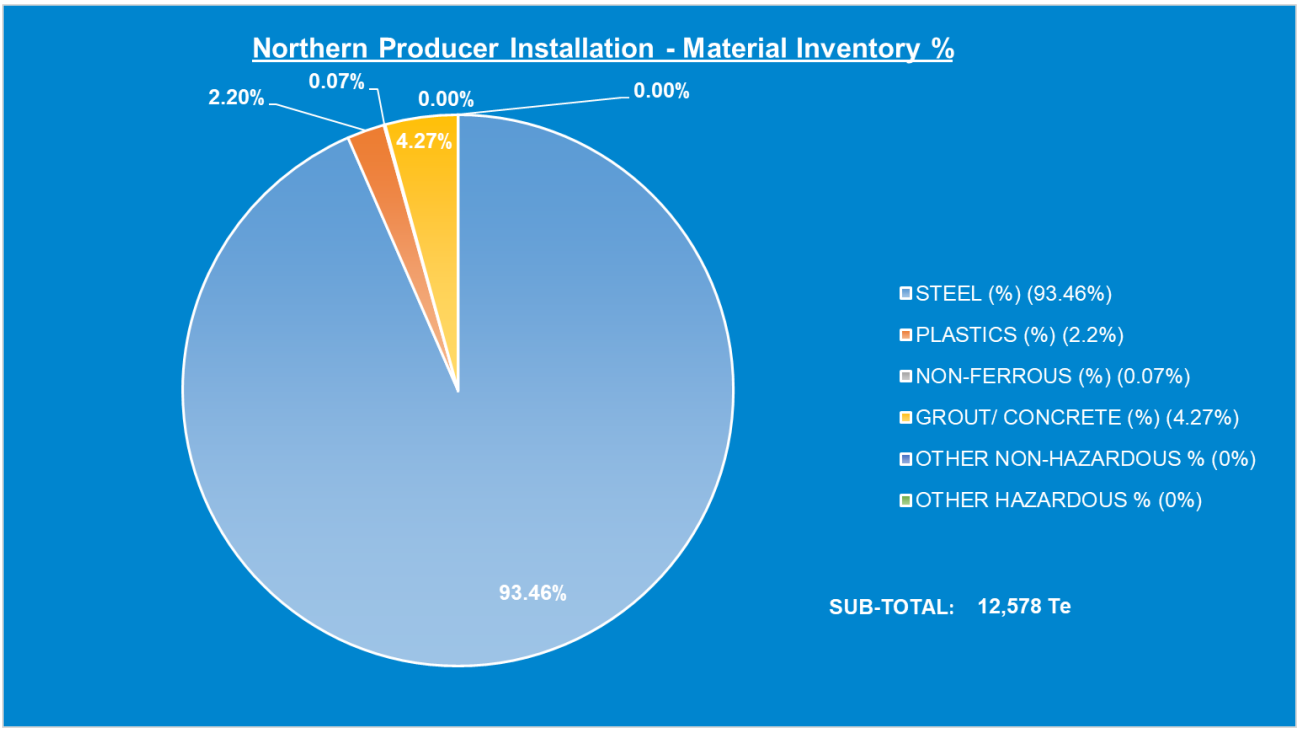


Figure 2.3.1: Pie-Chart of Material Inventory for Northern Producer FPF

2.4 DSW & WD Pipelines including Stabilisation Features ~500m Zone

Table 2.4.1: DSW & WD Pipeline/Flowline/Umbilical Information

Description	Pipeline Number (as per PWA)	PWA Ident	Diameter (NB) (inches)[1]	Length (m)	Description of Component Parts	Product Conveyed	From – To End Points[2]	Burial Status	Pipeline Status	Current Content
Oil export pipeline	PL2578	1	8”	1	ESDV	Oil	ESDV	Mounted topsides	Operational	Oil
		2	285.4mm	410	Composite flexible riser		ESDV at NP to RBS	Suspended in water over MWA		
		3	8”	50	Expansion spool		RBS to flowline flange	Surface laid, partly covered under concrete mattresses		
		4	8”	5,086	Carbon steel flowline		RBS Expansion spool flange to WS	Trenched and buried under deposited rock between KP0.002 and KP5.047		
Gas export pipeline	PL2579	1	175.9mm	400	Dynamic Flexible Riser	Gas	ESDV at NP to RBS	Suspended in water over MWA	Operational	Gas
		2,3,4,5	3”	53	Expansion spools on approach to & including RBS, pipework & valves		Riser flange to flowline flange via RBS	Surface laid		
		6	3”	5,086	Carbon steel flowline		Start & finish of flowline on approach to WS	Same trench as PL2578 buried under deposited rock		

Table 2.4.1: DSW & WD Pipeline/Flowline/Umbilical Information										
Description	**Pipeline Number (as per PWA)**	**PWA Ident**	**Diameter (NB) (inches)[1]**	**Length (m)**	**Description of Component Parts**	**Product Conveyed**	**From – To End Points[2]**	**Burial Status**	**Pipeline Status**	**Current Content**
Gas export pipeline (cont'd/…)	PL2579 (cont'd/…)	7	3"	45	Expansion spool	Gas	By-passes WS	Surface laid, covered by concrete mattresses	Operational	Gas
		8	3"	10,089	Carbon steel flowline		Downstream of Wye structure to expansion spool upstream of Thistle SSIV	Trenched and buried under deposited rock between KP5.214 and KP15.264		
		9	3"	30	Expansion spools		Between end of flowline and Thistle SSIV	Surface laid, partly covered with concrete mattresses		
		10	3"	7			Between Thistle SSIV and Thistle RBS			
		11	175.9mm	300	Flexible riser		Thistle RBS to Thistle ESDV	Suspended in water column		

NOTES

1. If diameter is expressed in mm it refers to outside diameter of electrical cable or umbilical pipeline;
2. For brevity, the description of the end-to-end points may differ slightly from those consented;
3. PWA Idents highlighted in green for the parts of pipelines affected by proposals in this document; the remaining sections of pipeline will remain 'as' is' meantime until full field decommissioning is carried out.

Table 2.4.2: DSW & WD Subsea Pipeline Stabilisation Features				
Stabilisation Feature	**Total Number**	**Total Mass (Te)**	**Location(s)**	**Exposed/Buried/Condition**
Concrete mattresses[1]	15	61.3	**PL2578** 2x Downstream of MWA. Refer Figure 1.6.3	Latest survey information suggests the concrete mattresses are exposed.
			PL2579 8x Downstream of MWA. Refer Figure 1.6.3	
			PL2578/9 5x Between RBS and deposited rock. Refer Figure 1.6.3	
Grout bags	n/a	n/a		
Riser Base Structure (8.6m x 7m x 3.1m)	1	82	Downstream of NP	
Mid-Water Arch (15.8m x 10.8m x 4.6m) Incl. clump weight guide frame (18.4m x 7m x 2.3m)	1	298.8	Adjacent to NP vessel. Combined mass includes Buoyancy, Tether Chain, Clump Weight Guide Frame, Clump Weights (2x), Guide Gutter	MWA itself sits within the water column, clump weights on seabed

NOTES:

1. Concrete mattresses are 'SPS' type: 6m x 2m x 0.15m (Approx. mass each mattress 3.14Te) or 6m x 3m x 0.15m (Approx. mass each mattress 4.72Te).

2.5 DSW & WD Material Inventory Estimates

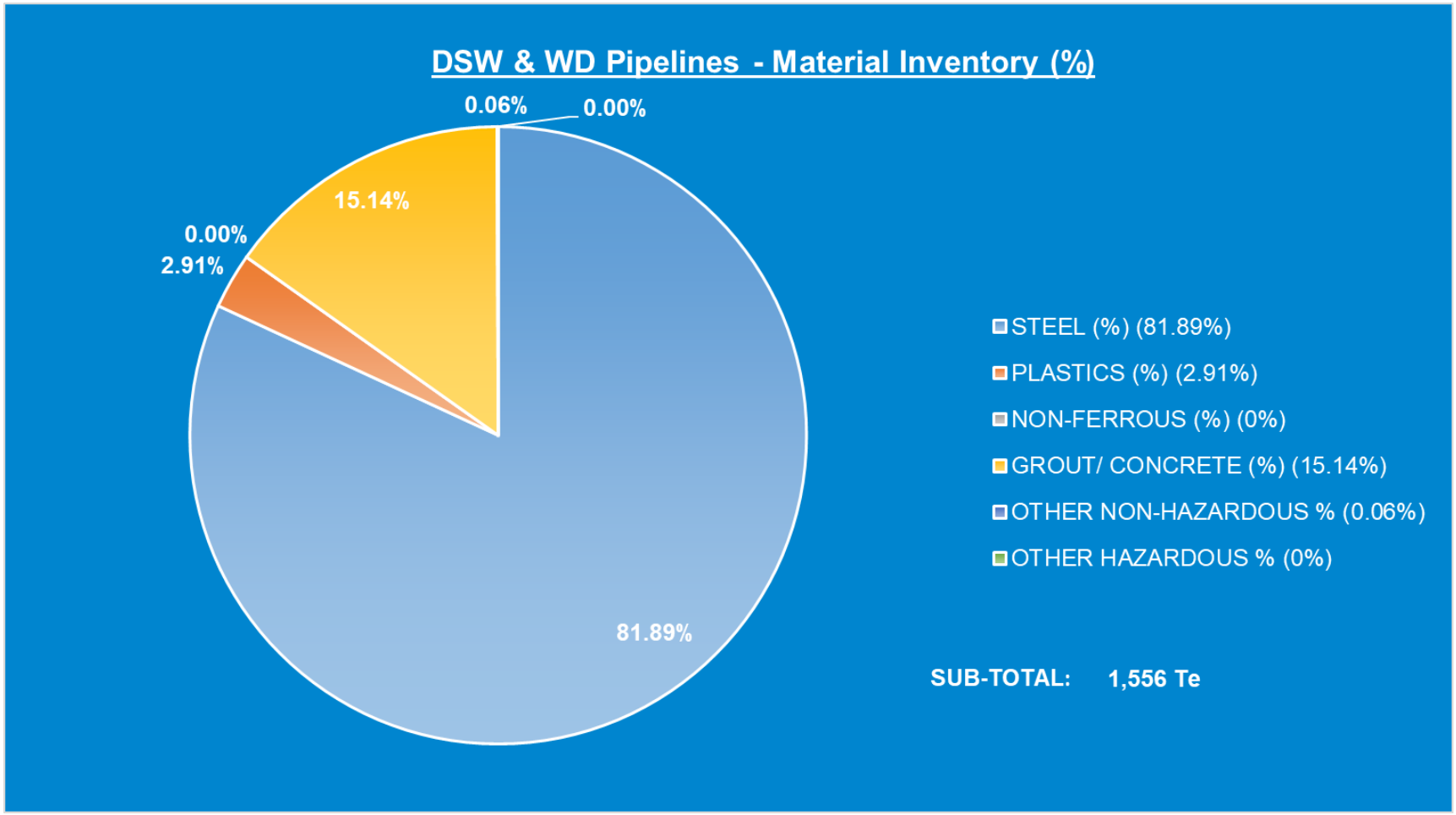


Figure 2.5.1: Pie-Chart of Material Inventory for DSW & WD Pipelines

2.6 DSW Pipelines including Stabilisation Features ~500m Zone

Table 2.6.1: DSW Pipeline/Flowline/Umbilical Information

Description	Pipeline Number (as per PWA)	PWA Ident	Diameter (NB) (inches)[1]	Length (m)	Description of Component Parts	Product Conveyed	From – To End Points[2]	Burial Status	Pipeline Status	Current Content
Oil pipeline	PL2572	1-27 incl.	8”/6”	314	Duplex & carbon steel expansion spools & gate valves	Oil	Production Tree P5 to flowline flange incl. future tie in flange at P5	Surface laid, covered with concrete mattresses	Operational	Oil, Produced water
		28	8”	4,027	Carbon steel flowline		Expansion spool flange to expansion spool flange on approach to RBS	Trenched and buried under deposited rock between KP0.05 and KP4.001		
		29	8”	66	Carbon steel expansion spool		Expansion spool flange on approach to RBS & RBS	Surface laid, partly covered with concrete mattresses		
		30	8”	7	Carbon steel expansion spool		Expansion spool downstream of RBS connecting to flexible riser	Surface laid, partly covered with concrete mattresses		
		31	285.4mm	390	Composite flexible riser		RBS expansion spool flange to ESDV at NP	Suspended in water over MWA		

Table 2.6.1: DSW Pipeline/Flowline/Umbilical Information										
Description	**Pipeline Number (as per PWA)**	**PWA Ident**	**Diameter (NB) (inches)[1]**	**Length (m)**	**Description of Component Parts**	**Product Conveyed**	**From – To End Points[2]**	**Burial Status**	**Pipeline Status**	**Current Content**
Gas lift pipeline	PL2573	1	175.9mm	400	Dynamic flexible riser	Gas	ESDV at NP to RBS	Suspended in water over MWA	Operational	Gas
		2-5 incl.	3”	73	Expansion spools incl. RBS		Expansion spool flange at end of riser to end of expansion spool downstream of RBS	Surface laid, partly covered with concrete mattresses		
		6	3”	4,027	Carbon steel flowline		Expansion spool flange downstream of RBS to end of flowline on approach to production Xmas tree P1	Trenched and buried under deposited rock in the same trench as PL2572		
		7-33 incl.	3”	350	Carbon steel expansion spools & gate valves		End of flowline flange to production Xmas tree P7 via P1,P2,P3,P5,P6	Surface laid covered with concrete mattresses		
Water injection riser	PL2574	1	285.4mm	390	Composite dynamic flexible riser	Seawater	NP to RBS	Suspended in water over MWA	Operational	Seawater
Umbilical	PLU2575[3]	1 to 25	114.5mm	400	Umbilical pipeline	Chemicals, Methanol, Hydraulic Fluids	NP to RBS	Suspended in water over MWA	Operational	Chemicals, Methanol, Hydraulic Fluids

Table 2.6.1: DSW Pipeline/Flowline/Umbilical Information										
Description	**Pipeline Number (as per PWA)**	**PWA Ident**	**Diameter (NB) (inches)[1]**	**Length (m)**	**Description of Component Parts**	**Product Conveyed**	**From – To End Points[2]**	**Burial Status**	**Pipeline Status**	**Current Content**
Static umbilical	PLU2576	DSW JR1 to 8	114.5mm	10	Static umbilical jumpers	Chemicals, Methanol, Hydraulic Fluids	Between DUTU and SUTU	Exposed	Operational	Chemicals, Methanol, Hydraulic Fluids
	PLU2576[3]	Cores 1 to 8		4,162	Static umbilical		SUTU at RBS to SUTU at DSW	Trenched and buried under deposited rock in the same trench as PL2572		
	PLU2576	DSW JS1 to 8		10	Static umbilical jumpers		Between DSW SUTU and SDU	Exposed		
Water injection pipeline (disused)	PL2581	1	8”	5,237	Carbon steel pipeline	Seawater	Between expansion spools at pipeline ends	Trenched and buried in seabed except at Dons pipeline crossing where it is buried under deposited rock (between KP3.6 and KP3.92).	Out of use	Treated seawater
		2	8”	27	Expansion spool		Between pipeline end flange and tree at DSW water injection wells	Surface laid, covered with concrete mattresses on approach to Xmas trees		

Table 2.6.1: DSW Pipeline/Flowline/Umbilical Information										
Description	**Pipeline Number (as per PWA)**	**PWA Ident**	**Diameter (NB) (inches)[1]**	**Length (m)**	**Description of Component Parts**	**Product Conveyed**	**From – To End Points[2]**	**Burial Status**	**Pipeline Status**	**Current Content**
Replacement water injection pipeline	PL4262	1	8”	9	Pipespool	Seawater	RBS pipework	Exposed within RBS	Operational	Seawater
		2	228.1mm	5,550	Flexible pipeline		RBS to DSW WI1	Trenched and buried under deposited rock between KP0.12 and KP5.265		
		3-13	8”	109	Pipespools		Between pipeline end flange and each Xmas tree at DSW water injection wells	Surface laid, covered with concrete mattresses on approach to WI trees		

NOTES

1. If diameter is expressed in mm it refers to outside diameter of electrical cable or umbilical pipeline;
2. For brevity, the description of the end-to-end points may differ slightly from those consented;
3. PLU2575 and PLU2576 Jumpers not listed here as they are not directly affected by pipeline disconnection and removal activities;
4. PLU2577 and associated jumpers are not listed here as they are not directly affected by pipeline disconnection and removal activities;
5. PWA Idents highlighted in green for the parts of pipelines affected by proposals in this document; the remaining sections of pipeline will remain ‘as’ is’ meantime until full field decommissioning is carried out.

Table 2.6.2: DSW Subsea Pipeline Stabilisation Features				
Stabilisation Feature	**Total Number**	**Total Mass (Te)**	**Location(s)**	**Exposed/Buried/Condition**
Concrete mattresses[1]	32	113.2	**PL2572** 4x Downstream of MWA. Refer Figure 1.6.3.	Latest survey information suggests the concrete mattresses are exposed.
			PL2573 9x Downstream of MWA (4x) and upstream of deposited rock (5x). Refer Figure 1.6.3.	
			PLU2576 7x Downstream of RBS. Refer Figure 1.6.3.	
			PL4262 8x Downstream of RBS. Refer Figure 1.6.3.	
Grout bags	n/a	n/a		

NOTES:

1. Concrete mattresses are 'SPS' type: 6m x 2m x 0.15m (Approx. mass each mattress 3.14Te) or 6m x 3m x 0.15m (Approx. mass each mattress 4.72Te).

2.7 DSW Material Inventory Estimates

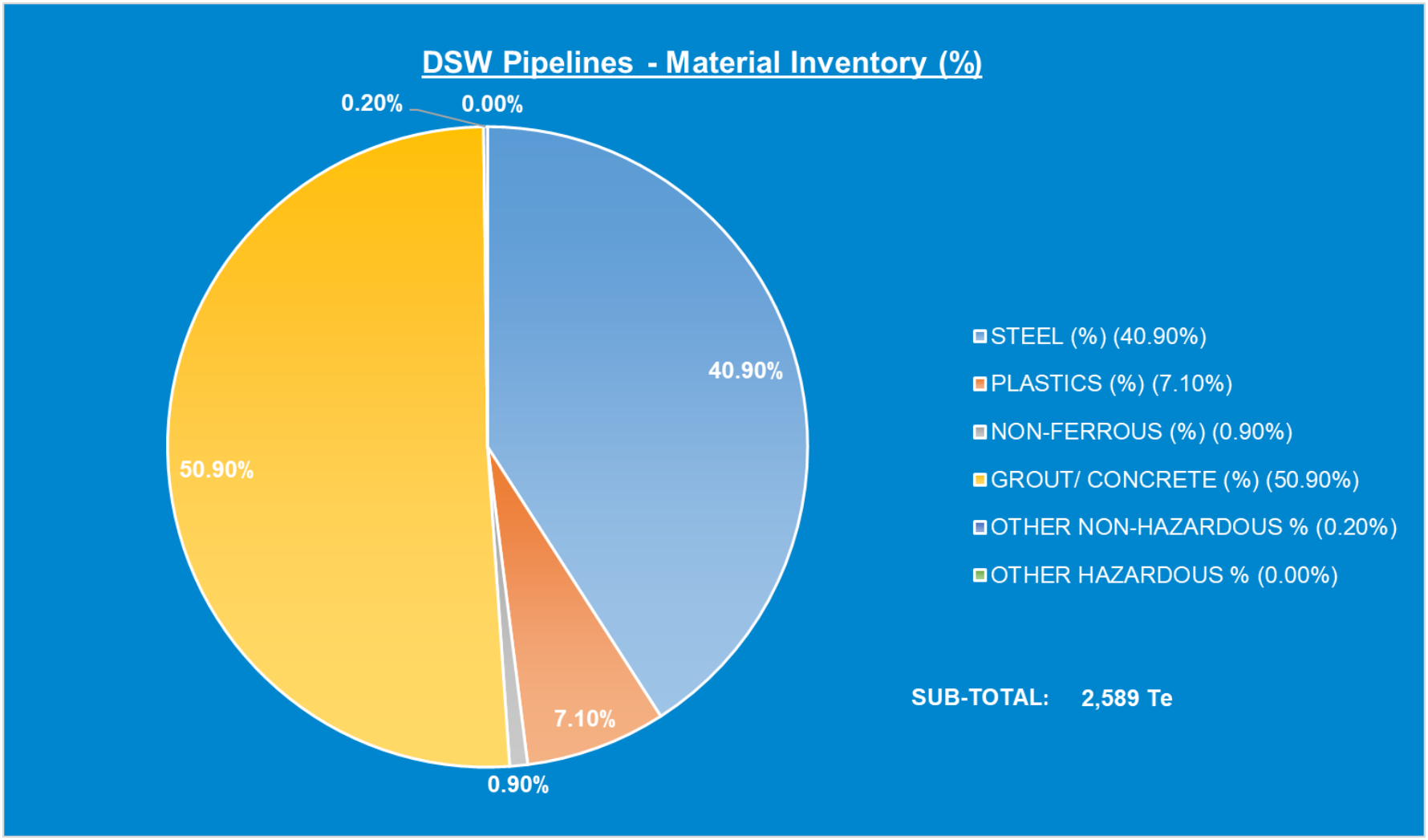


Figure 2.7.1: Pie-Chart of Material Inventory for DSW Pipelines

2.8 WD Pipelines including Stabilisation Features ~500m Zone

Table 2.8.1: WD Pipeline/Flowline/Umbilical Information

Description	Pipeline Number (as per PWA)	PWA Ident	Diameter (NB) (inches)[1]	Length (m)	Description of Component Parts	Product Conveyed	From – To End Points[2]	Burial Status	Pipeline Status	Current Content
Water injection pipeline	PL2582	1	8”	61	Pipespools	Seawater	Spool end near RBS and pipeline flange	Surface laid, partly covered with concrete mattresses	Out of use	Treated seawater
		2	8”	2,274	Pipeline		RBS to WD pipeline flange	Trenched and buried in seabed except under deposited rock between KP1.175 and KP2.23		
		3	8”	27	Pipespools		Between pipeline end flange and each Xmas tree at WD WI1	Wet stored local to WD P1		
Oil pipeline	PL2583	1-17	8”/6”	141	Duplex & carbon steel pipespools	Oil	WD production tree P3 and pipeline flange	Surface laid, covered with concrete mattresses on approach to WI Xmas trees	Operational	Oil, Produced water
		18	8”	2,300	Pipeline		Pipeline flange on approach to WD P1 and RBS	Trenched and buried under deposited rock between KP0.05 and KP2.3		

Table 2.8.1: WD Pipeline/Flowline/Umbilical Information										
Description	**Pipeline Number (as per PWA)**	**PWA Ident**	**Diameter (NB) (inches)[1]**	**Length (m)**	**Description of Component Parts**	**Product Conveyed**	**From – To End Points[2]**	**Burial Status**	**Pipeline Status**	**Current Content**
Oil pipeline	PL2583 (Cont'd/…)	19	8"	45	Pipespools	Oil	Pipeline end flange and RBS	Surface laid, partly covered with concrete mattresses	Operational	Oil
		20,21	285.4mm	400	Composite flexible riser		RBS to ESDV at NP	Suspended in water over MWA		
Gas injection pipeline	PL2584	1,2	175.9mm	400	Dynamic Flexible Riser	Gas	ESDV at NP to RBS	Suspended in water over MWA	Operational	Gas
		3,4	3"	44	Expansion spools on approach to & including RBS, pipework & valves		Riser flange to flowline flange via RBS	Surface laid, partly covered with concrete mattresses		
		5	3"	2,300	Carbon steel flowline		Pipeline flange downstream of RBS to Xmas tree at WD P1 well	Same trench as PL2583 buried under deposited rock		
		6-22	3"	145	Carbon steel pipespools		Between Xmas tree at WD P1 well through to Xmas tree at WD P3 well	Surface laid, covered with concrete mattresses		
Static umbilical	PLU2585[3]	WD JR1-8	114.5mm	10	Static umbilical jumpers	Chemicals, Methanol, Hydraulic Fluids	Between Riser Base DUTU and Riser Base SUTU	Exposed	Operational	Chemicals, Methanol, Hydraulic Fluids
		Cores 1-8		2,600	Static umbilical		RBS SUTU to WD SUTU	In the same trench as PL2582		

Table 2.8.1: WD Pipeline/Flowline/Umbilical Information										
Description	**Pipeline Number (as per PWA)**	**PWA Ident**	**Diameter (NB) (inches)[1]**	**Length (m)**	**Description of Component Parts**	**Product Conveyed**	**From – To End Points[2]**	**Burial Status**	**Pipeline Status**	**Current Content**
		WD JS1-8		10	Static umbilical jumpers		Between WD SUTU and SDU	Exposed		
Water injection pipeline	PL4261	1	8”	8	Pipespool	Seawater	RBS pipework	Exposed within RBS	Operational	Seawater
		2	228.1mm	2,842	Flexible pipeline		RBS to WD WI2	Trenched and buried under deposited rock between KP0.467 and KP2.348		
		3-7	8”	81	Pipespools		Between pipeline end flange and each Xmas tree at DSW water injection wells	Surface laid, covered with concrete mattresses on approach to WI trees		

NOTES:

1. If diameter is expressed in mm it refers to outside diameter of electrical cable or umbilical pipeline;
2. For brevity, the description of the end-to-end points may differ slightly from those consented;
3. PLU2585 Jumpers not listed here as they are not directly affected by pipeline disconnection and removal activities;
4. PWA Idents highlighted in green for the parts of pipelines affected by proposals in this document; the remaining sections of pipeline will remain ‘as’ is’ meantime until full field decommissioning is carried out.

Table 2.8.2: WD Subsea Pipeline Stabilisation Features				
Stabilisation Feature	**Total Number**	**Total Mass (Te)**	**Location(s)**	**Exposed/Buried/Condition**
Concrete mattresses[1]	34	124.2	**PL2582** 11x Downstream of RBS. Refer Figure 1.6.3.	Latest survey information suggests the concrete mattresses are exposed.
			PL2582 1x Downstream of RBS, approaching deposited rock. Refer Figure 1.6.3.	
			PL2584 2x Downstream of RBS. Refer Figure 1.6.3.	
			PL2584 3x Downstream of MWA. Refer Figure 1.6.3.	
			PLU2585 1x Downstream of RBS, approaching deposited rock. Refer Figure 1.6.3.	
			PL4261 9x Downstream of RBS. Refer Figure 1.6.3.	
Grout bags	n/a	n/a		

NOTES:

1. Concrete mattresses are 'SPS' type: 6m x 2m x 0.15m (Approx. mass each mattress 3.14Te) or 6m x 3m x 0.15m (Approx. mass each mattress 4.72Te).

2.9 WD Material Inventory Estimates

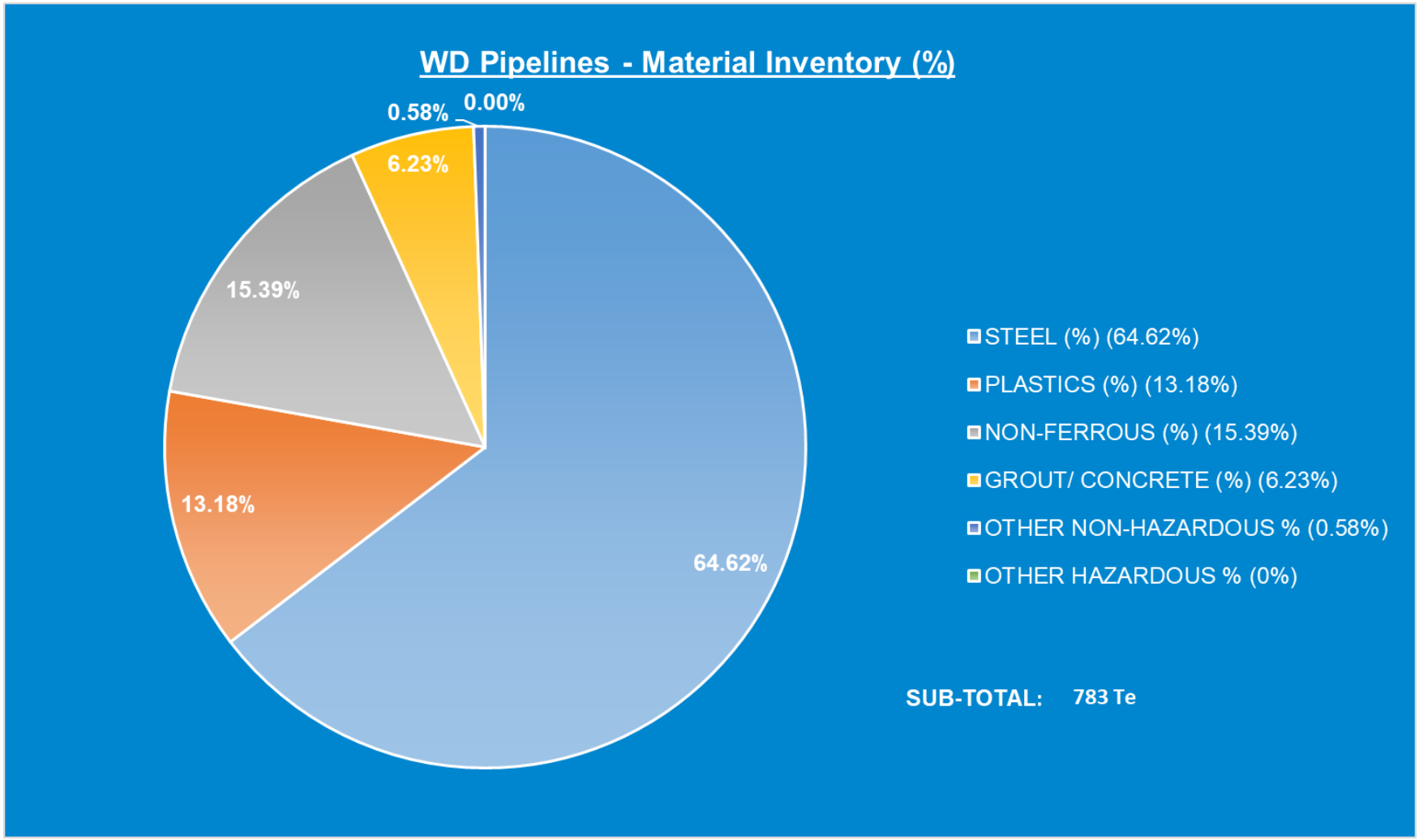


Figure 2.9.1: Pie-Chart of Material Inventory for WD Pipelines

3. REMOVAL AND DISPOSAL METHODS

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 Trans Frontier Shipment of Waste (TFSW), including hazardous materials. Early engagement with the relevant waste regulatory authorities will ensure that any issues with TFSW are addressed.

3.1 Installations - Surface Facilities, FPF

The Northern Producer FPF is under a Lease and Cooperate Contract between the vessel owners and the DSW, WD, Conrie and Ythan partners until life of field has been declared by EnQuest and the field partners. After completion of the operation at its current location, at the discretion of its owners, the FPF will be towed from the field and either redeployed or towed to a suitable licensed location for preparation for re-use or decommissioning. The owner will be responsible for taking reasonable measures to assure itself that proposals to re-use the vessel will be credible, and that disposal of the FPF will comply with the IMO Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.

Preparation and cleaning: The methods that will be used to vent and purge the FPF prior to removal to shore are summarised in Table 3.1.1.

Table 3.1.1: Cleaning of FPF for Removal

Waste type	Composition of Waste	Disposal Route
On-board hydrocarbons	Bulk liquid waste will be produced during the flushing of the DSW, WD, Conrie and Ythan fields production systems and during the cleaning of the FPF process equipment. Bulk liquids will be offloaded and transported to shore for treatment and disposal.	Where possible, flushing of bulk process hydrocarbons will be conducted offshore, with residual fluids disposed of under appropriate permits. Any residual hydrocarbons remaining onboard will be evacuated to shore for separation and use.
Other hazardous materials	The presence of NORM will be identified.	NORM, if present, will be disposed of in accordance with the appropriate permit.

Table 3.1.2: Topside Removal Methods

1) Semi-Submersible Crane Vessel ☐; 2) Monohull Crane Vessel ☐; 3) Shear Leg Vessel ☐; 4) Jack up Work barge ☐; 5) Piece small or large ☐; 6) Complete with jacket ☐; 7) Other ☑

Method	Description
Proposed removal method and disposal route	The FPF will be released from its moorings after all risers, flowlines and jumpers have been cleaned, flushed, cut, and removed. The vessel will then be towed to a suitable location where it will be refurbished for re-use or to an alternative location at a licensed facility to be decommissioned. The opportunities for re-use will be determined by the vessel owner. A final decision on any decommissioning activities will be made following a commercial tendering process.

3.2 Installations - Subsea Facilities & Stabilisation Features

Table 3.2.1: Subsea Installations & Stabilisation Features			
Subsea installations and stabilisation features	**Number**	**Option**	**Disposal Route (if applicable)**
FPF anchors and anchor chains	8	Fully recover	n/a

3.3 Pipelines

The risers and pipelines identified in this document have not been subjected to a full comparative assessment on the basis that the risers are suspended in the water column and that surface laid sections of pipelines would ordinarily be removed.

Decommissioning of the pipeline infrastructure that remains following the first phase of decommissioning work will be addressed in separate decommissioning programmes supported by a comparative assessment as appropriate.

All surface laid equipment including flexible flowlines, risers that have not been trenched or buried will be completely recovered from the seabed up to the point where they are buried and taken to shore for re-use or recycling or final disposal. Table 3.3.1 summarises the lengths of pipelines and pipespools being removed to allow clearance of the 500m zone and removal of potential snagging hazards.

3.3.1 DSW & WD Pipelines

Table 3.3.1: DSW & WD Pipeline Decommissioning Proposals			
Pipeline or Group	**Lengths being recovered**		
	Riser (m)	**Pipespools / Umbilical Jumpers (m)**	**Pipeline (part thereof, m)**
DSW & WD (i.e. Risers & pipelines that service both the DSW & WD fields)			
PL2578	410	50	~5 (up to where buried under rock)
PL2579	400	53	~5 (refer PL2578)
NOTES: 1. Where buried in the seabed local excavations will be required to locate the pipeline cut point. Following severance of the pipeline the excavation will be left to backfill naturally; 2. Where buried in deposited rock, remedial work may be required to bury the end of the pipeline where it protrudes out from the rock. As a contingency measure, small deposits of rock may need to be added to the existing rock to make sure that the pipeline ends remain buried.			

3.3.2 DSW Pipelines

Table 3.3.2: DSW Pipeline Decommissioning Proposals			
Pipeline or Group	**Lengths being recovered**		
	Riser (m)	**Pipespools / Umbilical Jumpers (m)**	**Pipeline (part thereof, m)**
DSW (i.e. Risers & pipelines that service just the DSW fields)			
PL2572	410	73	~5 (up to where buried under rock)
PL2573	400	73	~5 (refer PL2572)
PL2574	390	n/a	n/a

Table 3.3.2: DSW Pipeline Decommissioning Proposals			
Pipeline or Group	Lengths being recovered		
	Riser (m)	Pipespools / Umbilical Jumpers (m)	Pipeline (part thereof, m)
PLU2575	400	n/a	n/a
PLU2576	n/a	10	~300 (refer PL2572)
PL2581	n/a	60	~50 (into trench in seabed)
PL4262	n/a	9	~120 (up to where buried under rock)
NOTES: 1. Please refer notes in Table 3.3.1			

3.3.3 WD Pipelines

Table 3.3.3: WD Pipeline Decommissioning Proposals			
Pipeline or Group	Lengths being recovered		
	Riser (m)	Pipespools / Umbilical Jumpers (m)	Pipeline (part thereof, m)
WD (i.e. Risers & pipelines that service just the WD fields)			
PL2582	n/a	61	~51 (up to where buried under rock)
PL2583	390	45	~50 (up to where buried under rock)
PL2584	400	44	~50 (refer PL2583)
PLU2585	n/a	10	~330 (up to where buried under rock)
PL4261	n/a	8	~470 (up to where buried under rock)
NOTES 1. Please refer notes in Table 3.3.1			

3.4 Pipeline Stabilisation Features

All concrete mattresses will be recovered to shore unless noted otherwise.

3.4.1 DSW & WD Pipeline & stabilisation features

Table 3.4.1: DSW & WD Pipeline Stabilisation Features			
Stabilisation Features	Number	Description	Disposal Route (if applicable)
Concrete mattresses	10	**PL2578** 2x Downstream of MWA. Refer Figure 1.6.3	Recover the exposed concrete mattresses to shore for re-use, recycling, or disposal.
		PL2579 8x Downstream of MWA Refer Figure 1.6.3	
		PL2578/9 5x Between RBS and deposited rock. Refer Figure 1.6.3	
Riser Base Structure	1	Downstream of NP	Recover to shore for re-use, recycling, or disposal

Table 3.4.1: DSW & WD Pipeline Stabilisation Features			
Stabilisation Features	**Number**	**Description**	**Disposal Route (if applicable)**
Mid-Water Arch	1	Adjacent to NP vessel. Combined mass includes Buoyancy, Tether Chain, Clump Weight Guide Frame, Clump Weights (2x), Guide Gutter	Recover to shore for re-use, recycling, or disposal

3.4.2 DSW Pipeline & stabilisation features

Table 3.4.2: DSW Pipeline Stabilisation Features			
Stabilisation Features	**Number**	**Description**	**Disposal Route (if applicable)**
Concrete mattresses	24	**PL2572** 4x Downstream of MWA. Refer Figure 1.6.3	Recover the exposed concrete mattresses to shore for re-use, recycling, or disposal.
		PL2573 9x Downstream of MWA (4x) and upstream of deposited rock (5x). Refer Figure 1.6.3	
		PLU2576 7x Downstream of RBS. Refer Figure 1.6.3	
		PL4262 8x Downstream of RBS. Refer Figure 1.6.3	

3.4.3 WD Pipeline & stabilisation features

Table 3.4.3: WD Pipeline Stabilisation Features			
Stabilisation Features	**Number**	**Description**	**Disposal Route (if applicable)**
Concrete mattresses	32	**PL2582** 11x Downstream of RBS. Refer Figure 1.6.3	Recover the exposed concrete mattresses to shore for re-use, recycling, or disposal.
		PL2584 1x Downstream of RBS. Refer Figure 1.6.3	
		PL2584 3x Downstream of MWA. Refer Figure 1.6.3	
		PLU2585 1x Downstream of RBS. Refer Figure 1.6.3	
		PL4261 9x Downstream of RBS. Refer Figure 1.6.3	

3.5 Waste Stream Management Methods

Table 3.5.1: Waste Stream Management Methods	
Waste Stream	**Removal and disposal method**
Bulk liquids	Bulk hydrocarbons will be exported with any residual hydrocarbons removed from the FPF in accordance with contractual agreements with the vessel owner. Any associated bulk seawater from topsides will be cleaned and disposed overboard under permit. The production risers, pipelines and water injection flowlines will be flushed and left filled with seawater as appropriate prior to being disconnected. Any residual fluids from within these pipelines will be released to marine environment under permit prior to removal to shore. Further cleaning and decontamination will take place onshore prior to recycling / re-use or disposal.
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.
NORM	Based on production records to date, NORM is expected. Tests for NORM will be undertaken offshore and any NORM encountered will be dealt with and disposed of in accordance with guidelines and company policies.
Asbestos	Given the age of the Northern Producer vessel itself it is likely that asbestos will be present. Should the vessel be dismantled any such material found will be dealt with and disposed of in accordance with guidelines and company policies.
Other hazardous wastes	Will be recovered to shore and disposed of according to guidelines and company policies and will also take place under appropriate permits.
Onshore Dismantling sites	Should the owner wish to dismantle the NP FPF, 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. The same will apply to all pipeline related materials recovered to shore.

Table 3.5.2: Inventory Disposition		
Inventory	**Total inventory (Te)**	**Phase 1 Planned to shore (Te)**
FPF & Anchor Systems	12,578	12,578
DSW & WD Pipelines	1,556	449
DSW Pipelines	2,589	114
WD Pipelines	783	49
TOTAL:	**17,506**	**13,190**

NOTES:

1. The balance of material concerns pipelines and deposited rock that will be left *in situ* following completion of the decommissioning works described herein. The decommissioning of these materials will be addressed in Decommissioning Programmes that are being prepared separately for decommissioning of the DSW, Conrie, Ythan and West Don installations and associated pipeline infrastructure.

Table 3.5.3: Re-use, Recycle & Disposal Aspirations for Recovered Material			
Inventory	**Re-use**	**Recycle**	**Disposal (e.g. Landfill)**
FPF incl. Anchor System[1]	<5%	>95%	<5%
DSW & WD Pipelines	<5%	>95%	<5%
DSW Pipelines	<5%	>95%	<5%
WD Pipelines	<5%	>95%	<5%
NOTE: 1. Preferred but subject to owner's discretion and market conditions			

All recovered material will be transported onshore for re-use, recycling, or disposal. The expectation is that any synthetic materials associated with the pipelines will be shredded and recycled. It is not possible to predict the market for re-usable materials with any confidence so the figures in Table 3.5.3 are aspirational.

4. ENVIRONMENTAL APPRAISAL

4.1 Environmental Sensitivities

The environmental characteristics and sensitivities are such that the seabed area is stable with relatively homogenous community. It is typical of sandy sediments, generally diverse and evenly distributed community with low taxonomic dominance.

Generally uniform and background hydrocarbon and metal concentrations typical of the northern North Sea, 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.

The closest SAC or Annex 1 feature is the Pobie Bank Reef that is ~109km south-west of NP.

Impact from operations from the NP are not significant as there are no discharges from drilling, and seabed impacts from anchors can be considered minimal.

Commercial fishing activity in the area can be considered **low**.

The reference sources used for this assessment are as follows:

- Environmental Baseline Survey (Don SW and SW to Thistle) & Habitat Investigation (W. Dons) UKCS Block 211/18. May-July 2007;
- Fugro Pipeline Route Survey. Dons West. July 2010;
- Gardline Environmental Baseline & Habitat Assessment, East Dons Site Survey. UKCS 211/18 and 211/19. June 2012;
- Environmental Baseline & Habitat Assessment. Dunlin By-pass. July 2018;
- Using data taken from either an adjacent month or adjacent block, seabird sensitivity except for January, November or December of any given year, seabird vulnerability is considered low;.
- Sand discharges have been minimal offshore;
- There is only one wreck located within Block 211/18 designated under the Protection of Military Remains Act 1986 'war graves'.
- There are no historical Marine Protected Areas in the vicinity of the Northern Producer FPF.

4.2 Potential Environmental Impacts and their Management

4.2.1 Overview

The significance of any environmental impacts and risks (potential impacts) associated with each element of the project activities are described in Table 4.2.1.

4.2.2 Key control and mitigation measures

Table 4.2.1: Key Control and Mitigation Measures
Underwater Noise
• A SIMOPS plan for vessel activity in the field will be put in place • Vessel, cutting and trenching operations will use standard methods and equipment. No explosives used.
Discharges to Sea
• All contracted vessels will operate in line with IMO and MARPOL regulations • Pipelines and spool are to be flushed, filled with seawater, and isolated prior to disconnection • All discharges will be permitted under applicable UK legislation.
Accidental Events

Table 4.2.1: Key Control and Mitigation Measures
• All contracted vessels will have a ship-board oil pollution emergency plan (SOPEP) in place • A Collision Risk Management Plan will be developed and implemented • Agreed arrangements in place with oil spill response organisation for mobilising resources in event of a spill • Existing field OPEP in place to reduce the likelihood of hydrocarbon release and define spill response in place • Lifting operations will be planned to manage the risk • Recovery of any dropped objects will take place • Vessel contactors will have procedures for fuel bunkering that meet EnQuest's standard • Where practicable, re-fuelling will take place during daylight hours only.
Physical Presence of Infrastructure & Vessels
• All vessels will comply with standard marking conditions and consent to locate conditions • If required, a specific SIMOPS plan for vessel activity in the field will be put in place, noting that a standard DSV SIMOPS Guideline already exists for the asset • All seabed infrastructure will be fully protected on the seabed in the interim period between Phase 1 & 2 • If full seabed clearance of the FPF 500m zone is not completed, a guard vessel hired by EnQuest will remain on site • Small quantities of rock may be required where exposed pipeline ends remain after severance at existing deposited rock; • Seabed clearance certificate issued if an overtrawl survey is carried out, otherwise survey findings will be described in the close out report.
Atmospheric Emissions & Energy Use
• Time vessels spend in the field will be optimised, with a SIMOPS plan in place • Reuse or recycling of materials will be the preferential option.
Bird Management
• Surveys will be carried out to determine prevalence of nesting birds on the installation and contingency plans will be prepared.
Waste
• Onshore treatment will take place at waste management site with appropriate permits and licenses • UK waste disposal sites will be used where practicable.
Seabed Disturbance
• Activities which may lead to seabed disturbance planned, managed, and implemented in such a way that disturbance is minimised. A Marine License will be in place for any planned operational disturbance • Natural backfill of the excavated areas, no planned mechanical backfill, or remedial seabed levelling of pipeline corridors • Debris survey undertaken on completion of the activities and where possible resultant debris will be recovered • Minimising disturbance to seabed from overtrawl through liaison with fishing organisations and regulator.

Following the environmental assessment and implementation of additional control and mitigation measures where necessary, the level of environmental risk from the planned and unplanned decommissioning operations, is **low**. In addition, any cumulative impacts limited to seabed disturbance have been assessed and also considered to be **low**. Therefore, the departure of the NP FPF and removal of risers and surface laid pipelines and associated stabilisation features can be completed without causing significant impact to the environment.

5. INTERESTED PARTY CONSULTATIONS

5.1 Consultations Summary

Table 5.1.1: Summary of Stakeholder Comments		
Who	**Comment**	**Response**
INFORMAL CONSULTATIONS		
GMG	The decommissioning proposals herein were shared with GMG 01 July 2020 in advance of the Statutory Consultation.	As there are no existing cables nearby GMG had adverse comment to make concerning the proposals.
NFFO	The decommissioning proposals herein were shared with NFFO 01 July 2020.	No adverse comments were received with NFFO being happy to defer to SFF as the decommissioning activities would be carried out in Scottish waters.
NIFPO	The decommissioning proposals herein were shared with NIFPO 01 July 2020.	No adverse comments were received. NIFPO would be able to offer vessels for guard duty, over-trawlability surveys and other services should there be such a requirement during execution of the project.
SFF	The decommissioning proposals herein were shared with SFF 01 July 2020 and discussed 03 July 2020.	SFF had no adverse comment to make concerning the Phase 1 decommissioning proposals relating to the departure of the Northern Producer and clearance of the 500m zone; • SFF would be able to offer the services of a guard vessel if required, but use of ERRV (based at Thistle, currently splitting its time between Thistle & Northern Producer) would seem acceptable in this instance; • SFF would be inclined not to favour use of cardinal buoys as markers. Not always visible, especially in inclement seas, can break free and consider them to be surface hazards. SFF have expressed their concerns to Marine Contractor Association; • SFF would wish security messages to be expressed as WGS84 decimal or WBS84 decimal minutes but NOT WGS84 degrees, minutes, and seconds as this can give rise to confusion when seconds are quoted; • There remains a source of tension regarding the requirement to overtrawl and the demonstration of a clear seabed, with the SFF and NFFO arguing that they can only really be satisfied that the seabed is safe for fishing by their having carried an overtrawl rather than it being demonstrated for example by Side Scan Sonar and ROV survey. The idea of avoiding an overtrawl originally arose as a result of concerns of damage to environmentally sensitive areas such as North Norfolk sandbanks in the southern North Sea where JNCC and EMT in particular, have argued against the use over overtrawl.

Table 5.1.1: Summary of Stakeholder Comments		
Who	**Comment**	**Response**
STATUTORY CONSULTATIONS		
NFFO		
NIFPO		
SFF		
GMG		
Public		

6. PROGRAMME MANAGEMENT

6.1 Project Management and Verification

An EnQuest project management team will work with the owner of the NP to 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 Health and Safety principles. If required, changes to the Decommissioning Programmes will be discussed with OPRED with any necessary approvals sought.

6.2 Post-Decommissioning Debris Clearance and Verification

The NP FPF installation site and 500m safety zone will be subject to clear seabed assessment when the decommissioning activities have concluded.

Should disconnection of the FPF and sailaway result in the Mid Water Arch, risers and surface pipelines temporarily being left in place, the risers will be anchored so that they remain stable and the Mid Water Arch will remain tethered to the seabed. A guard vessel or subject to a risk assessment an acceptable alternative will be used to protect local users of the sea in the area until a clear seabed has been established.

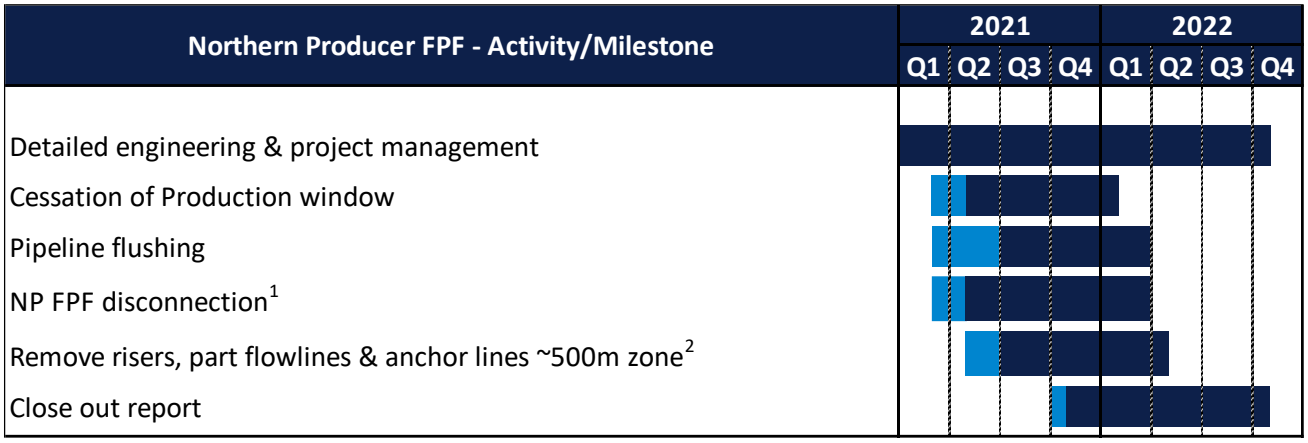
It is proposed that EnQuest will work with OPRED and SFF on behalf of the Section 29 Holders to investigate use of an evidence-based approach to establish an acceptable clear seabed for the 500m zone. As the seabed is not in an environmentally sensitive area, an overtrawl may be carried out to verify the condition of the seabed after decommissioning activities have been completed. If an overtrawl is carried out this will be supported by a Certificate of Clearance. Evidence of a clear seabed will be included in the Close Out Report and sent to the Seabed Data Centre (Offshore Installations) at the Hydrographic Office.

Any oil and gas debris will be recovered from the seabed for onshore disposal or recycling in line with existing disposal methods.

6.3 Schedule

A proposed schedule is provided in Figure 6.3.1. The activities are subject to the acceptance of the Decommissioning Programmes 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.



Notes / Key

Most likely period of activity

Activity window to allow commercial flexibility associated with decommissioning activities

1. Current indications are that FPF sailaway will be carried out early Q2 2021;
2. Removal of risers, surface laid flowlines in and around 500m zone will follow FPF sailaway but may be deferred as a result of inclement weather forecast;
3. The first draft of the ful Decommissioning Programmes for DSW, Conrie, Ythan and West Don fields will be submitted Q1 2021.

Figure 6.3.1: Gantt Chart of Project Plan

6.4 Costs

Decommissioning costs will be agreed between the parties submitting the joint Decommissioning Programmes and provided separately to OPRED and OGA.

6.5 Close Out Report

In accordance with OPRED guidelines, a Close Out Report will be submitted to OPRED explaining any variations from the DP, normally within 12 months of completion of the offshore decommissioning scope.

6.6 Post-Decommissioning Monitoring and Evaluation

Decommissioning of the remaining installations and infrastructure that remain after the FPF has departed will be subject of separate decommissioning programmes to be submitted by EnQuest.

Residual liability will remain with the DSW & WD Section 29 holders identified in Section 1.4 for the infrastructure remaining *in situ* following the decommissioning works associated with these Decommissioning Programmes. Unless agreed otherwise in advance with OPRED, EnQuest will remain the focal point for such matters, such as any change in ownership, for example.

The requirement for legacy and liability management will be described in more detail in the Close Out report.

APPENDIX A LAYOUTS OF FIELDS CONNECTED TO NORTHERN PRODUCER

Appendix A.1 Don South West Production (with Conrie & Ythan)

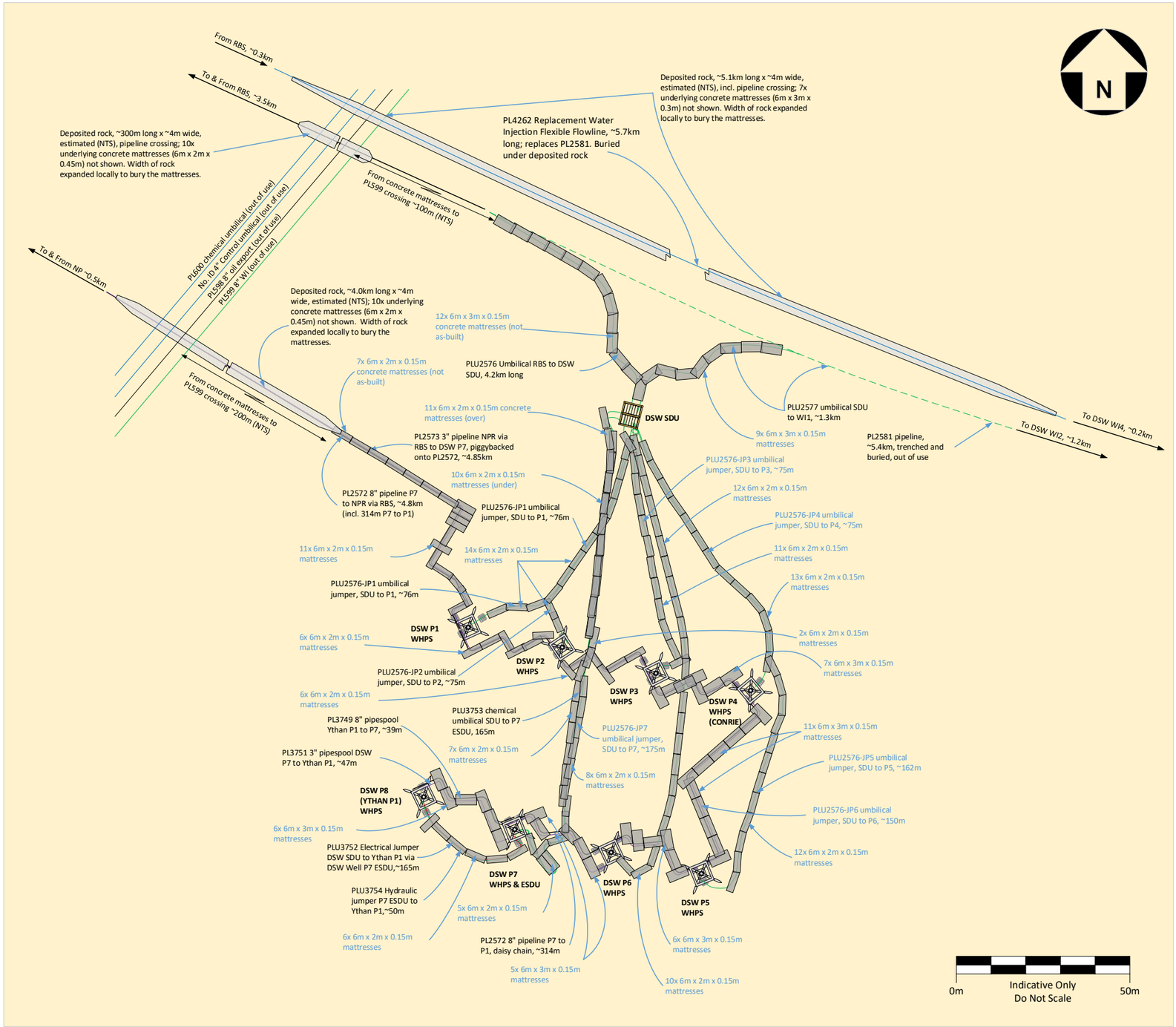


Figure A.1.1: Layout Showing DSW, Conrie & Ythan and associated infrastructure)[2]

[2] This layout has been included for information. Separate Decommissioning Programmes will be prepared to address future decommissioning activities.

Appendix A.2 Don South West WI

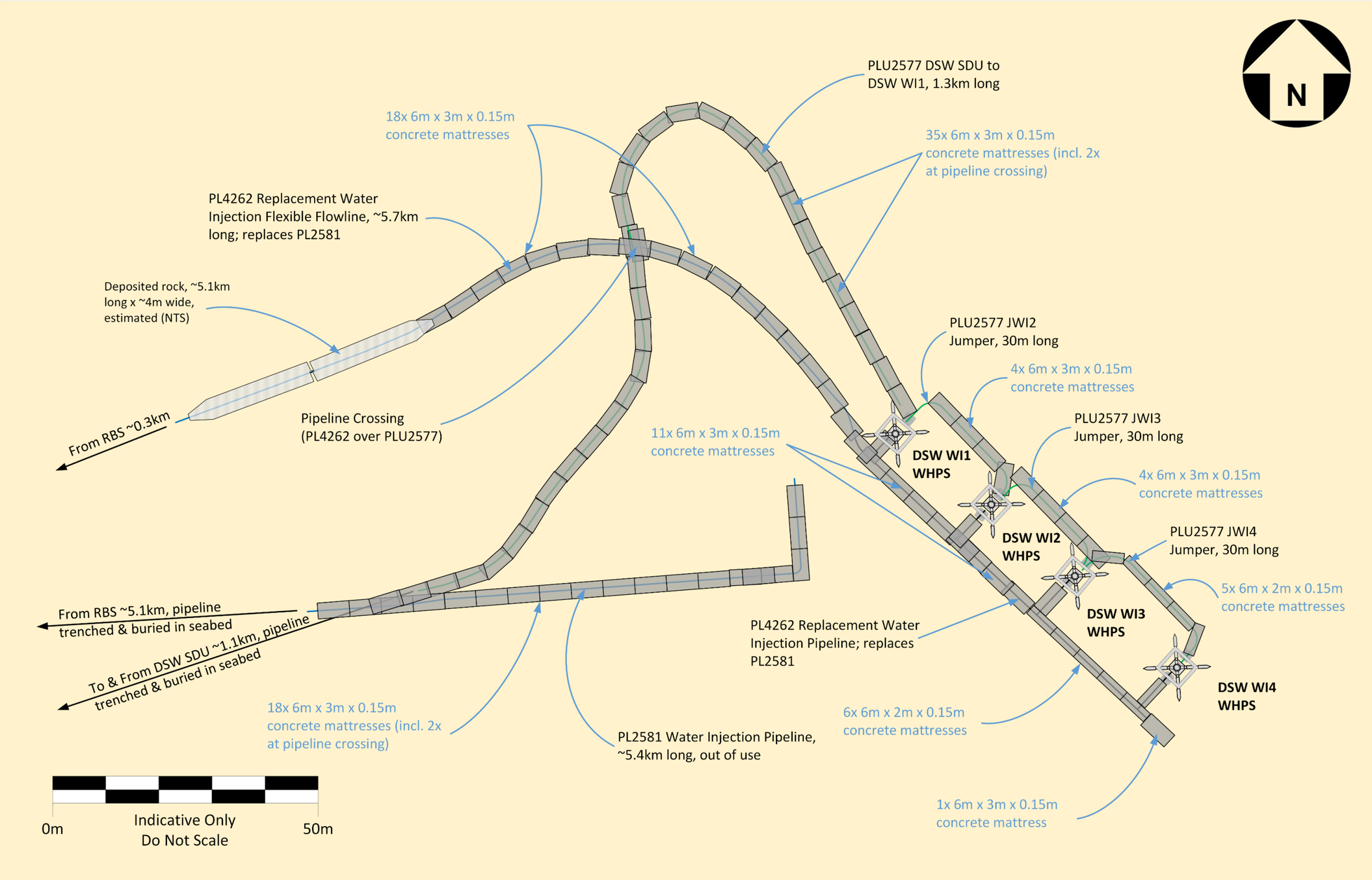


Figure A.2.1: Layout showing DSW WI and associated infrastructure[2]

Appendix A.3 West Don Production & Water Injection

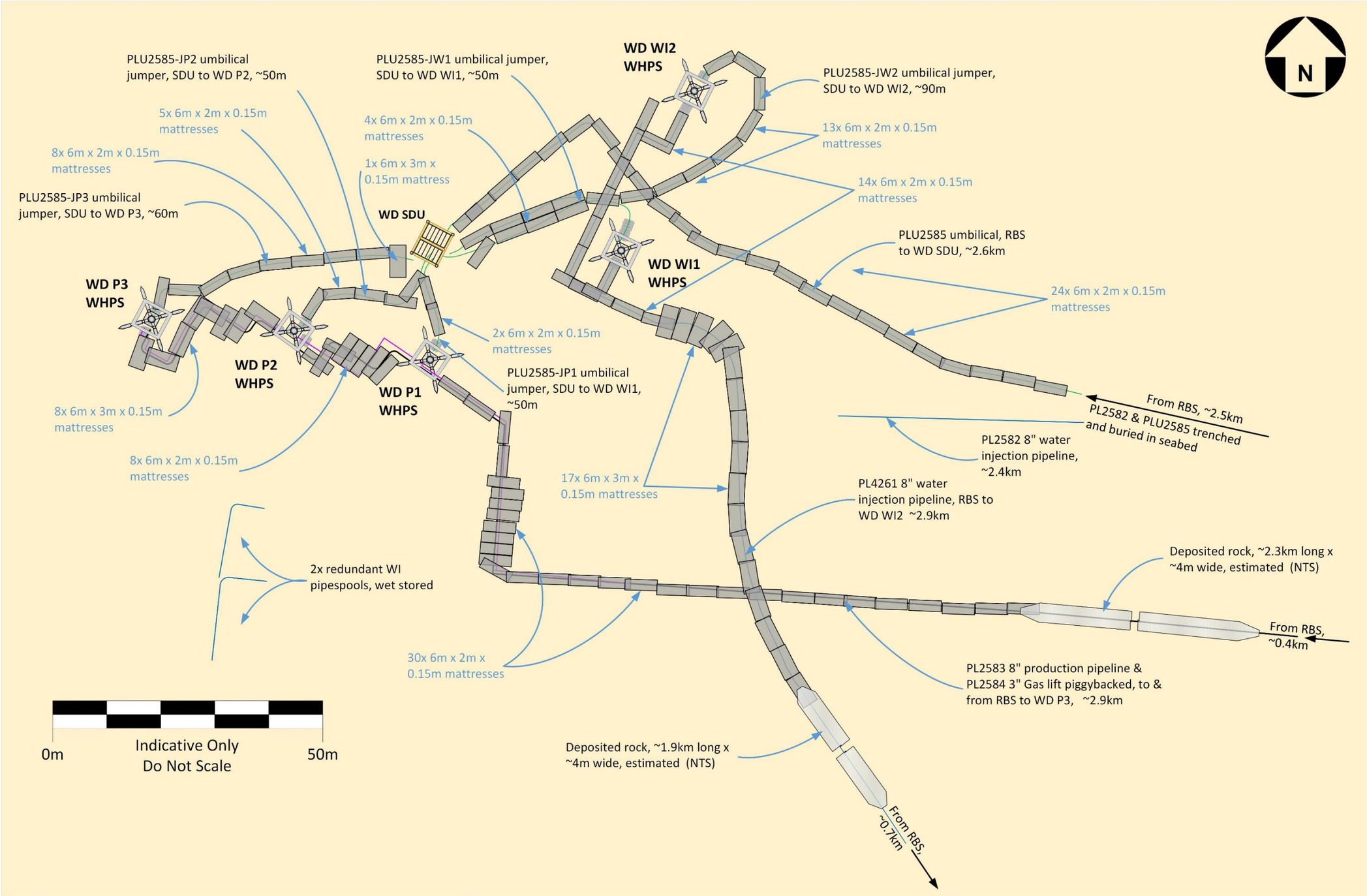


Figure A.3.1: Layout Showing WD Production & Water Injection[2]

APPENDIX B PUBLIC NOTICE & CONSULTEE CORRESPONDENCE

Appendix B.1 Public Notices