

# BRAE AREA

BRAE ALPHA

## WEST DRILLING RIG

Decommissioning Close Out Report



October 2023 – Revision 02

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## DOCUMENT CONTROL

### Approvals

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### Revision Control

Revision No	Reference	Changes/Comments	Issue Date
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## ABBREVIATIONS

Abbreviation	Explanation
AFOD	AF Offshore Decommissioning
CO <sub>2</sub>	Carbon Dioxide
DP	Decommissioning Programme
EPRD	Engineering, Preparation, Removal & Disposal
GHG	Greenhouse Gas
HAF	Heerema and AFOD Consortium
HSE	Health and Safety Executive
LLC	Limited Liability Company
MMS	Materials Management Strategy
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
SEPA	Scottish Environmental Protection Agency
SSCV	Semi-Submersible Crane Vessel
TAQA (UK)	TAQA Bratani Limited
UKCS	United Kingdom Continental Shelf
WBS	Work Breakdown Structure

# 1 Summary

## 1.1 Decommissioning Programme

The Brae Alpha installation is located in UKCS Block 16/7a, approximately 270 km north-east of Aberdeen, in a water depth of 112 m. The platform has modular topsides and a steel jacket/sub-structure. Brae Alpha started production in 1983.

When the platform was built, two drilling rigs were installed to facilitate efficient drilling of the platform wells. The West Drilling Rig was isolated in 2013 due to drag chain integrity issues however its location obstructed access to the west wells for plug and abandonment. In 2019, RockRose UKCS8 LLC (the previous operator of the platform) submitted a decommissioning programme (See [OPRED website](#)) for the removal of the West Drilling Rig to allow Plug and Abandonment (P&A) of the west wells by the East Drilling Rig.

The Brae Alpha platform West Drilling Rig comprised of Modules 11, 21 and 31, also known as the skidding module, rig sub-structure and derrick respectively. The scope of these facilities covered by this close out report is highlighted in [Figure 1-1](#).

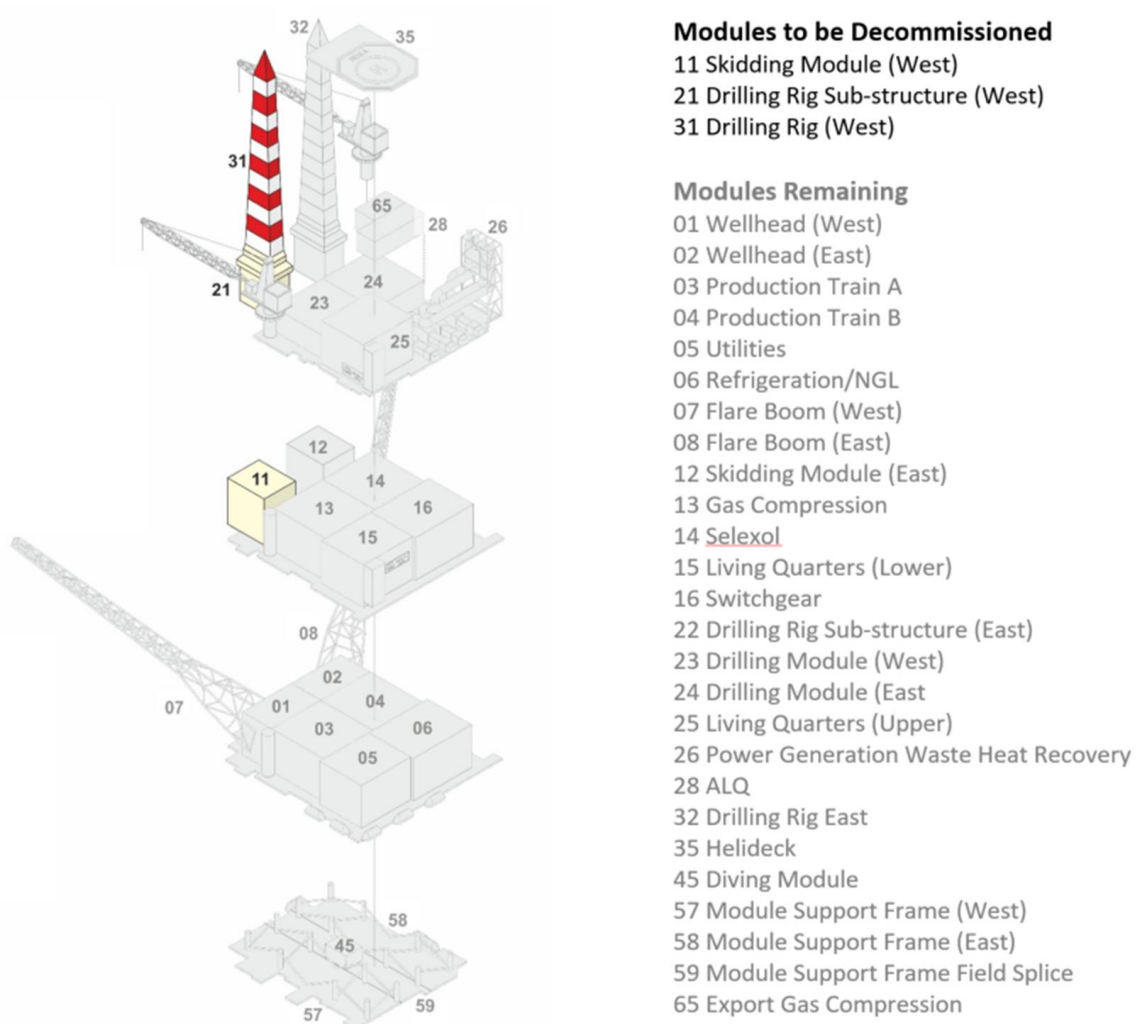


Figure 1-1: Brae Alpha West Drilling Rig Facilities

The Decommissioning Programme (DP) was formally approved by the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) on 30th September 2019. (See [OPRED website](#)). A revision to the DP to extend the schedule of work was later approved on 17th January 2022.

**Table 1.1: Overview of Decommissioned Installation(s) in the approved DP**

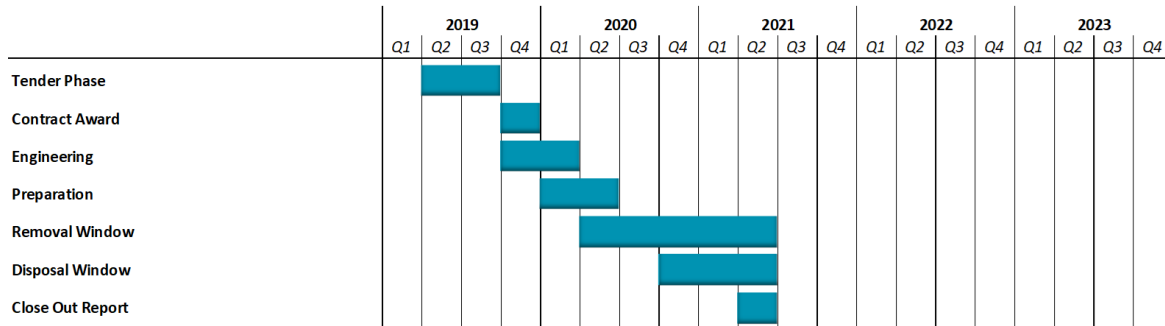
Installation Type	Number	Weight (tonnes)
Brae Alpha West Drilling Rig (Part of main platform topsides)	1	1090

**Table 1.2: Summary of Approved Decommissioning Options in the approved DP**

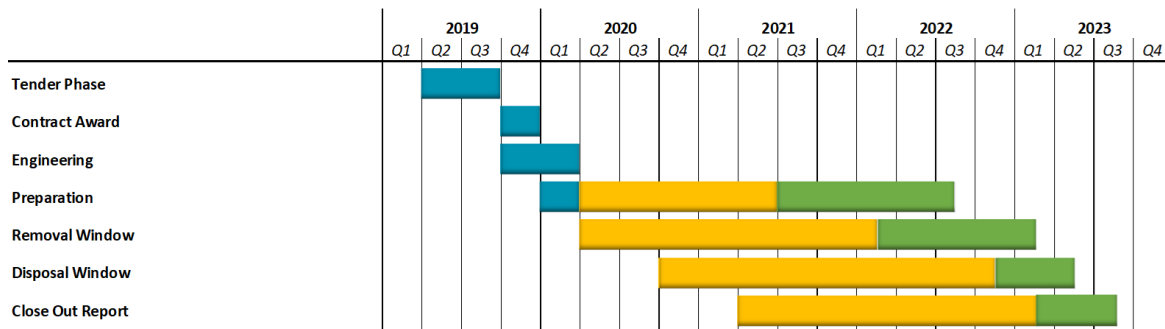
Type	Selected Option
Topsides (Brae Alpha West Drilling Rig)	Removal of the West Drilling Rig from the Brae Alpha topsides for reuse, recycling, or appropriate disposal.

## 1.2 Project Delivery against the Approved Schedule

**Brae Alpha West Drilling Rig Original Planned Decommissioning Schedule**

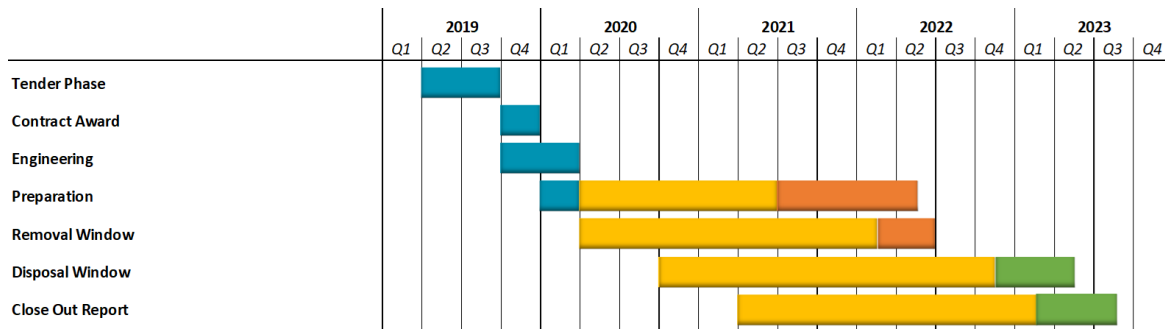


**Brae Alpha West Drilling Rig Revised Planned Decommissioning Schedule**



Activity completed on original schedule █  
 Delay due to COVID Pandemic █  
 Revised planned activity window █

**Brae Alpha West Drilling Rig Actual Decommissioning Schedule**



Activity completed on original schedule █  
 Delay due to COVID Pandemic █  
 Activity completed on revised schedule █  
 Revised planned activity window █

**Figure 1-2: Comparison of Planned vs Actual Decommissioning Schedules**

Figure 1-2 shows the original proposed Brae Alpha West Drilling Rig decommissioning schedule compared to the actual schedule. The difference is due to the decision to delay the preparation and removal works due to COVID-19 impact on Brae Alpha bedding limits. Preparation works were



ultimately completed in May 2022 and the removal completed in June 2022. At the time of writing disposal activities have been completed with the exception of repatriation of the two smoke detectors.

### 1.3 Project Overview

TAQA UK awarded the contract to a consortium (HAF) comprising Heerema Marine Contractors (HMC) and AF Offshore Decommissioning (AFOD) for the engineering, preparation, removal, and disposal (EPRD) of the Brae Alpha West Drilling Rig.

The modules were removed by reverse installation using the semi-submersible crane vessel (SSCV), Sleipnir in June 2022.

The modules were transported to and dismantled at the AF Decom Environmental Base at Vats, Norway before onward transfer for further processing, disposal or to the smelter. The steel which was sent for reprocessing accounted for approximately 97 % of the overall weight.

### 1.4 Associated Decommissioning Approvals

Table 1.3: Associated Decommissioning Approvals	
Brae Alpha West Drilling Rig Removal	<p>The Brae Alpha West Drilling Rig Removal Safety Case Material Change (SC/PRD/88/MCS/7) was accepted on 4<sup>th</sup> May 2021.</p> <p>The following permits were approved for the rig removal:</p> <ul style="list-style-type: none"> <li>• Consent to Locate - CL/1133/4</li> <li>• Marine Licence – ML/846/0</li> </ul>

## 2 Decommissioning Activities

### 2.1 Contracts Awarded

The key contractors utilised during the execution of the decommissioning programme are listed in [Table 2.1](#).

Table 2.1: Contracts Awarded		
Contractor	Service	Date of Award
HAF Consortium	Brae Bravo Engineering, Preparation, Removal & Disposal (EPRD). Addendum to include Brae Alpha West Drilling Rig	December 2019
Aquaterra	Rope access services	September 2018
Risktec	Hazard Identification (HAZID) support	October 2018
ESR Technology Limited	Specialist support with safety cases and associated studies	November 2018
Lloyds Offshore Consultancy	Provision of Marine Warranty Surveyor (MWS) services	June 2019
ABB Limited	Specialist engineering support for dismantling	January 2020
Lloyds	Independent Verification	July 2020
Kent (Formerly Atkins)	Specialist structural engineering support	September 2020
Xodus	Nesting bird survey and assessment	January 2021
Ove Arup	Quality Assurance (QA) services	February 2021
D3 Consulting	Disposal site representatives	July 2021

### 2.2 Platform Operations

The dates that key milestones were achieved during execution of the decommissioning programme are listed in [Table 2.2](#).

Table 2.2: Platform Decommissioning Operations	
Activity	Date
Completion of Facilities Decommissioning and Lift Preparations	May 2022
Commencement of Facilities Removal	June 2022
Completion of Facilities Removal	June 2022
Completion of Dismantling, Disposal & Recycling	February 2023*

\*Excluding repatriation of 2 smoke detectors

## 2.3 Results of Post Decommissioning & Environmental Surveys & Debris Clearance

**Table 2.3: Environmental Surveys & Debris Clearance**

There was no requirement to conduct a survey following the removal of the Brae Alpha West Drilling Rig.

On completion of the wider Brae Area decommissioning activities, a post-decommissioning survey will be conducted within a 500m radius of the Brae Bravo installation, the results of which will be shared within future Brae Area close out reports.

## 2.4 Stakeholder Engagement

**Table 2.4: Stakeholder Engagement**

The Brae Alpha Operator consulted a wide range of interested parties during the decommissioning planning stages of the overall Brae Area decommissioning programme. These included:

- Greenpeace
- Health and Safety Executive (HSE)
- JNCC (Joint Nature Conservation Committee)
- Marine Conservation Society
- Marine Scotland
- National Federation of Fishermen's Organisations
- Oil and Gas Authority
- OSPAR (Oslo/Paris Convention)
- Scottish Environment Protection Authority
- SFF (Scottish Fishermen's Federation)
- WWF

Information regarding decommissioning of the Brae Area is also available to other interested parties and the general public via the TAQA UK Decommissioning Website:

<https://eu.taqa.com/decommissioning/>

TAQA UK continued to provide regular updates and engage with the regulators during the offshore project execute phase and onto the onshore dismantling and final processing of the Brae Alpha West Drilling Rig.

This included:

- Health and Safety Executive (HSE)
- OPRED – Offshore Decommissioning Unit (ODU), Environment Management Team (EMT), Inspectorate
- SEPA (Scottish Environment Protection Agency)
- Media releases

## 3 Impact on Environment

### 3.1 Activities

There were no environmental incidents or spills that occurred during the removal of the Brae Alpha West Drilling Rig. All permit conditions were adhered to.

Ongoing logs of seabird activity on and surrounding the platform were kept during the preparation and removal phases of the modules to ensure compliance with the Wild Birds Directive. There continued to be no evidence of nesting bird activity on the platform.

### 3.2 Greenhouse Gas Emissions

TAQA UK has developed an Emissions Management Strategy which details how TAQA UK will support the UK government's commitment to achieve net zero Greenhouse Gas (GHG) emissions by 2050 and the Scottish government's target of 2045, through aligning with the North Sea Transition Authority (NSTA) Stewardship Expectation 11 (Net Zero) and demonstrating that being an environmentally responsible operator is part of our licence to operate.

Net zero means that the UK's total GHG emissions would be equal to or less than the emissions the UK removed from the environment. This can be achieved by a combination of emission removal, emission reduction, and offsetting.

TAQA UK is responsible asset stewards and already aims to use energy as efficiently as possible under the constraints of the current asset set.

Atmospheric emissions associated with decommissioning activities are however inevitable. TAQA UK is dedicated to minimising greenhouse gas emissions from decommissioning operations, as far as is reasonably practicable for each project. TAQA UK is committed to working with the supply chain and joint ventures as part of meeting these commitments. Atmospheric emissions are an element of the assessment process when determining removal scopes and a focus area for tender reviews. For example, Heerema (part of the HAF consortium) are Climate Neutral Certified and invest in carbon offsetting projects. More information can be found on their website:

<https://www.heerema.com/sustainability>

TAQA UK has assessed the emissions associated with the Brae Alpha West Drilling Rig removal project.

Clear boundaries and assumptions have been documented for the scope of the emissions assessment to allow comparison with future decommissioning projects.

The scope encompassed the following elements:

- SSCV fuel use while in the 500 m zone
- SSCV fuel use during transit to and from the dismantling yard
- Helicopter travel offshore during decommissioning activities
- TAQA UK site reps travel to and from dismantling yard
- Dismantling machinery and equipment at dismantling yard
- Road transportation from dismantling yard to the initial processing/disposal sites
- Sea transportation from dismantling yard to the smelter
- Smelting
- Ancillary transport to the dismantling yard for meetings, etc

The results from the assessment show a total of approximately 204 tonnes of CO<sub>2</sub> (Carbon Dioxide) can be attributed to the Brae Alpha West Drilling Rig decommissioning project.<sup>1</sup> This equates to approximately <0.1% of the average annual platform CO<sub>2</sub> emissions during normal platform operating mode.

Taking the total mass of material returned to shore and processed (including all the elements listed above), this produced a rate of approximately 0.2 tonnes CO<sub>2</sub> per tonne of material decommissioned. (This compares to the Institute of Petroleum Standard (2000)<sup>2</sup> of 1.889 tonnes CO<sub>2</sub>/tonne material processed which would be emitted to manufacture the equivalent mass of new steel).

Figure 3-1 below shows the contributing sources to the overall total of CO<sub>2</sub>:

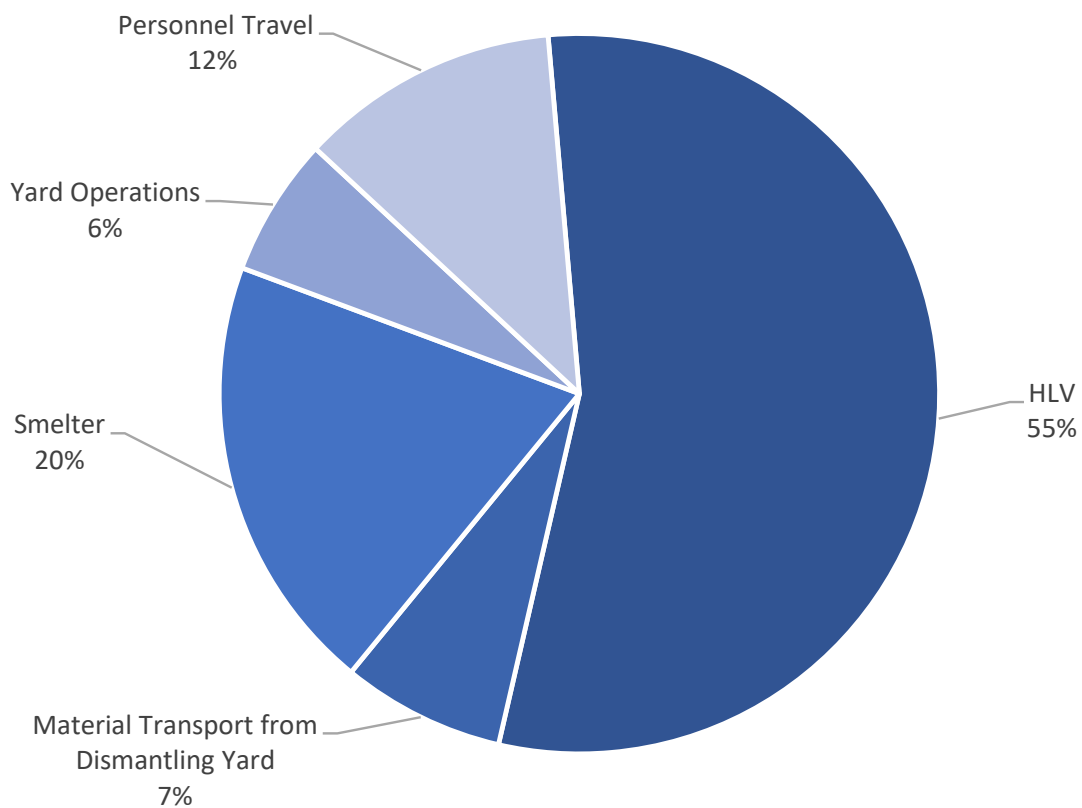


Figure 3-1: Sources of CO<sub>2</sub>

Over the course of the Brae Alpha West Drilling Rig removal project the following emission reduction opportunities were realised:

- A proportion of the fuel used by the SSCV Sleipnir for the West Drilling Rig Removal project was liquified natural gas (LNG) which results in less GHG emissions than traditional fuel oil
- The West Brae Drilling Rig removal was conducted in conjunction with the nearby Brae Bravo Upper Jacket removal, avoiding a dedicated SSCV trip with associated emissions

<sup>1</sup> This figure does not include any carbon offsetting.

<sup>2</sup> Guidelines for the Calculation of Estimates of Energy Use and Gaseous Emissions in the Decommissioning of Offshore Structures. Institute of Petroleum, 2000.

- The smelter is located in northern Norway and is supplied by hydro-electric power
- The primary power source at the Vats dismantling yard is hydro-electric
- Road haulage was reduced by the use of barges to transfer the large quantities of steel directly from the yard to the smelter by sea

### 3.3 Future Monitoring

Following completion of the wider Brae Area decommissioning activities, TAQA UK will carry out a post decommissioning environmental seabed survey. The survey will focus on chemical and physical disturbances of the decommissioning and be compared with the pre decommissioning survey. A copy of the survey results will be forwarded to OPRED. After the survey results have been sent to OPRED and reviewed, a post monitoring survey schedule will be agreed by both parties taking account of ongoing liability, and the status and findings of previous surveys. The schedule will apply a risk-based approach to the frequency and scope of further surveys. At least two post decommissioning environmental surveys are expected.

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## 4 Impact on Health and Safety Performance

### 4.1 Details of any Incidents / Accidents during Project Execution

The removal and decommissioning of the Brae Alpha West Drilling Rig was a highly complex project involving a team comprising of personnel from multiple companies, disciplines, cultures, business processes and languages. The project also involved the removal of the rig from an operational platform which added a further level of complexity. The teams involved in the decommissioning activities brought a strong safety focus to the project throughout all phases including project management, planning, engineering, and worksite activities. This was demonstrated by the fact there were no safety or environmental events during the execution of the project.

This collaborative approach of the companies and personnel working together enabled team members to learn best practice from each other resulting in the opportunity for these learnings to be applied to future projects.

## 5 Waste

In recognition of TAQA UK's role as Waste Producer and the inherent waste Duty of Care, TAQA UK developed a Materials Management Strategy (MMS) in preparation for decommissioning Brae Alpha West Drilling Rig. The MMS formed a route map for management of decommissioning materials and aligned key materials management decisions and actions with the relevant Offshore Energies United Kingdom (OEUK) decommissioning work breakdown structure (WBS) for the project, from the early project management stage (WBS 1) to completion of onshore materials management (WBS 8).

The MMS was designed to address the five key principles required by SEPA and OPRED for decommissioning materials management, thus enabling:

- Early engagement with the regulators and waste management sector
- Application of the waste hierarchy
- Ensuring Duty of Care through the decommissioning cycle
- Development and maintenance of a robust and detailed Materials Inventory
- Development and maintenance of an Active Waste Management Plan (AWMP) for the decommissioning work

TAQA UK liaised with SEPA throughout the project ensuring the regulator was kept abreast of the planned works and throughout the application process for the Transfrontier Shipment Notification for which TAQA UK also liaised with the Norwegian Environment Agency.

<b>Table 5.1: Materials Returned to Shore</b>				
<b>Material</b>	<b>Total Weight (T) as per the approved DP</b>	<b>Material left In situ (T)</b>	<b>Actual Weight (T) to shore</b>	<b>Disposal Method</b>
Steel	1,000	0	886.55	10 T Reused 876.55 T recycled
Non-ferrous	40	0	16.50	Recycled
Radioactive waste (smoke detectors) <sup>3</sup>	0	0	0.0005	Disposed
Hazardous	0.2	0	10.47	0.01 T recycled 10.46 T disposed
Other including plastic and WEEE (Waste Electrical and Electronic Equipment)	50	0	1.37	1.17 T recycled 0.20 T sent for energy recovery
<b>Total</b>	<b>1,090.2</b>	<b>0</b>	<b>914.89</b>	
<b>Total reuse/recycling/energy recovery as percentage of total weight to shore</b>			<b>98.9 %</b>	
<b>Total disposed as percentage of total weight to shore</b>			<b>1.1 %</b>	

<sup>3</sup> The actual weight of radioactive waste shown is, at the time of writing, pending repatriation for disposal. The disposal routes have been identified and the required TFS Notification has commenced. TFS procedures are under review, therefore when repatriation will take place is uncertain.



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As shown in [Table 5.1](#), the topsides project exceeded the materials management target of a minimum 95 % by weight reuse/recycling/energy recovery, and less than 5 % by weight disposal of the materials returned to shore.

## 6 Lessons Learned

Throughout all phases of the scope covered by this Decommissioning Programme lessons learned sessions have been held regularly and a comprehensive register has been generated. Below are what are considered by TAQA UK to be the top lessons.

1. During the offshore campaigns TAQA UK mobilised a multi-discipline team to the SSCVs to manage the execution. The presence of the TAQA UK team on-board the SSCVs to oversee safety, operations and engineering was highly successful. TAQA UK integrated fully with the EPRD engineering teams and the EPRD offshore workforce to assure, verify and support the successful execution of the project.

It has also been recognised that maintaining a consistent core team throughout the planning and engineering phase contributed heavily to the success of the project.

2. TAQA UK created an induction which was given onshore ahead of travelling to the SSCVs to help set clear expectations to the entire offshore workforce. To further enhance the on-boarding process a second induction was presented offshore with pocket-sized safety booklets containing key information given to all personnel. These helped communicate to the workforce not only what the expectations around safety were, but also why they were important and how we could work together to achieve a positive safety culture.
3. TAQA UK engaged early in the project with the HSE regarding the management and phasing of the safety cases. This allowed discussions to be held on key aspects early, allowing timely solutions to be put in place.
4. An open and constructive relationship was established early on with OPRED and SEPA. This helped the planning for, and subsequent approval of, the necessary permits and consents to complete the work.
5. Full-time site representatives were mobilised to the dismantling yard to oversee operations, support Health, Safety, Environment and Quality (HSEQ) and ensure the waste duty of care was followed. This has contributed positively to the operations on site and achievement of the recycling target.

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## 7 Cost Summary

### 7.1 Cost Progress Summary

Submitted to OPRED in confidence.

## 8 Photographs



Figure 8-1: Heavy Lift



Figure 8-2: On site at Vats

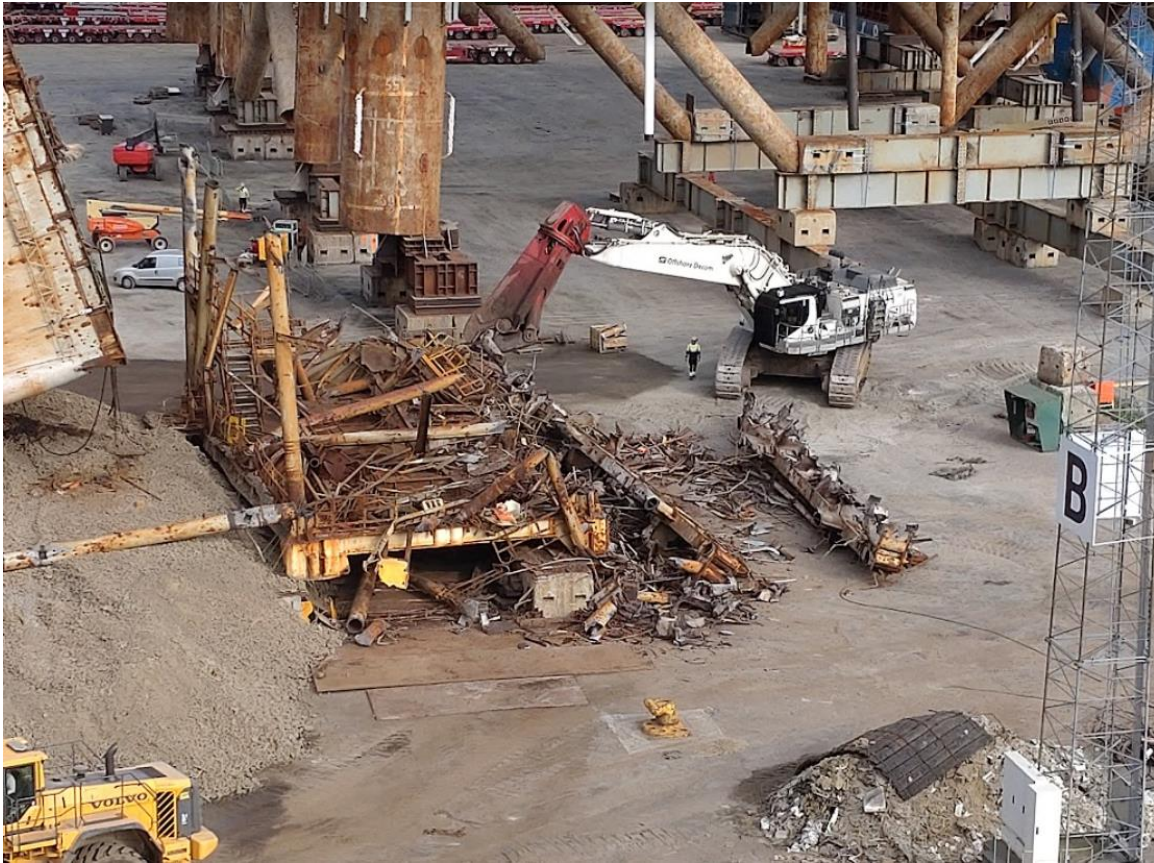


Figure 8-3: Mechanical Downsizing



Figure 8-4: Material Sorting



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