Western Isles FPSO Decommissioning Programmes

March 2023

Consultation Draft

UK-WIS-DC-DCM-PLN-0003

Preface

This document sets out the Draft Decommissioning Programmes for the Western Isles Floating Production Storage and Offloading Vessel (FPSO) and associated mooring systems, risers and dynamic umbilicals. It has been submitted to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) which, in turn, triggers statutory and public consultation.

Stakeholders are invited to respond to the draft proposals during the 30-day consultation which runs from 3 March to 3 April. Documentation referred to within this consultation draft can be made available for inspection by arrangement.

Comments should be sent by post to Stuart Wordsworth, Decommissioning Manager, Dana Petroleum (E&P) Limited, 62 Huntly Street, Aberdeen AB10 1RS, or by email to stuart.wordsworth@dana-petroleum.com.

After consideration of any responses and further discussions with OPRED, the document will be updated and refined as required. Additional discussion with stakeholders may be needed depending on the comments submitted. The 'final' version of the document will incorporate details of comments from statutory and public consultees, indicating how these have been addressed.

Readers should note that the Draft Decommissioning Programmes for the Western Isles Subsea Infrastructure will form the basis of separate consultation in due course.

Document Control

Approvals

	Name	Signature	Date
Prepared by	**Stuart Wordsworth**	S R Wordsworth (Feb 23, 2023 15:17 GMT)	
Reviewed by	**Keith Williams**	Keith Williams (Feb 23, 2023 16:16 GMT)	
Approved by	**Andy Duncanson**	Andy Duncanson (Feb 23, 2023 17:02 GMT)	

Revision Control

Revision No	Reference	Changes/Comments	Issue Date
1	**First Draft**	**For review**	**02/05/22**
2	**Pre-Consultation Draft**	**For Review**	**02/08/22**
3	**Consultation Draft**	**For Issue**	**22/02/23**

Distribution List

Name	Company	No of Copies
OPRED	**Offshore Petroleum Regulator for Environment and Decommissioning**	**Electronic**
Alex Riddell	**Global Marine Systems**	**Electronic**
Ian Rowe	**National Federation of Fishermen's Organisations**	**Electronic**
Harry Wick	**Northern Ireland Fishermen's Federation**	**Electronic**
Mohammad Fahim Hashimi	**Scottish Fishermen's Federation**	**Electronic**

Contents

Terms and Abbreviations

Abbreviation	Explanation
AIS	Automatic Identification Systems
CA	Comparative Assessment
CNS	Central North Sea
DFPV	Drain, flush, purge and vent
DP	Decommissioning Programme
EA	Environmental Appraisal
ENE	East North East
ENVID	Environmental Impact Identification
ESDV	Emergency Shutdown Valve
ESE	East South East
FPSO	Floating Production Storage and Offloading Vessel
HSE	Health & Safety Executive
ICES	International Council for the Exploration of the Sea
IHM	Inventory of Hazardous Material
IMO	International Maritime Organisation
INTOG	Innovation and Targeted Oil and Gas Schemes
JNCC	Joint Nature Conservation Committee
km	kilometre
LSA	Low Specific Activity
MAT	Master Application Template
MEG	Mono-Ethylene Glycol
MWA	Midwater Arch
NDC	North Drill Centre
NLB	Northern Lighthouse Board
NNS	Northern North Sea
NORM	Naturally Occurring Radioactive Material
NRB	North Riser Base
NSTA	North Sea Transition Authority
OCR	Offshore Chemical Regulations
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning

Abbreviation	Explanation
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (Oslo Paris Convention)
P&A	Plug and Abandonment
PMF	Priority Marine Feature
PWA	Pipeline Work Authorisation
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SCAP	Supply Chain Action Plan
SEPA	Scottish Environment Protection Agency
SAT	Supplementary Application Template
SDC	South Drill Centre
SFF	Scottish Fishermen's Federation
SPA	Special Protection Area
SRB	South Riser Base
SSE	South South East
Te	Tonnes
TFSW	Trans Frontier Shipment of Waste
THC	Total Hydrocarbon Concentration
UKCS	United Kingdom Continental Shelf
UKHO	United Kingdom Hydrographic Office

Figures and Tables

Appendices

1. EXECUTIVE SUMMARY

1.1. Combined Decommissioning Programme

This document contains two decommissioning programmes (DPs) for each set of section 29 Notices covering the floating production storage and offloading (FPSO) vessel including mooring lines and for the disconnection and recovery of the associated flexible risers and dynamic umbilicals to enable FPSO sailaway. The items included in the combined Western Isles DPs are:

1. Western Isles Section 29 Notice – Offshore Installations
    - The Sevan 400 floating production storage and offloading vessel (including the mooring lines from the FPSO up to bottom chain section)
2. Western Isles Section 29 Notice – Submarine Pipelines
    - PL3186 (Flexible Riser Only)
    - PL3729.1 (Flexible Riser Only)
    - PL3729.2 (Flexible Riser Only)
    - PL3729.3 (Flexible Riser Only)
    - PL3729.4 (Flexible Riser Only)
    - PLU3729.5 (Dynamic Umbilical Only)
    - PL3730.1 (Flexible Riser Only)
    - PL3730.2 (Flexible Riser Only)
    - PL3730.3 (Flexible Riser Only)
    - PL3730.4 (Flexible Riser Only)
    - PLU3730.5 (Dynamic Umbilical Only)

These DPs include the full removal of the FPSO, flexible risers, dynamic umbilicals and the upper sections of the mooring lines (top chain, buoyancy and polyester line) to and including the lower H-shackle, excluding the bottom chain and anchors (please refer to Figure 1-2). The remaining field infrastructure, which is listed on the Section 29 Notices, will be subject to a separate combined DP and will be submitted separately to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED). Preparatory activities for the midwater arch (MWA) removal are within the scope of this DP. These preparatory activities, which will be carried out during the removal of the risers, are the sinking of the two MWAs and their gravity bases (see configuration in Appendix 2) which will be temporarily wet stored and removed later as part of the subsea decommissioning campaign. It is intended that the removal of the items identified within this programme shall be performed in such a way as to not prejudice any further decommissioning work in the field.

1.2. Requirement for Decommissioning Programmes

1.2.1. Installations

In accordance with the Petroleum Act 1998, the Section 29 Notice Holders of the Western Isles Installations (see Table 1.2) are applying to OPRED to obtain approval for decommissioning the installations detailed in Table of this programme. (See also Section 8 - Section 29 Notice Holder Letters of Support).

1.2.2. Pipelines

In accordance with the Petroleum Act 1998, the Section 29 Notice Holders of the Western Isles pipelines (see Table 1.4) are applying to OPRED to obtain approval for decommissioning the pipelines detailed in Table 2- of this programme (see also Section 8 – Section 29 Notice Holder Letters of Support).

In conjunction with public, stakeholder and regulatory consultation, the DPs are submitted in compliance with national and international regulations and OPRED guidelines. The schedule outlined in this document is for a five-year project (from Define to post-decommissioning surveys), see Section 6.3 for more detail.

1.3. Introduction

The Western Isles FPSO produces from the Harris and Barra fields. The fields are located in the UKCS, Block 210/24a situated 90km to the North East of Shetland and 12km west of the Tern platform (as the crow flies) which is the nearest fixed facility. The water depth of field varies from approximately 150m to 165m.

The fields have been developed using a floating production, storage and offloading (FPSO) facility. Oil is exported by shuttle tanker and excess produced gas is exported through a dedicated pipeline to the Tern-North Cormorant gas pipeline. Later in the field life due to a reduction of produced gas, gas has been continuously imported to balance the fuel gas deficit. The subsea facilities are tied back to the floating production facility by two subsea pipeline bundles and flexible risers. Water injection is required to maintain the reservoir pressure and gas lift is also required to assist production. Due to the nature of the reservoir, the production and injection wells are clustered around two drill centres: the North Drill Centre (NDC) and the South Drill Centre (SDC). Refer to Figure Figure 1-2 for schematic layout of the facilities.

The FPSO is not required to perform any further decommissioning related activities on the subsea infrastructure after completion of the decommissioning activities detailed in section 1.1, and it is proposed that the vessel is removed thereafter from its current location.

Following public, stakeholder and regulatory consultation, this combined DP is submitted without derogation and in full compliance with OPRED guidelines.

It should be noted that an Environmental Appraisal (EA) shall support the combined DP for the remaining subsea infrastructure following FPSO sailaway. Environmental impacts associated with the work in this DP have been assessed and detailed in Section 4 of this document.

1.4. Overview of Installation/Pipelines Being Decommissioned

1.4.1. Installation

Table 1-1 Installation Being Decommissioned (Western Isles FPSO)			
Fields	Harris Barra	**Production Type (Oil/Gas/Condensate)**	Oil & Gas
Water Depth (m)	150m to 165m	**UKCS block**	210/24a
Distance to median (km)	58	**Distance from nearest UK coastline (km)**	90
Surface Installation			
Number	Type	FPSO/Vessel Weight (Te)	Mooring System Weight (Te)
1	FPSO	29,284 (Lightweight, Gross Dry Weight)	2,385.2[1]
Subsea Installations			
Number		Type	
12 (3 groups of 4 lines)		Mooring Lines	

Table 1-2 Installations Section 29 Notice Holders Details		
Section 29 Notice Holders	**Registration Number**	**Equity Interest (%)**
Dana Petroleum (E&P) Limited	02294746	76.9188%
Dana Petroleum Limited	03456891	0%
Itochu Corporation	JP7120001077358	0%
NEO Energy (UKCS) Limited	02669936	23.0812%
NEO Energy Group Limited	SC470677	0%
NEO Energy Upstream UK Limited	SC279865	0%

[1] *2385.2 Te is the total weight for the sections of the mooring lines being removed in this DP comprising the upper section of mooring lines (top chain, buoyancy and polyester line) to and including the lower H-shackle; this is also shown in Figure 1-2.*

1.4.2. Pipelines

Table 1-3 Pipelines Being Decommissioned	
Number and total length (km) of Pipelines **Full details given in Table 2.2**	11 pipelines with 5.809km total length Note: this includes only the flexible risers and dynamic umbilicals accounted for under the total pipeline length stated

Table 1-4 Pipelines Section 29 Notice Holders Details		
Section 29 Notice Holders	**Registration Number**	**Equity Interest (%)**
Dana Petroleum (E&P) Limited	02294746	76.9188%
Dana Petroleum Limited	03456891	0%
Itochu Corporation	JP7120001077358	0%
NEO Energy (UKCS) Limited	02669936	23.0812%
NEO Energy Group Limited	SC470677	0%
NEO Energy Upstream UK Limited	SC279865	0%

1.5. Summary of Proposed Decommissioning Programmes

Table 1-5 Summary of Decommissioning Programmes	
Proposed Decommissioning Solution	**Reason for Selection**
1. Surface Installation (FPSO)	
Full Removal - The FPSO will be disconnected from its mooring system and risers. Following disconnection, the FPSO will be towed to shore for potential reuse, subject to evaluation of reuse options. The FPSO, if not reused, will be recycled or disposed of, whether in the UK or elsewhere in compliance with the standards set under the applicable laws of the United Kingdom or any other jurisdiction in which the FPSO vessel is to be recycled or disposed of. Once a reuse option is identified OPRED will be advised as part of the post-decommissioning approval process reporting regime. Should no reuse option be identified OPRED will be advised on the fate of the vessel. Any applications and permits required for work associated with removal of the vessel will be submitted.	The FPSO is suitable for reuse and is not needed for decommissioning activities within the field so it will be removed from station.

2. Mooring Lines	
Full Removal – Mooring lines will be recovered for reuse and recycling, in compliance with regulatory requirements - The upper sections of FPSO mooring lines up to and including the lower H-shackle will be lowered to the seabed and recovered during the FPSO sailaway campaign, the lower section of the chain connecting to the anchor piles is out with the scope of this DP and will be recovered at a later date and is included within a separate DP. Any applications and permits required for work associated with disconnection and removal of the upper sections of the mooring lines will be submitted.	Removes a potential obstruction to fishing operations and maximises reuse and recycling of materials.
3. Risers & Umbilicals	
Full Removal – The flexible risers and dynamic umbilicals will be disconnected subsea and at the FPSO and recovered by vessel for transport ashore for reuse, recycling or disposal. If recovery is not feasible at time of FPSO sailaway the risers and dynamic umbilicals may be temporarily wet stored for recovery at a later date. In this instance a guard vessel will remain on location after sailaway to mitigate hazards for other users of the sea. Investigations into potential reuse options are ongoing.	Leaves clear seabed and water column and to satisfy the regulatory requirement.
4. Interdependencies	
There is no anticipated impact on third-party assets or pipelines. This DP covers the FPSO sailaway and the disconnection and recovery of the upper section of its mooring lines. This DP also covers the disconnection and recovery of the flexible risers and dynamic umbilicals. Following riser recovery it is proposed that the MWAs will be sunk and temporarily wet stored in place (adjacent to their respective gravity bases, see schematics at Appendix 2) awaiting recovery or fully recovered intact as part of the subsea pipelines decommissioning campaign. The Western Isles subsea infrastructure (including MWAs) shall not be decommissioned as part of the FPSO sailaway campaign and is covered by a separate DP. Once the FPSO vessel has been removed, the MWAs (previously falling under the protection of the FPSO 500m zone) and mooring piles (bottom chain and anchors) and other pipelines related infrastructure (outside the FPSO 500m zone) will require appropriate safety measures to protect them to ensure they pose no threat to other users of the sea prior to their decommissioning sometime in the future. Given sailaway of the FPSO will occur prior to well P&A, well integrity testing will be conducted prior to disconnection of the FPSO. Thereafter monitoring will be conducted through ROV inspections prior to the commencement of the wells P&A operations. It is acknowledged that navigational aids and/or a guard vessel will be required to mitigate hazards for other users of the sea in instances where the 500m safety zone is no longer in place and/or potential navigational hazards remain. Detailed removals plans have not yet been established, however Dana shall ensure that Admiralty Charts and Notices to Mariners are updated, and engagement is maintained with the Health and Safety Executive (HSE) and Northern Lighthouse Board (NLB) to ensure appropriate mitigation measures are agreed and put in place.	

1.6. Field Location Including Field Layout and Adjacent Facilities

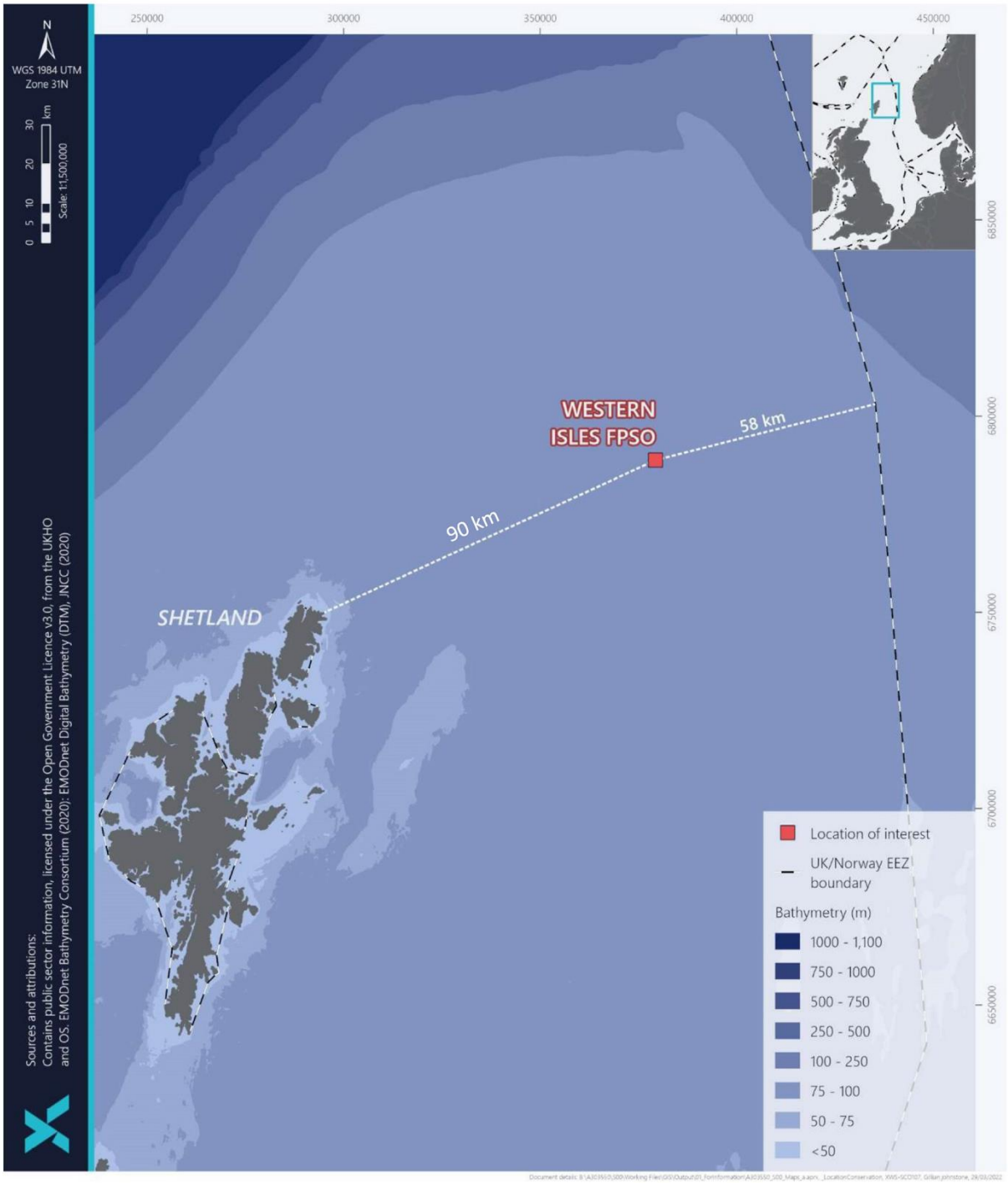


Figure 1-1 Field Location in UKCS

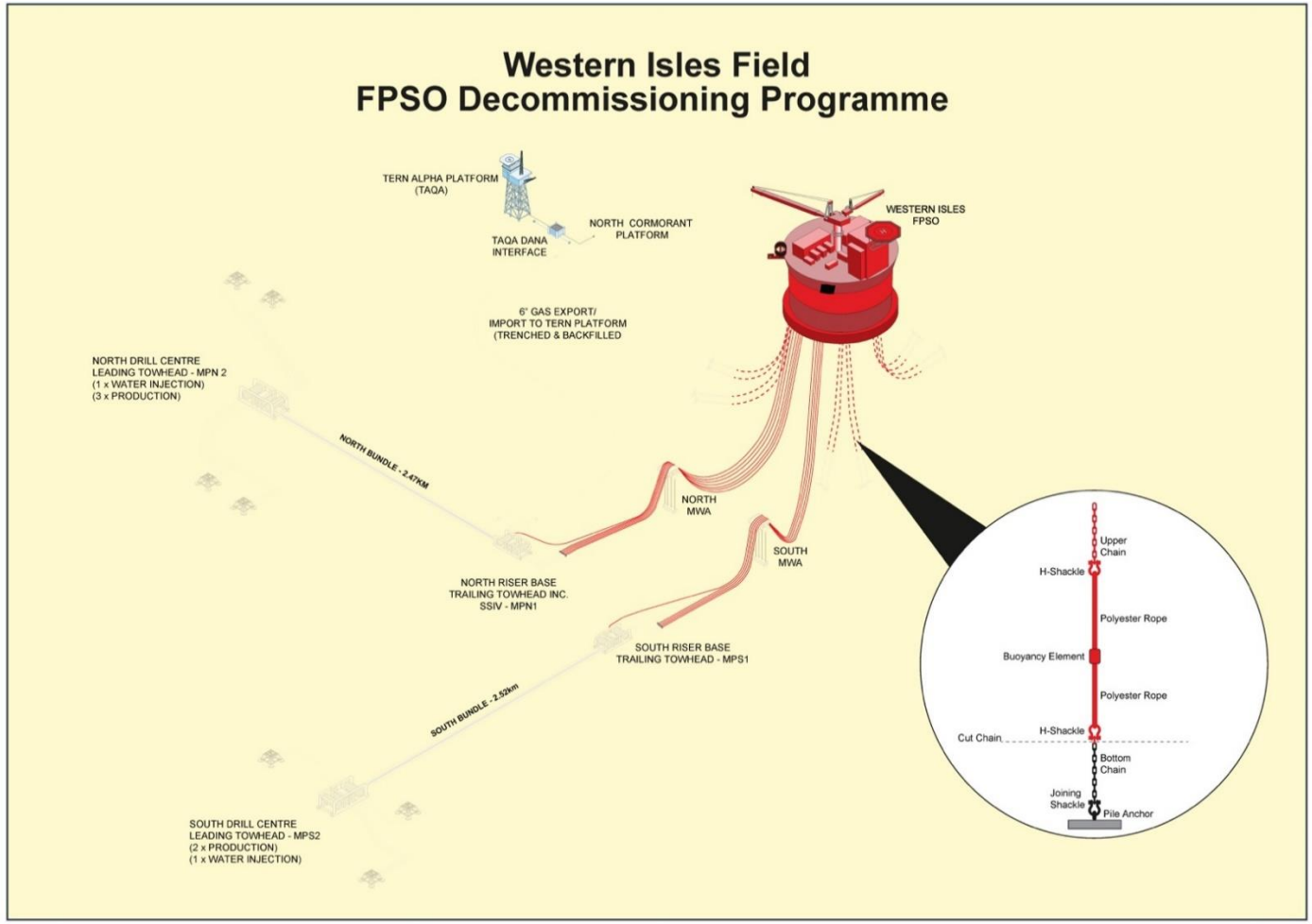


Figure 1-2 Field Layout – Red denotes equipment within this DP

Table 1-6 Adjacent Facilities					
Owner	**Name**	**Type**	**Distance/ Direction**	**Information**	**Status**
TAQA Bratani Limited	Tern	Platform	12 km/ENE	Third Party Asset	Operational
TAQA Bratani Limited	Cormorant A	Platform	21.1 km/ESE	Third Party Asset	Operational
TAQA Bratani Limited	Cormorant North	Platform	21.4 km/ENE	Third Party Asset	Operational
TAQA Bratani Limited	Eider A	Platform	26.9 km/ENE	Third Party Asset	Operational
EnQuest Heather	Heather A	Platform	30.8 km/SSE	Third Party Asset	Operational
Fairfield	Dunlin A	Platform	45.7 km/ENE	Third Party Asset	Non-operational
EnQuest Heather	Thistle A	Platform	47.2 km/ENE	Third Party Asset	Operational
CNR International	Ninian Northern	Platform	49.8 km/ESE	Third Party Asset	Non-Operational
Impacts of Decommissioning Proposals					
There is no direct impact on third party adjacent facilities as a result of the acitivies listed within this DP.					

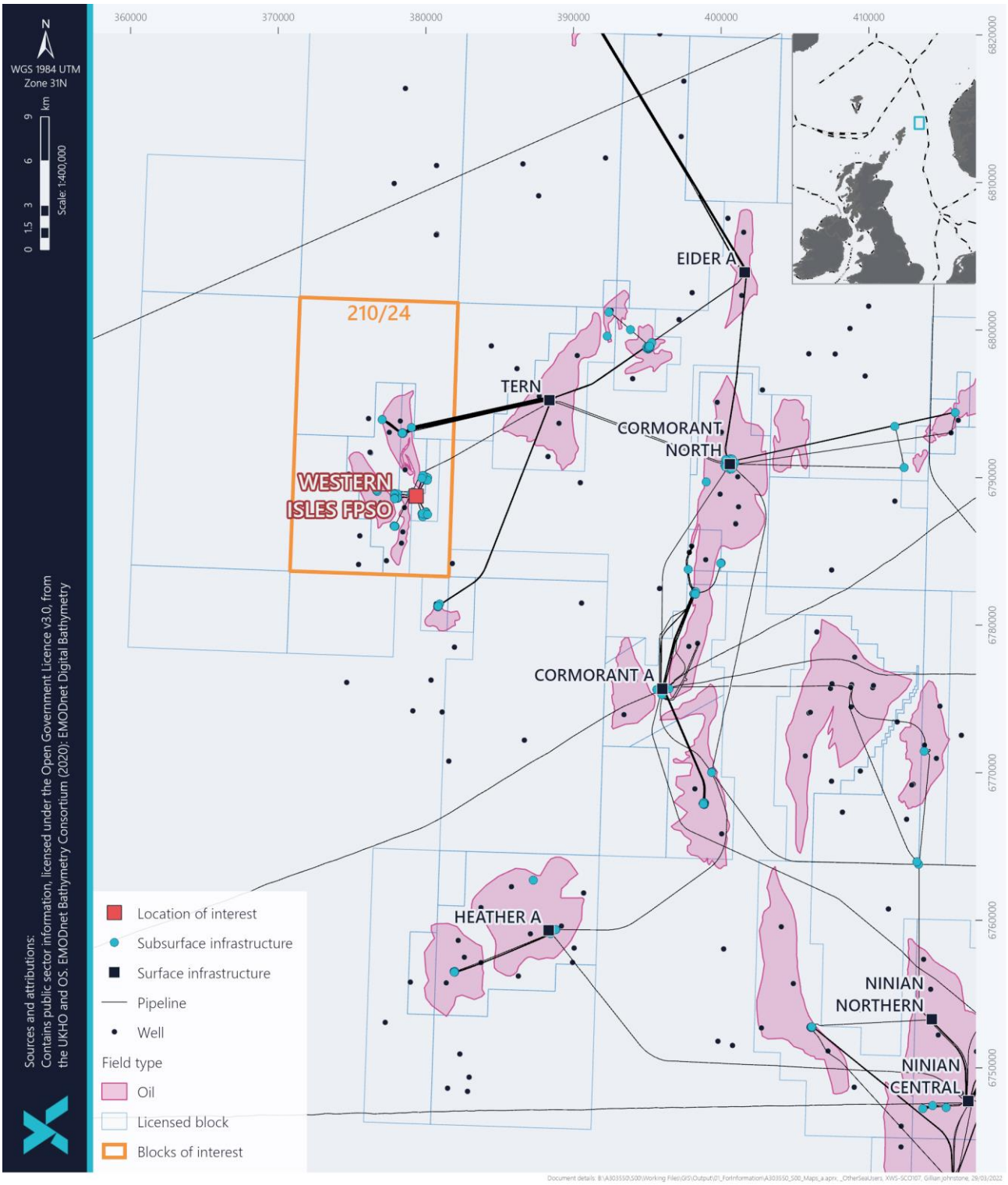


Figure 1-3 Adjacent Facilities

1.7. Industrial Implications

It is Dana's intention to develop a contract strategy that will result in an efficient and cost-effective execution of the decommissioning works. Details of decommissioning project opportunities will be published to alert potential contractors to competitive tender opportunities, together with direct invitations to relevant parties. Dana are already in discussion with the North Sea Transition Authority (NSTA) regarding Supply Chain Action Plan (SCAP) requirements.

It may be appropriate to use existing framework agreements to enable FPSO sailaway. However, this will be reviewed in the context of the wider Western Isles decommissioning project to achieve synergies with the subsea activities. Collaborations with other operators will also be explored in order to reduce vessel mobilisation costs.

2. Description of Items to be Decommissioned

2.1. Installations: Surface Facilities – FPSO

Table 2-1 Surface Facilities Information						
Name	**Facility Type**	**Location**		**Topsides/ Facilities**	**Mooring System**	
				Weight (Te)	**Weight (Te)**	**Number of mooring lines**
Western Isles	FPSO	WGS84 Decimal	0.753632 61.214486	29,284 (Lightweight, Gross Dry Weight)	Total weight is 2,385.2 Te (198.7 Te per mooring line) Section weight per mooring line: • 18.8 Te (lower polyester) • 51.0 Te (Buoyancy element c/w links) • 32.8 Te (upper polyester) • 91.0 Te (upper chain) • 2.5 Te (each H-shackle, 2 off)	12 mooring lines (3 groups of 4 lines): • Lower length polyester 400m x 260mm Dia. • Upper length polyester 700m x 260mm Dia. • Top chain length 180m x 159mm Dia.
		WGS84 Decimal Minute	0° 45’ 19.435” 61° 12’ 53.993”			

2.2. Pipelines Including Stabilisation Features

Table 2-2 Risers and Umbilicals to be Removed as Part of FPSO Sailaway									
Description	Pipeline Number (as per PWA)	Diameter (inches)	Length (km)	Description of Component Parts	Product Conveyed	From – To End Points	Burial Status	Pipeline Status	Current Content
Gas Import / Export Flexible Riser	PL3186	6	0.504	Flexible	Gas	Western Isles FPSO ESDV to 6" Gas Import / Export Flexible Riser Flange	Initially surface laid then in suspension over MWA to FPSO	Operational	Import gas
Production Flexible Riser	PL3729.1	8	0.501	Flexible	Oil	8" Production Flexible Riser Flange to Western Isles FPSO ESDV	Initially surface laid then in suspension over MWA to FPSO	Operational	Production fluid
Production Flexible Riser	PL3729.2	8	0.502	Flexible	Oil	8" Production Flexible Riser Flange to Western Isles FPSO ESDV	Initially surface laid then in suspension over MWA to FPSO	Operational	Production fluid
Water Injection Flexible Riser	PL3729.3	8	0.503	Flexible	Water	Western Isles FPSO ESDV to 8" Water Injection Flexible Riser Flange	Initially surface laid then in suspension over MWA to FPSO	Operational	Injection water

Table 2-2 Risers and Umbilicals to be Removed as Part of FPSO Sailaway									
Description	Pipeline Number (as per PWA)	Diameter (inches)	Length (km)	Description of Component Parts	Product Conveyed	From – To End Points	Burial Status	Pipeline Status	Current Content
Gas Lift Flexible Riser	PL3729.4	6	0.503	Flexible	Gas	Western Isles FPSO ESDV to 6" Gas Lift Flexible Riser	Initially surface laid then in suspension over MWA to FPSO	Operational	Lift gas
Dynamic Umbilical	PLU3729.5	9	0.564	Dynamic	Control systems	Western Isles FPSO to NRB Trailing Towhead	Initially surface laid then in suspension over MWA to FPSO	Operational	Pelagic (hydraulic control fluid), Pelagic (hydraulic control fluid), Scale inhibitor, Corrosion inhibitor, Wax inhibitor, Biocide, 50:50 MEG/water, Methanol, 50:50 MEG/water, Electrical Power/Signal Cables
Production Flexible Riser	PL3730.1	8	0.530	Flexible	Oil	8" Production Flexible Riser Flange to Western Isles FPSO ESDV	Initially surface laid then in suspension over MWA to FPSO	Operational	Production fluid

Table 2-2 Risers and Umbilicals to be Removed as Part of FPSO Sailaway									
Description	Pipeline Number (as per PWA)	Diameter (inches)	Length (km)	Description of Component Parts	Product Conveyed	From – To End Points	Burial Status	Pipeline Status	Current Content
Production Flexible Riser	PL3730.2	8	0.530	Flexible	Oil	8" Production Flexible Riser Flange to Western Isles FPSO ESDV	Initially surface laid then in suspension over MWA to FPSO	Operational	Production fluid
Water Injection Flexible Riser	PL3730.3	8	0.530	Flexible	Water	Western Isles FPSO ESDV to 8" Water Injection Flexible Riser Flange	Initially surface laid then in suspension over MWA to FPSO	Operational	Injection water
Gas Lift Flexible Riser	PL3730.4	10	0.530	Flexible	Gas	Western Isles FPSO ESDV to 6" Gas Lift Flexible Riser	Initially surface laid then in suspension over MWA to FPSO	Operational	Lift gas

Table 2-2 Risers and Umbilicals to be Removed as Part of FPSO Sailaway									
Description	Pipeline Number (as per PWA)	Diameter (inches)	Length (km)	Description of Component Parts	Product Conveyed	From – To End Points	Burial Status	Pipeline Status	Current Content
Dynamic Umbilical	PLU3730.5	9	0.612	Dynamic	Control systems	Western Isles FPSO to SRB Trailing Towhead	Initially surface laid then in suspension over MWA to FPSO	Operational	Pelagic (hydraulic control fluid), Pelagic (hydraulic control fluid), Scale inhibitor, Corrosion inhibitor, Wax inhibitor, Biocide, 50:50 MEG/wate, Methanol, 50:50 MEG/water, Electrical Power/Signal Cables

2.3. Inventory Estimates

The following diagrams indicate the percentage composition of the FPSO and associated subsea infrastructure that will be decommissioned.

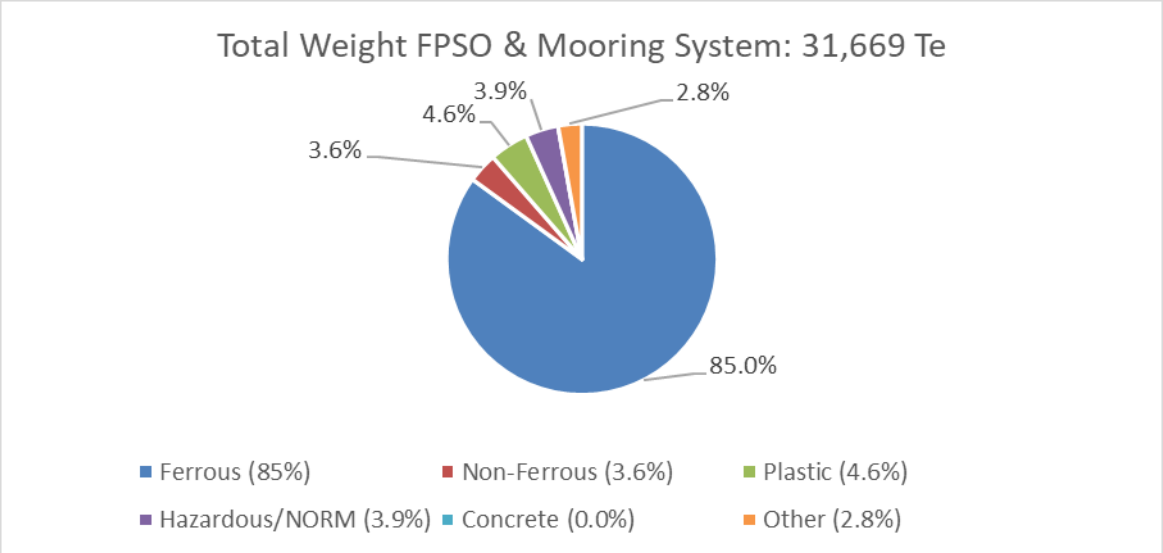


Figure 2-1 Pie Chart of Estimated Inventories (FPSO and Mooring System)

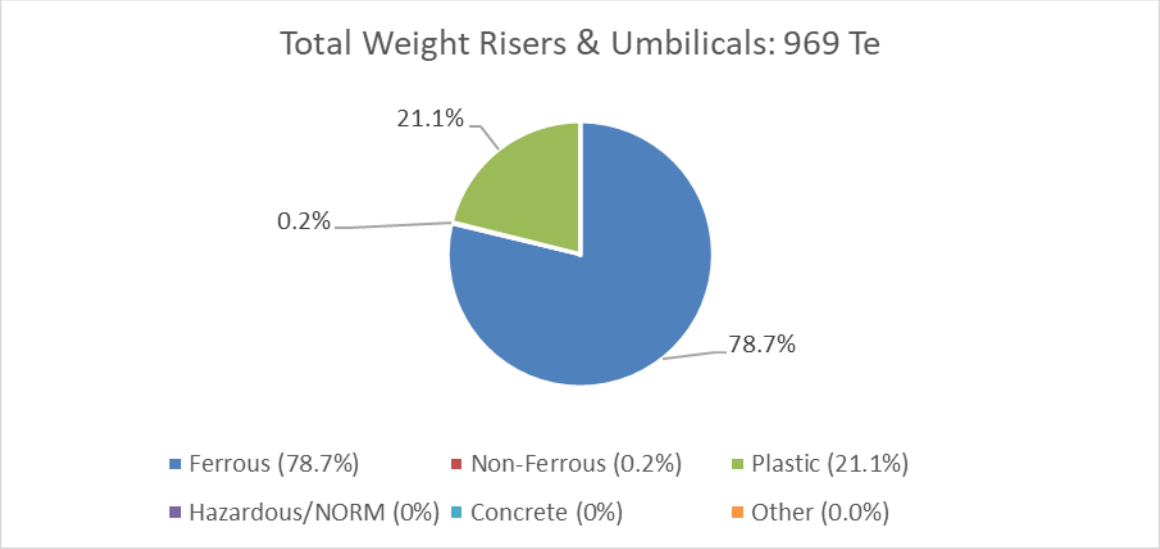


Figure 2-2 Pie Chart of Estimated Inventory (Risers and Umbilicals)

3. REMOVAL AND DISPOSAL METHODS

Decommissioning of the Western Isles FPSO, flexible risers, dynamic umbilicals and mooring lines will generate a quantity of waste. Dana is committed to establishing and maintaining environmentally acceptable methods for managing wastes in line with the Waste Framework Directive and principles of the waste hierarchy.

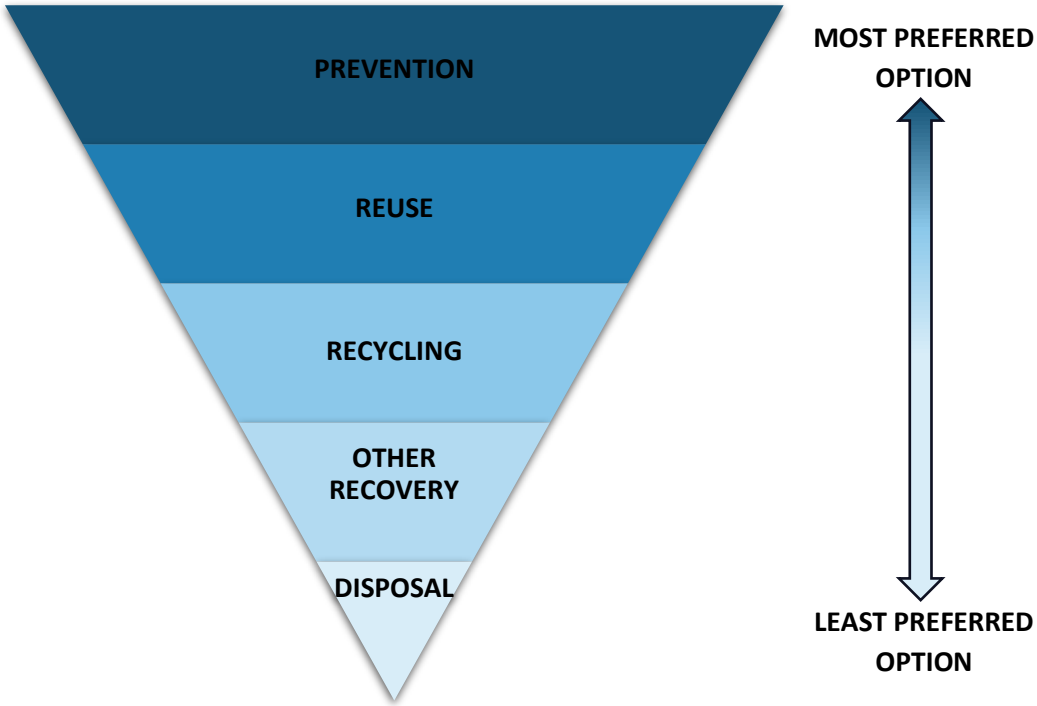


Figure 3-1 Waste Hierarchy

In line with the waste hierarchy, Dana are investigating potential reuse options for the Western Isles FPSO, flexible risers and dynamic umbilicals.

Where no reuse options exist, recovered infrastructure will be returned to shore and transferred to a suitably licensed waste treatment facility. It is expected that the recovered infrastructure, i.e. risers and umbilicals, will be cleaned before being reused / recycled. OPRED will be advised once a removal method is defined and once a disposal yard is selected.

An appropriately licensed disposal company and yard will be identified through a selection process that will ensure that the chosen facility demonstrates a proven track record of waste stream management throughout the deconstruction process, the ability to deliver innovative reuse / recycling options, and ensure the aims of the waste hierarchy are achieved.

Geographic locations of potential disposal yard options may require the consideration of Trans Frontier Shipment of Waste (TFSW), including hazardous materials. Early engagement with the regulatory authorities will ensure that any issues with TFSW are addressed. Once an appropriately licensed waste contractor has been selected OPRED and SEPA will be informed.

3.1. Surface Facilities – FPSO

3.1.1. FPSO Decommissioning Overview

The Western Isles FPSO has a design life of 20 years when installed at the field and is capable of staying on station for the full design life of the FPSO.

After completion of the operation of the Western Isles FPSO at its current site, the FPSO is to be reused, subject to evaluation of reuse options. If a reuse option is not identified the FPSO shall be recycled/disposed of at appropriate facilities; should this happen OPRED will be advised on the fate of the vessel.

3.1.2. FPSO Description

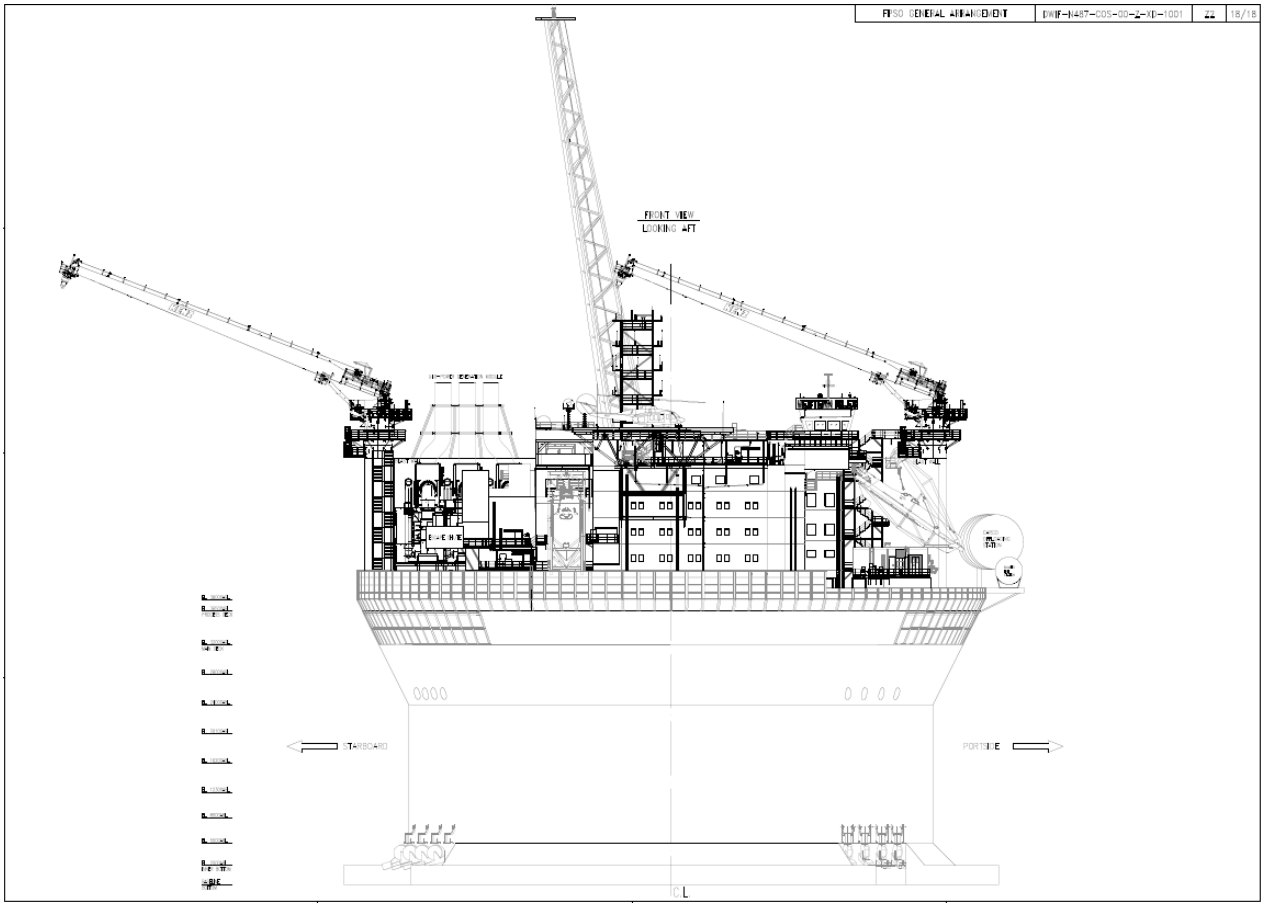


Figure 3-2 Diagram of FPSO

3.1.3. Preparation/Cleaning

The Western Isles FPSO hull is compartmentalised into ballast tanks, cargo tanks, clean and dirty slops tanks and various other utility systems including open drains, diesel and potable water.

Prior to FPSO mooring disconnection all hydrocarbon bearing tanks will be pumped out, flushed, purged and vented as far as reasonably practicable.

It is expected that on completion of the drain, flush, purge and vent (DFPV) process and fluid reinjection there will be a small volume of residual fluids left in the slops tanks. This will mainly consist of residual flushing fluids (primarily seawater), and rainwater run-off from the open drains systems.

All other in deck tanks shall be DFPV as far as practicable including hazardous and non-hazardous open drains that will likely hold residual run off and rain water.

The methods that will be used to vent and purge the FPSO prior to removal to shore are summarised in Table 3.1.

Table 3-1 Cleaning of FPSO for Removal

Waste Type	Composition of Waste	Disposal Route
Onboard hydrocarbons	Process fluids, fuels and lubricants	On-board hydrocarbons will be offloaded by shuttle tanker. Remaining hydrocarbons and wash fluids will be injected into a donor well. Should this approach be unsuccessful, on-board hydrocarbons will be transported ashore for reuse/disposal, these activities will all be carried out under the appropriate permits.
Other hazardous materials	NORM, LSA Scale, any radioactive material, instruments containing heavy metals, batteries	If these are identified, transported ashore for reuse/disposal by appropriate methods these activities will all be carried out under the appropriate permits.

3.1.4. Removal Methods

Table 3-2 FPSO Removal Methods	
Method	**Description**
Reverse Install/Sailaway	Pigging and flushing operations shall occur from the Western Isles FPSO in order to ensure, where possible, that all pipelines have been depressurised, cleaned, flushed and isolated prior to FPSO departure. Mooring line lower section (bottom chain section) shall be cut below the H-shackle, leaving anchors in place (the anchors discussed in the Western Isles subsea infrastructure decommissioning programmes, which is subject to comparative assessment). The flexible risers and dynamic umbilicals shall be disconnected subsea and at the FPSO and recovered for transport to shore. If recovery is not feasible at time of FPSO sailaway the risers and dynamic umbilicals may be temporarily wet stored for recovery at a later date. In this instance a guard vessel will remain on location after sailaway to mitigate hazards for other users of the sea. The FPSO will be towed to port for cleaning and, or refurbishment before being reused, or towed to an alternative location at a licensed facility to be decommissioned. Reuse opportunities are actively being reviewed and are ongoing. OPRED will be advised when any decisions regarding reuse are made.

3.2. Mooring Lines

The mooring system consists of 12 mooring lines (3 groups of 4 lines). The horizontal projection of the mooring lines is presented in the figure below.

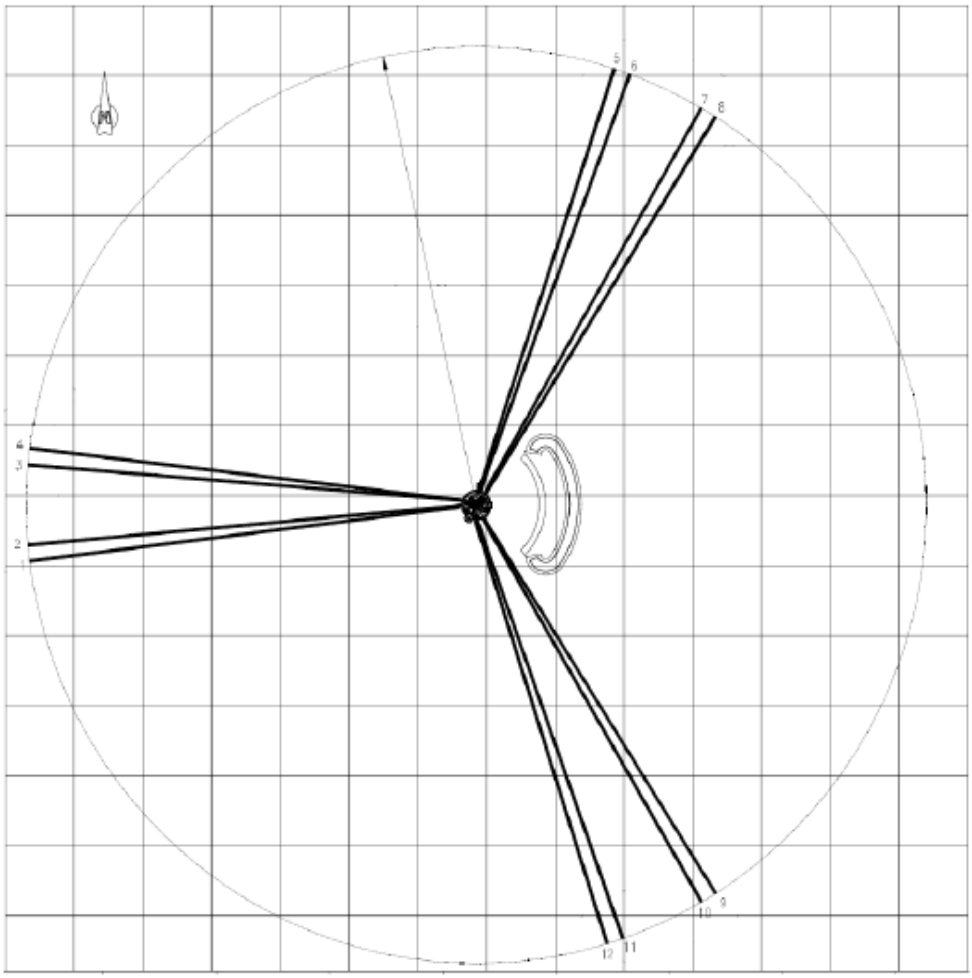


Figure 3-3 Mooring Layout

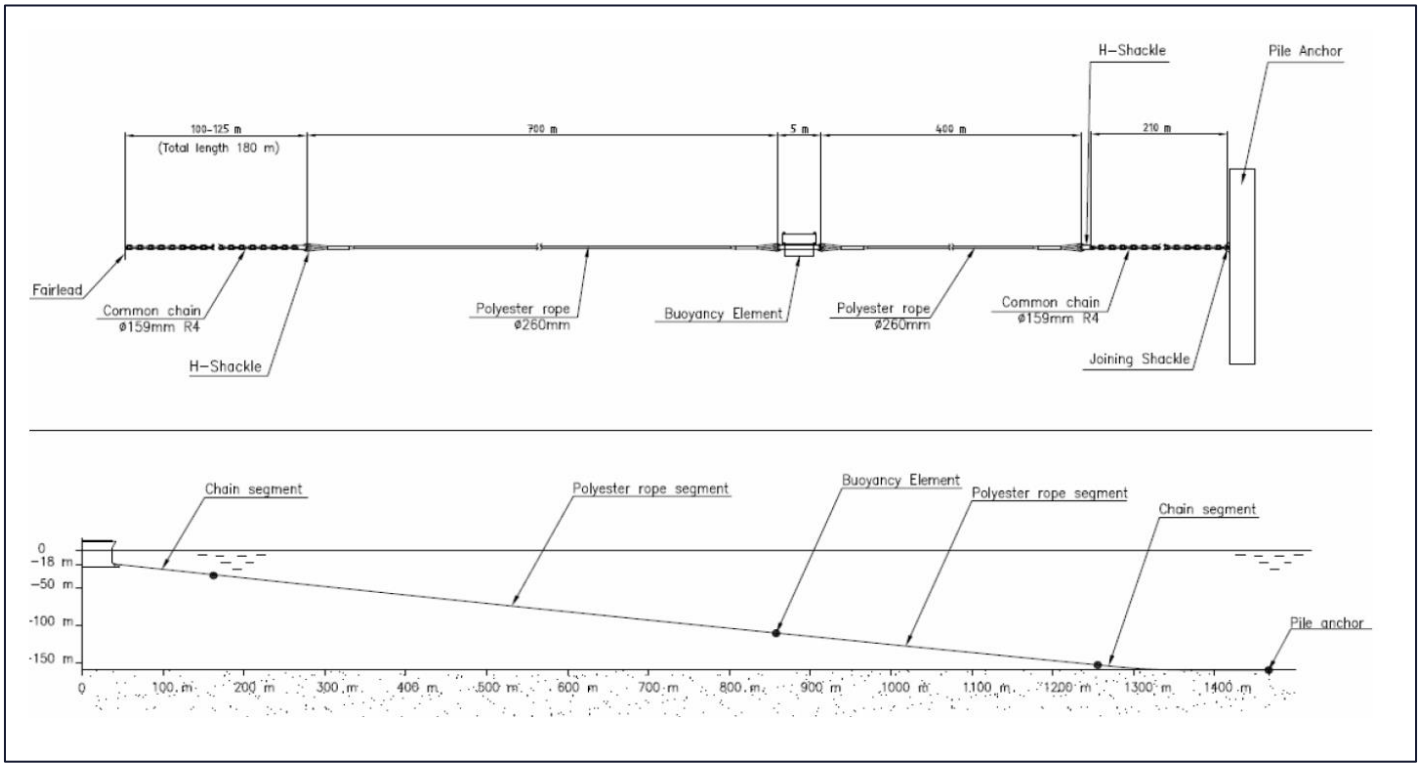


Figure 3-4 Mooring Line Arrangement

Table 3-3 Mooring Lines Decommissioning Options			
Mooring System	**Number**	**Option**	**Disposal Route (if applicable)**
FPSO mooring lines	12	Recovery of mooring lines except bottom chain and anchor piles	Return to shore for reuse, recycling, or disposal

3.3. Risers and Umbilicals

The scope of this DP includes the flexible risers and dynamic umbilicals between the towheads and the Western Isles FPSO. All the risers and umbilicals shall be fully removed consistent with 10.18 in the "Decommissioning of Offshore Oil and Gas Installations and Pipelines Guidance Notes, November 2018". The risers and associated pipelines will be flushed and cleaned prior to disconnection activities taking place. Any residual fluids from within the risers will be released to the environment under permit during the recovery operations. Where necessary further cleaning and decontamination will take place onshore prior to recycling/reuse.

3.3.1. Comparative Assessment

A Comparative Assessment (CA) has not been carried out for the flexible risers and dynamic umbilicals covered by this DP as the lines are suspended in the water column and are planned to be fully recovered following their disconnection from the towhead and FPSO. Although detailed engineering for their recovery has not yet been performed the risers and umbilicals will be recovered to a vessel for transport ashore.

3.4. Waste Streams

Table 3-4 Waste Stream Management Methods	
Waste Stream	**Removal and Disposal method**
Bulk liquids	On-board hydrocarbons will be offloaded by shuttle tanker. Remaining hydrocarbons and wash fluids will be injected into a donor well. Should this approach be unsuccessful, on-board hydrocarbons will be transported ashore for reuse/disposal. Further cleaning and decontamination will take place onshore prior to reuse.
Marine growth	Marine growth on the FPSO and risers/dynamic umbilicals is expected to dry out and detach during recovery/sailaway. As part of infrastructure disposal or refurbishment operations remaining marine growth will be removed and disposed of in accordance with the regulations. Annual ROV inspection has shown no significant marine growth is present.
NORM/LSA Scale	NORM may be partially removed offshore under appropriate permit.
Asbestos	No asbestos is expected in or on the FPSO due to its recent construction.
Other hazardous wastes	Will be recovered to shore and disposed of under appropriate permit.
Onshore Dismantling sites	Appropriate licensed sites will be selected. Facility chosen by removal contractor must demonstrate proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver innovative recycling options.

Table 3-5 Inventory Disposition (tonnes)			
	Total Inventory Tonnage	Planned tonnage to shore	Planned left *in situ*
Installations	31,669	31,669	0
Pipelines	969	969	0

4. ENVIRONMENTAL APPRAISAL OVERVIEW

There will be some planned and unplanned environmental impacts arising from the sailaway of the Western Isles FPSO. Dana has undertaken an ENVID in line with the Decommissioning Guidance Notes regarding the activities described within this DP.

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.

Dana understands the importance of minimising the potential for environmental impact during decommissioning, in parallel with safety and technical feasibility requirements. To this end, environmental impacts will be fully considered in the design of arrangements for the disconnection and sailaway of the FPSO. Where necessary, additional measures will be developed in order to limit the extent of any potential impact.

All operations described in this DP will be subject to all the relevant environmental permits and approvals. All permit applications and reporting will be managed through a Permits, Licences, Authorisations, Notifications and Consents (PLANC) register.

The ENVID did not identify any activities required to undertake the removal of the Western Isles FPSO that would be considered to have a significant environmental Impact. As a result a standalone EA has not been considered necessary to support these decommissioning activities.

4.1. Environmental Sensitivities

Table 4-1 Environmental Sensitivities

Environmental Receptor	Main Features
Conservation interests	The Western Isles FPSO is located approximately 62 km from the nearest conservation site – the Pobie Bank Reef Special Area of Conservation (SAC). The SAC is designated for the presence of Annex I habitat Reefs. Pobie Bank's stony and bedrock reef provides a habitat to an extensive community of encrusting and robust sponges and bryozoans, which are found throughout the site. In the shallowest areas the bedrock and boulders also support encrusting coralline algae. All other conservation sites are located over 90 km from the project area. The closest coastal designated site is the Hermaness, Saxa Vord and Valla Field Special Protection Area (SPA) (approximately 93 km from the Western Isles FPSO). Seabed survey imagery did not identify any evidence of Annex I habitats. Only one individual of the ubiquitous ocean quahog *Arctica islandica* was found in a single sample (Gardline, 2012). There was no other evidence of OSPAR threatened and/or declining species or any UK Biodiversity Action Plan (UKBAP) species in the project area.

Table 4-1 Environmental Sensitivities	
Environmental Receptor	**Main Features**
Seabed	Site specific seabed data indicated that the sediments around the FPSO and drill centres were poorly sorted silty shelly gravelly sands (medium sands according to the Wentworth classification) (Gardline, 2010a, 2012). The sediment particle size was generally smaller along the pipeline route from the FPSO to Tern pipeline. The sediments were considered fine sand under the Wentworth classification (Gardline, 2010a, 2010b). The sediments near the Western Isles FPSO were typical of those at this latitude and water depth in the North Sea (Gardline, 2010a, 2010b). Sediment organic content and hydrocarbon concentrations were mostly consistent with background levels for the Northern North Sea (NNS) and were comparable between surveys (Gardline, 2010a, 2010b, 2012), with the exception of two stations in 2012 which exhibited comparatively elevated Total Hydrocarbon Concentration (THC) levels (Gardline, 2012). As with offshore sediments in the North Sea, the Polychaetes was the dominant infaunal species group across both surveys (Gardline, 2010a, 2012). Infaunal species composition was largely consistent between surveys (Gardline, 2010a, 2012). In keeping with sediments at this latitude, there were minor variations in densities between surveys at some locations; however, the indices of diversity and evenness were broadly similar. Whilst these metrics indicated a clean and undisturbed seabed at most locations, there was evidence of organic enrichment through slightly elevated THC concentration and reduced faunal densities at one location, however the cause of this is not known (Gardline, 2012).
Fish	The fields are located in an area of high nursery intensity for blue whiting *Micromesistius poutassou*. Anglerfish (Monkfish) *Lophius piscatorius*, European hake *Merluccius merluccius*, haddock *Melanogrammus aeglefinus*, herring *Clupea harengus*, ling *Molva molva*, mackerel *Scomber scombrus*, Norway pout *Trisopterus esmarkii*, spurdog *Squalus acanthias* and whiting *Merlangius merlangus* all use the area as nursery grounds (Coull *et al*., 1998; Ellis *et al.*, 2012). Haddock, Norway pout, saithe *Pollachius virens* and whiting use the area as grounds for spawning, with spawning efforts for these species being concentrated in the first half of the year (between January and June). Of the species which are known to occur in the area in some capacity, a number are species of conservation concern. Anglerfish (Monkfish), blue whiting, herring, ling, mackerel, Norway pout, saithe and whiting are all Scottish Priority Marine Features (PMFs). Additionally, spurdog is an OSPAR listed Threatened and/or Declining Species.

Table 4-1 Environmental Sensitivities	
Environmental Receptor	**Main Features**
Fisheries	The Western Isles FPSO sits within ICES rectangle 51F0. According to Scottish Government (2021) landings data for 2020, Rectangle 51F0 is targeted primarily for demersal species. In 2020, demersal catch live weight was 1,195 Te with a corresponding value of £1,190,217. This accounts for approximately 99% of landings and approximately 99% of value for that year. To put landings into context, a total of 518,381 tonnes with a value of £644,655,638 was landed in the UK in 2020 (Scottish Government, 2021). Fisheries in Rectangle 51F0 contribute approximately 0.23% of landings and 0.31% of value when compared to overall UKCS values (Scottish Government, 2021). Overall, fishing effort is relatively low, although there is a recent trend showing increased effort; 2020 saw 303 fishing days compared to 2016 which experienced 121 days. This is due to the recent spread in fishing effort throughout the year (in 2019 and 2020). In the past, effort was mostly concentrated in the summer months and in November and December. As of 2020, fishing took place in all months, with the exception of December. However, overall fishing effort remains relatively low as there are <100 days of fishing in each month Scottish Government (2021).

Table 4-1 Environmental Sensitivities	
Environmental Receptor	**Main Features**
Marine Mammals	Harbour porpoise *Phocoena phocoena* are frequently found throughout UK waters. They typically occur in groups of one to three individuals in shallow waters, although they have been sighted in larger groups and in deep waters. They are present in UK waters throughout the year and are most likely to be observed in the Western Isles fields in the summer months (Reid *et al.,* 2003). The density of harbour porpoise in the project area is estimated to be 0.402 animals/km^2 (Hammond *et al.,* 2021). Harbour porpoise is an Annex II listed species and European Protected Species (EPS). Minke whales *Balaenoptera acutorostrata* occur in water depths of 200 m or less throughout the NNS and Central North Sea (CNS). They are usually sighted in pairs or in solitude; however, groups of up to 15 individuals can be sighted feeding. It appears that animals return to the same seasonal feeding grounds (Reid *et al*., 2003). Minke whales are most likely to be observed in the project area in the summer months and in low numbers. Their density is predicted to be 0.0316 animals/km^2 which is the highest across all areas surveyed (Hammond et al., 2021). Minke whale are also listed as a UK BAP species. No other cetacean species are likely to be present in the project area. Two species of seal are resident in UK waters: the grey seal *Halichoerus grypus* and the harbour or common seal *Phoca vitulina*, both occurring regularly over large parts of the North Sea. The estimated grey seal-at-sea density within the Western Isles area is thought to be 0.009 individuals per 25 km^2 (Russell *et al*., 2017). The percentage of the grey seal population in the Western Isles area at any given time is ≤0.001% (Carter and Russell, 2020). The estimated harbour seal-at-sea density in the area is thought to be 0.005 individuals per km^2 (Russell *et al*., 2017). The percentage of the harbour seal population in the Western Isles area at any given time is ≤0.001% (Carter and Russell, 2020).
Birds	The area surrounding the Western Isles fields is utilised by the following species at various times of the year: European storm petrel *Hydrobates pelagicus*, long tailed skua *Stercorarius longicaudus*, northern gannet *Morus bassanus*, great skua *Stercorarius skua*, black-legged kittiwake *Rissa tridactyla*, glaucous gull *Larus hyperboreus*, great black-backed gull *Larus marinus*, herring gull *Larus argentatus*, common guillemot *Uria aalge*, little auk *Alle alle*, razorbill *Alca torda* and Atlantic puffin *Fratercula arctica* (Kober *et al*., 2010).

Table 4-1 Environmental Sensitivities	
Environmental Receptor	**Main Features**
Other Users of the Sea	Shipping activity within Blocks 210/24 and 210/25 is considered to be very low and low respectively (Oil and Gas Authority, 2016). There are no operational offshore wind farms (OWFs) in the vicinity of the Western Isles fields. However, the project area is close to areas identified under the Innovation and Targeted Oil and Gas (INTOG) scheme. The INTOG areas represent areas within which projects targeting oil and gas decarbonisation or which will generate >100 MW of energy will be considered for approval (Marine Scotland, 2021). The Western Isles FPSO lies approximately 27 km southwest of the NE-a and NE-b INTOG areas. There are no other renewables developments, proposed or active, near the project area. There are no active or disused cables within 100 km of the Western Isles field. The CANTAT-3 active telecom cable is located approximately 107 km northeast of the Western Isles FPSO. Blocks 210/24 and 210/25 are not considered blocks of concern to the Ministry of Defence (Oil and Gas Authority, 2019). There are few wrecks recorded in the vicinity of the Western Isles fields. The (non-dangerous) closest wreck is 20 km due east of the Western Isles FPSO. Closer to the project area lies an area of foul ground and an unknown obstacle; both are 10 km from the FPSO and are located <1 km from the associated pipeline (NMPi, 2022).

4.2. Potential Environmental Impacts and their Management

4.2.1. Environmental Impact Assessment Summary

Table 4-2 Environmental Impact Management		
Activity	**Main Impacts**	**Management**
FPSO Sailaway	Fuel use/atmospheric emissions	• Minimal number of vessels deployed • Use of low sulphur diesel • Compliance with Dana's Vessel Assurance process/procedure • Project Energy and Emissions study
	Hazard to navigation	• UKHO standard communication channels including Kingfisher, Notice to Mariners and radio navigation warnings • Use of Automatic Identification Systems (AIS) and other standard navigational controls • Agreed passage plan and tow procedure • Compliance with Dana Stakeholder Engagement Management Plan
	Disturbance of nesting seabird habitat	• Compliance with relevant guidance (e.g. "Undertaking of Seabird Survey Methods for Offshore Installations: Black-legged kittiwakes" (JNCC, 2021) • No history of nesting seabirds on the installation • Implementation of a Nesting Seabird Monitoring Plan

Table 4-2 Environmental Impact Management		
Activity	**Main Impacts**	**Management**
Disconnection and recovery of dynamic flexible risers and dynamic umbilicals	Chemical/oil discharge to sea	• Appropriate Risk Assessment through the MATs/SATs (OCR) System • Flushing and cleaning of the subsea system ahead of execution phase • Selection of flushing chemicals with lesser potential for environmental impact
	Fuel use/atmospheric emissions	• Minimal number of vessels deployed • Use of low sulphur diesel • Compliance with Dana's Vessel Assurance process/procedure • Project Energy and Emissions study
	Seabed disturbance (Contingency laydown and wet store)	• Controlled lowering and laydown of dynamic flexible risers and dynamic umbilicals to minimise area of seabed impacted • Potential impacts will be addressed in the Environmental Assessment Justification submitted in support of the requisite Marine Licence application
	Physical presence (Contingency laydown and wet store)	• Stakeholder engagement – notably with Scottish Fishermen's Federation (SFF) and NLB. • Controlled lowering and laydown of dynamic flexible risers and dynamic umbilicals within 500m zone • Any infrastructure outside the 500m zone is already exposed to fishing and managed accordingly • ERRV/Guard Vessel will remain on station in period between FPSO sailaway and recovery of the dynamic flexible risers and dynamic umbilicals • Potential impacts will be addressed in the Environmental Assessment Justification submitted in support of the requisite Marine Licence application

Table 4-2 Environmental Impact Management		
Activity	**Main Impacts**	**Management**
Cutting and recovery of mooring lines	Fuel use/atmospheric emissions	• Minimal number of vessels deployed • Use of low sulphur diesel • Compliance with Dana's Vessel Assurance process/procedure • Project Energy and Emissions study
	Seabed disturbance (laydown and potential wet store)	• Controlled lowering and laydown of mooring lines to minimise area of seabed impacted • Potential impacts will be addressed in the Environmental Assessment Justification submitted in support of the requisite Marine Licence application
	Onshore waste management	• Investigate redeployment/reuse opportunities • Use of appropriately authorised waste management contractor(s) and facilities • Compliance with the Waste Hierarchy • Compliance with project Waste Management Plan
Vessels	Hazard to navigation	• Safety zones (where/when applicable and being mindful that arrangements will change at certain stages of the project) • UKHO standard communication channels including Kingfisher, Notice to Mariners and radio navigation warnings • Use of Automatic Identification Systems (AIS) and other standard navigational controls • Compliance with Dana Stakeholder Engagement Management Plan
	Discharges to sea	• Treatment and maceration of wastewater to IMO standards • Bilge management procedures • Good operating practices • Vessel equipment maintained according to manufacturer's recommendations • Compliance with Dana's Vessel Assurance process/procedure
	Noise	• Vessel noise is unlikely to be above ambient noise levels • No use of explosives

Table 4-2 Environmental Impact Management		
Activity	**Main Impacts**	**Management**
Vessel (continued)	• Fuel use/atmospheric emissions	• Minimal number of vessels deployed • Use of low sulphur diesel • Vessel equipment maintained according to manufacturers' recommendations • Compliance with Dana's Vessel Assurance process/procedure • Project Energy and Emissions study
Waste	• Use of landfill • Radioactive waste/NORM	• Detailed inventories (including IHM) • Use of appropriately authorised waste management contractor(s) and facilities • Compliance with the Waste Hierarchy • Compliance with project Waste Management Plan • Compliance with project Waste Management Targets • SCAP

5. INTERESTED PARTY CONSULTATIONS

5.1. Consultations Summary

Table 5-1 Summary of Stakeholder Comments		
Who	**Comment**	**Response**
Statutory Consultations		
National Federation of Fishermen's Organisations	For completion post-consultation	
Scottish Fishermen's Federation	For completion post-consultation	
Northern Ireland Fish Producers Organisation	For completion post-consultation	
Global Marine Systems Limited	For completion post-consultation	
Public	For completion post-consultation	
Informal Stakeholder Consultations		
HSE	Introductory engagement on the Western Isles FPSO and subsea decommissioning programmes on 28th July 2022 (virtual meeting)	
SEPA	Opening engagement and general information sharing on the Western Isles FPSO and subsea decommissioning on 23 January 2023 (virtual meeting).	
SFF	Introductory engagement on the Western Isles FPSO and subsea decommissioning programmes on 28th July 2022 (virtual meeting)	
JNCC	Introductory engagement on the Western Isles FPSO and subsea decommissioning programmes on 11th August 2022 (virtual meeting)	

6. PROGRAMME MANAGEMENT

6.1. Project Management and Verification

A Project Management team will be appointed to manage suitable sub-contractors for the removal of the Western Isles FPSO. Standard procedures for operational control and hazard identification and management will be used. Where possible the work will be coordinated with other decommissioning operations in the NNS. The Project Management team will monitor and track the process of consents and the consultations required as part of this process. Any changes in the details of the offshore removal programme will be discussed and agreed with OPRED.

6.2. Post-Decommissioning Debris Clearance and Verification

The remaining subsea infrastructure (MWAs, mooring piles and other pipeline related equipment) will be decommissioned separate to the FPSO, risers, umbilicals and mooring line removal scopes, and are covered within the separate subsea infrastructure DP. As such seabed clearance for both DPs will be undertaken following completion of all the subsea works.

It is acknowledged that navigational aids and/or a guard vessel will be required to mitigate collision hazards for other users of the sea in instances where the 500m safety zone is no longer in place and/or potential navigational hazards remain. Detailed removals plans have not yet been established, however Dana shall ensure that Admiralty Charts and Notices to Mariners are updated, and engagement maintained with the HSE and NLB to ensure appropriate mitigation measures are agreed and put in place.

Following completion of all decommissioning works in the Western Isles (Barra and Harris) Fields a post-decommissioning site survey will be carried out around a 500m radius of installation sites and a 100m corridor (50m either side) along each existing pipeline route to identify any debris. Any seabed debris related to offshore oil and gas activities will be recovered for onshore disposal or recycling in line with existing disposal methods. There is an assumption that non-intrusive methods will be used and trawling will only be used after non-intrusive measures have been exhausted. Upon verification of a clear seabed a statement of clearance to all relevant governmental departments and non-governmental organisations will be issued. It is proposed the verification work for the scope of this DP be completed in conjunction with the subsea DP.

6.3. Schedule

A proposed schedule for the decommissioning of Western Isles is provided in Figure 6.1. The commencement of any execution activities is subject to commercial agreements and contracts. At this time this schedule is based on earliest anticipated CoP, subject to further discussions.

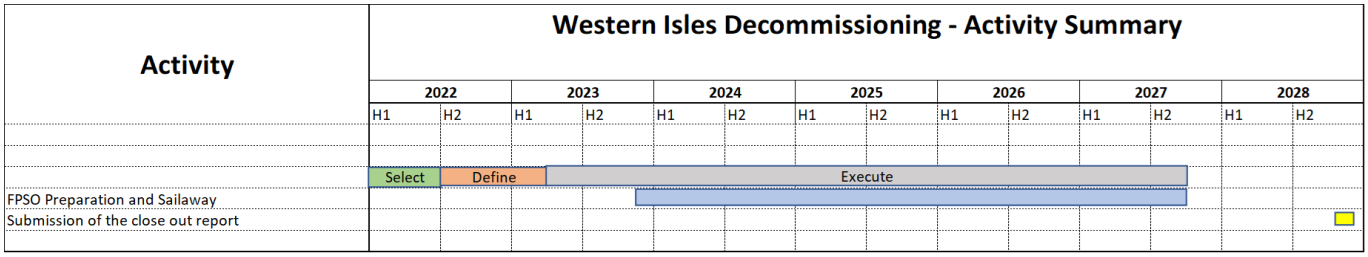


Figure 6-1 Gantt Chart of Project Plan

6.4. Costs

The decommissioning programme costs will be provided directly to OPRED.

6.5. Close Out

On completion of all works captured by this DP, only the FPSO, mooring lines, flexible risers and dynamic umbilicals will be decommissioned. As such post-decommissioning surveys will be limited to “as-left” surveys of associated seabed and subsea infrastructure affected by these works.

Subject to agreement with OPRED, findings from these surveys shall be included in a close out report submitted to OPRED within one year of the completion of the Western Isles FPSO decommissioning scope. The report will detail the outcomes of surveys as well as explain any major variances from the programme. The debris clearance, verification of seabed clearance and the first post-decommissioning environmental survey shall be performed after completion of the Western Isles subsea infrastructure decommissioning scope.

6.6. Post-Decommissioning Monitoring and Evaluation

A post-decommissioning environmental seabed survey, centred around sites of the wellheads and installations, will be carried out after the completion of the decommissioning of the whole area including the infrastructure detailed within the separate Subsea DP. The survey will assess the chemical, physical and biological impacts of the decommissioning activities and be compared with the pre decommissioning survey. All pipeline routes and installation sites will be the subject of post-decommissioning monitoring surveys, the frequency of which will be agreed between Dana and OPRED taking a risk-based approach.

Prior to FPSO removal, a risk-based assessment will be undertaken to determine suitable marking of the subsea infrastructure around the FPSO location. It is acknowledged that navigational aids and/or a guard vessel may be required to mitigate hazards for other users of the sea.

7. SUPPORTING DOCUMENTS

It has not been deemed necessary to prepare a comparative assessment or an environmental appraisal in support of this combined DP. This approach has been agreed with OPRED.

Table 7-1 Supporting Documents	
Reference	*Title*
Cost schedule	Provided in confidence to OPRED
Reference	*Title*
Carter and Russell, 2020	Carter, M. and Russell, D. J. F. (2020). At-Sea Density Maps for Grey and Harbour Seals in the British Isles (2020) (dataset). Available online at: https://risweb.st-andrews.ac.uk/portal/en/datasets/atsea-density-maps-for-grey-and-harbour-seals-in-the-british-isles-2020-dataset(dcebb865-3177-4498-ac9d-13a0f10b74e1).html
Coull et al., 1998	Coull, K., Johnstone, R. & Rogers, S., 1998. Fisheries Sensitivity Maps in British Waters, Published and distributed by UKOOA Ltd. Available online at: http://marine.gov.scot/data/fisheries-sensitivity-maps-british-waters-coull-et-al-1998
Ellis et al., 2012	Ellis, J.R., Milligan, S., Readdy, L., South, A., Taylor, N. & Brown, M., 2012. Mapping the spawning and nursery grounds of selected fish for spatial planning. Report to the Department of Environment, Food and Rural Affairs from Cefas. Defra Contract No. MB5301. Available online at: https://www.cefas.co.uk/publications/techrep/TechRep147.pdf
Gardline (2010a)	UKCS Block 210/24 Western Isles Development Site Survey: Environmental Baseline Report (October 2010)
Gardline (2010b)	UKCS Block 210/24 Western Isles Development Pipeline Route Survey: Environmental Baseline Report (October 2010)
Gardline (2012)	UKCS Block 210/24a Western Isles Development Infield Routes Survey: Pipeline Route Survey (December 2012)
Hammond et al., 2021	Hammond, P. S., Lacey, C., Gilles, A., Viquerat, S., Börjesson, P., Herr, H., MacLeod, K., Ridoux, V., Santos, M. B., Scheidat, M., Teilmann, J. and Øien, N., 2021. Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys (Revised 2021)
JNCC, 2021	JNCC, 2021. Seabird Survey Methods for Offshore Installations: Black-legged kittwakes. Advice Note. March 2021. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974338/Kittiwake_survey_advice_v2.1.pdf
Kober et al., 2010	Kober, K., Webb, A., Win, I., Lewis, M., O'Brien, S., Wilson, J. L., Ried, B. J., 2010. An analysis of the numbers and distribution of seabirds within the British Fishery Limit aimed at identifying areas that qualify as possible marine SPAs. ISSN; 0963-8091. JNCC report No.431
NMPi, 2022	NMPi, 2021. National Marine Plan Interactive. Available online at: http://www.gov.scot/Topics/marine/seamanagement/nmpihome
Oil and Gas Authority, 2016	Oil and Gas Authority, 2016. Information of levels of shipping activity. 29th Offshore Licensing Round information and resources.

Oil and Gas Authority, 2019	Oil and Gas Authority, 2019. Other Regulatory Issues 32nd Licensing Round information and Resources. Available online at: https://www.ogauthority.co.uk/media/5883/other-regulatory-issues-july-2019.pdf
OPRED (2018)	Offshore Petroleum Regulator for Environment and Decommisioning, 2018. Offshore Oil and Gas Decommissioning Guidance Notes. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/760560/Decom_Guidance_Notes_November_2018.pdf
Reid et al., 2003	Reid, J., Evans, P. & Northridge, S., 2003. An atlas of cetacean distribution on the northwest European Continental Shelf, Joint Nature Conservation Committee: Peterborough.
Russell et al., 2017	Russell, D. F., Jones, E. L., Morris, C. D. (2017). Updated Seal Usage Maps: The Estimated at-sea Distribution of Grey and Harbour Seals, Scottish Marine and Freshwater Science Report Vol 8 No 25. Available online at: https://data.marine.gov.scot/dataset/updated-seal-usage-maps-estimated-sea-distribution-grey-and-harbour-seals
Scottish Government, 2021	Scottish Government, 2021. Scottish Sea Fisheries Statistics, 2020. Scottish Government. Available online at: https://data.marine.gov.scot/dataset/2020-provisional-scottish-sea-fisheries-statistics-fishing-effort-and-quantity-and-value

8. Section 29 Notice Holder Letters of Support

[Section to be updated prior to final submission]

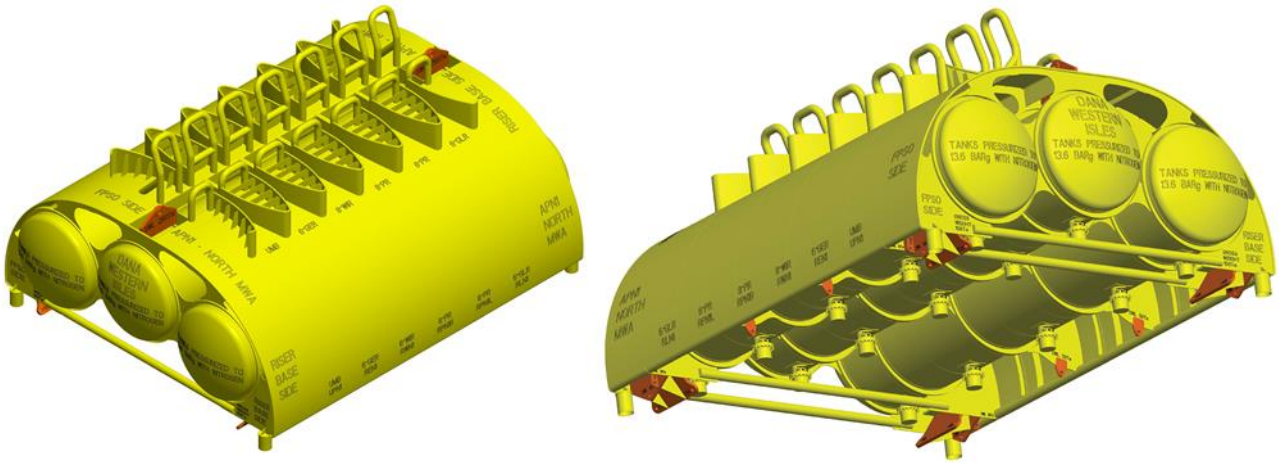
9. STATUTORY CONSULTEE CORRESPONDENCE

[Section to be updated prior to final submission]

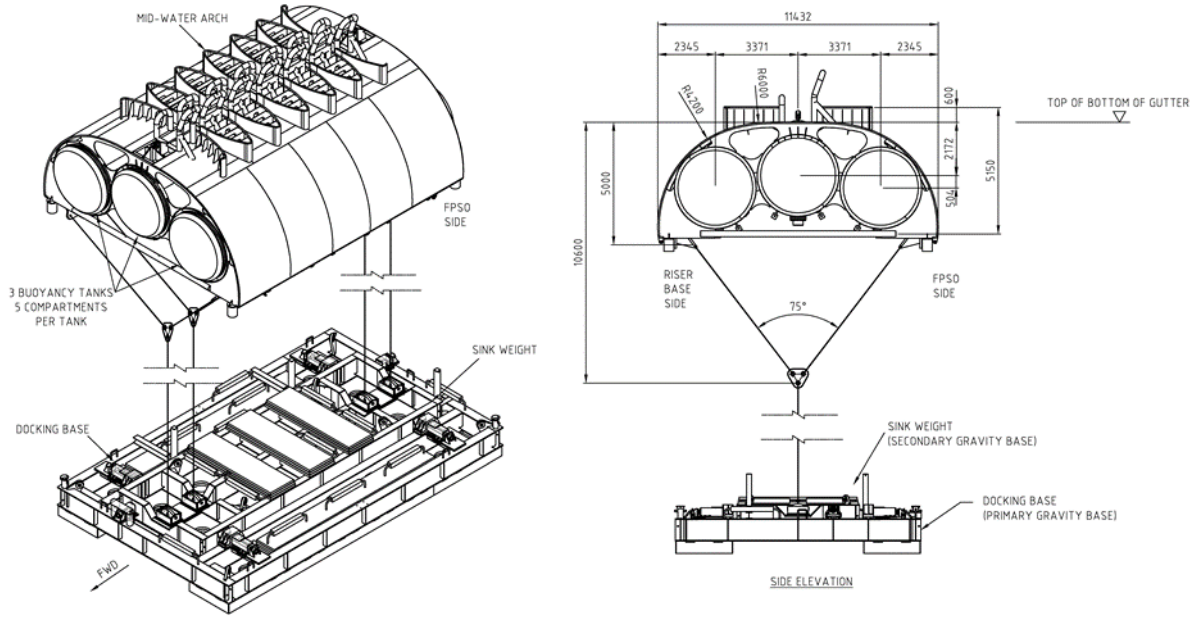
APPENDIX 1 COPY OF PUBLIC NOTICE

[To be added prior to final submission]

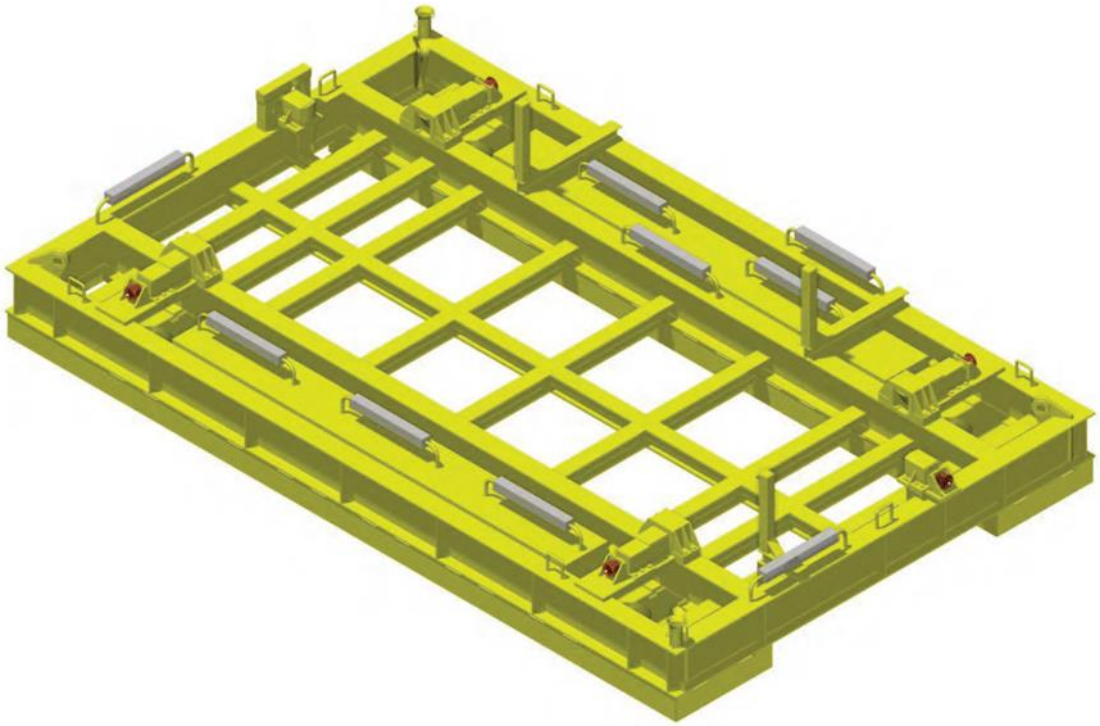
APPENDIX 2 MIDWATER ARCHES AND GRAVITY BASES



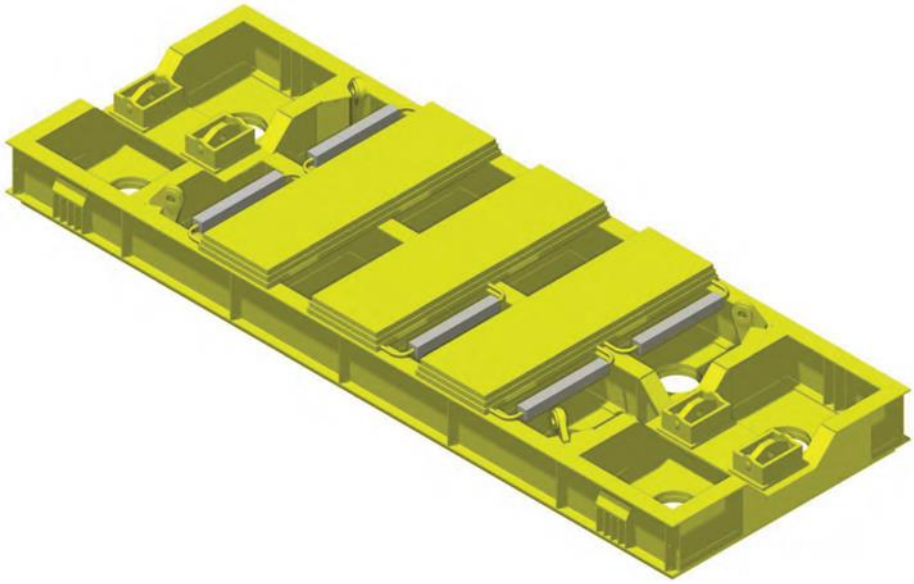
North MWA ISO View



Western Isles MWA System Installed Assembly



Western Isles MWA Primary Gravity Base



Western Isles MWA Sinker Base