

# **CORMORANT ALPHA DERRICK STRUCTURE REMOVAL AND MDR INSTALLATION**

**Decommissioning Close Out Report**



October 2023 – Revision 03

TB-COADEC01-X-CO-0001-000



## DOCUMENT CONTROL

### Approvals

	Name	Date
Prepared by	Robbie Jones Senior Environmental Advisor	October 2023
	Louisa Dunn Decommissioning Stakeholder & Compliance Lead	
	Alan Sutherland Cormorant Alpha MDU Project Manager	
Verified by	Alastair MacLean Northern North Sea Decommissioning Programme Manager	October 2023
Approved by	David Wilson Director – Decommissioning & Projects	October 2023

### Revision Control

Revision No	Reference	Changes/Comments	Issue Date
1	First Draft		June 2023
2	Second Issue	Incorporating OPRED comments	October 2023
3	Third Issue	Incorporating further OPRED comments	October 2023

## CONTENTS

DOCUMENT CONTROL .....	2
Approvals .....	2
Revision Control .....	2
CONTENTS .....	3
FIGURES .....	4
TABLES .....	5
ABBREVIATIONS .....	6
1 Summary .....	7
1.1 Decommissioning Programme .....	7
1.2 Project Delivery against the Approved Schedule .....	12
1.3 Project Overview .....	12
1.4 Associated Decommissioning Approvals .....	14
2 Decommissioning Activities .....	15
2.1 Contracts Awarded .....	15
2.2 Platform Operations .....	15
2.3 Results of Post Decommissioning & Environmental Surveys & Debris Clearance ..	16
2.4 Stakeholder Engagement .....	16
3 Impact on Environment .....	17
3.1 Activities .....	17
3.2 Greenhouse Gas Emissions .....	17
3.3 Future Monitoring .....	19
4 Impact on Health Safety & Environmental Performance .....	20
4.1 Details of any Incidents / Accidents during Project Execution .....	20
5 Waste .....	21
6 Lessons Learned .....	24
7 Cost Summary .....	25
7.1 Cost Progress Summary .....	25
8 Photographs .....	26

## FIGURES

Figure 1-1: Cormorant Alpha East Elevation, Drilling Derrick Structure Highlighted .....	7
Figure 1-2: Cormorant Alpha Drilling Derrick Structure .....	8
Figure 1-3: NNS Field Layout (COA highlighted in red) .....	11
Figure 1-4: Comparison of Planned vs Actual Decommissioning Schedules .....	12
Figure 3-1: Contributing Sources of CO <sub>2</sub> .....	19
Figure 5-1: Waste Destinations .....	23
Figure 8-1: Cormorant Alpha with original Drilling Derrick Structure in situ .....	26
Figure 8-2: Close up of original Drilling Derrick Structure, adjacent to Telecoms Tower .....	26
Figure 8-3: Commencement of Derrick Destruct using floating gin pole .....	27
Figure 8-4: Ongoing Derrick Destruct .....	28
Figure 8-5: Clear pipe deck (above) and skid deck (below) ahead of MDU Construction .....	29
Figure 8-6: Commencement of Construction .....	30
Figure 8-7: Ongoing MDU Construction .....	31
Figure 8-8: Ongoing MDU Construction .....	31
Figure 8-9: Mast Installation .....	32
Figure 8-10: Power Generation Units Installed .....	33
Figure 8-11: Palfinger Crane Boom Installed .....	33
Figure 8-12: MDU Emergency Lighting Energised .....	34
Figure 8-13: Derrick Destruct Waste Segregation (Cable, Steel & Electrical Equipment) .....	35
Figure 8-14: Derrick Destruct Waste Segregation (Scrap Metal) .....	35
Figure 8-15: Environmental Audit of MDU at Sandnes, Norway (March 2022) .....	36
Figure 8-16: MDU Commissioning Environmental Audit (January 2023) .....	36

## TABLES

Table 1.1: Overview of the Decommissioned Installation(s) in the approved DP.....	9
Table 1.2: Overview of the Decommissioned Pipelines and Umbilicals in the approved DP ...	9
Table 1.3: Overview of the Stabilisation Features in the approved DP .....	9
Table 1.4: Summary of the Approved Decommissioning Options in the approved DP.....	10
Table 1.5: Associated Decommissioning Approvals .....	14
Table 2.1: Contracts Awarded .....	15
Table 2.2: Platform Decommissioning Milestones .....	15
Table 2.3: Environmental Surveys & Debris Clearance.....	16
Table 2.4: Stakeholder Engagement.....	16
Table 5.1: Materials Inventory .....	22
Table 5.2: Final Waste Volumes and Destinations Following Removal/Disposal.....	22

## ABBREVIATIONS

Abbreviation	Explanation
ANSS	Augean North Sea Services
AWMP	Active Waste Management Plan
BEIS	Department of Business Energy and Industrial Strategy (Now Department for Energy Security & Net Zero, DESNZ)
COA	Cormorant Alpha
CO <sub>2</sub>	Carbon Dioxide
DP	Decommissioning Programme
EWC	European Waste Catalogue
GHG	Greenhouse Gas
MDR / MDU	Modular Drilling Rig / Modular Drilling Unit (used interchangeably)
NNS	Northern North Sea
NSTA	North Sea Transition Authority
OBM	Oil Based Mud
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
P&A	Plug and Abandon
PON	Petroleum Operations Notice
PRA	Production Operations Application
SEPA	Scottish Environmental Protection Agency
TAQA	TAQA Bratani Limited
WBS	Work Breakdown Structure
WIA	Well Intervention Application

# 1 Summary

## 1.1 Decommissioning Programme

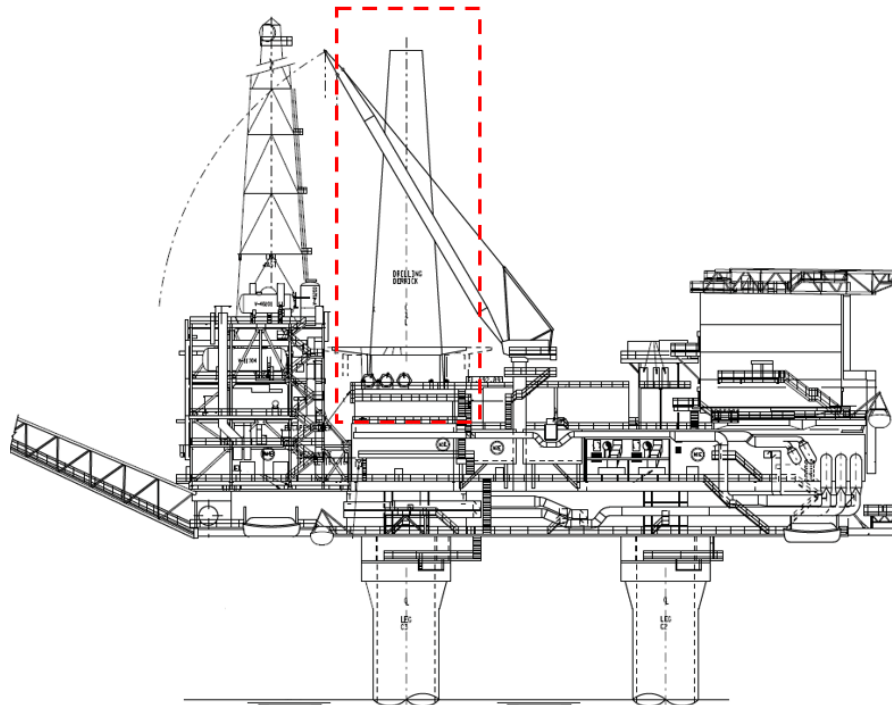
Cormorant Alpha is a fixed installation with a Concrete Gravity Base Structure (CGBS) located in the South Cormorant field in the East Shetland basin of the Northern North Sea Block 211/26a. The field was discovered in 1972 with the platform installed in 1978 and production starting in December 1979. The Cormorant Alpha offshore production platform is nearing the end of its economic life. TAQA is obligated to undertake effective well plug and abandonment of the existing well stock on the installation.

The Decommissioning Programme (DP) scope covers the removal of the existing platform drilling derrick structure which is part of the Cormorant Alpha installation and its replacement with the Archer Topaz Modular Drilling Unit (MDU) which has been installed in place of the existing derrick structure.

The scope of the facilities covered by this close out report is shown in [Figure 1-1](#) and [Figure 1-2](#). The location of Cormorant Alpha in relation to the other installations in the Northern North Sea is shown in [Figure 1-3](#).

The Decommissioning Programme (DP) was formally approved by Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) on 3<sup>rd</sup> June 2020. (See [OPRED website](#)).

Removal and disposal of the Platform Toppide and decommissioning of the Platform Gravity Base Structure are covered by separate DP's and are therefore not detailed within this document.



**Figure 1-1: Cormorant Alpha East Elevation, Drilling Derrick Structure Highlighted**

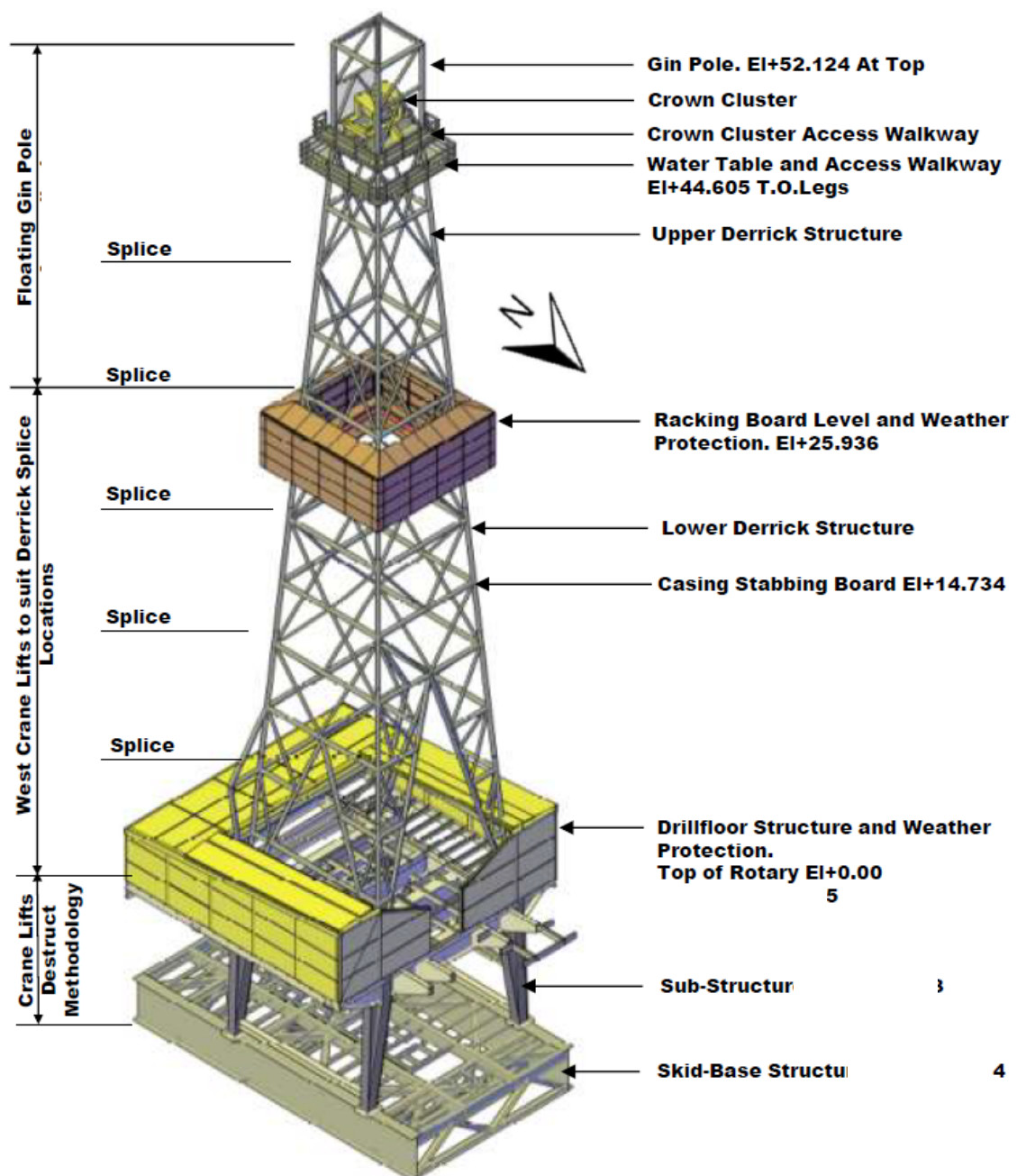


Figure 1-2: Cormorant Alpha Drilling Derrick Structure



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

Installation Type	Number	Weight (tonnes)
Drilling Derrick Structure	1	762.57 <sup>Note</sup>
Subsea Installation Type		
There are no subsea installations associated with the Cormorant Alpha derrick structure DP		
Note: Weight includes the steel derrick structure, lights, cabling, signage, access ladders / steps, etc.		

**Table 1.2: Overview of the Decommissioned Pipelines and Umbilicals in the approved DP**

Number of Pipelines	There are no pipelines or umbilicals associated with Cormorant Alpha derrick structure DP
Number of Umbilicals	
Total km of Pipelines & Umbilicals	
Total km of Pipelines & Umbilicals left in situ	

**Table 1.3: Overview of the Stabilisation Features in the approved DP**

Type	Number
Concrete Mattresses	There are no stabilisation features associated with Cormorant Alpha derrick structure DP
Grout Bags	
Sandbags	

Table 1.4: Summary of the Approved Decommissioning Options in the approved DP	
Type	Selected Option
Drilling Derrick Structure	Complete removal of the Drilling Derrick Structure for reuse, recycling, or appropriate disposal to allow for the construction, installation, and commissioning of the Archer Topaz Modular Drilling Unit
Subsea Installation(s)	N/A
Pipelines, Flowlines & Umbilicals	N/A
Stabilisation Features	N/A
Wells	N/A
Drill Cuttings	N/A

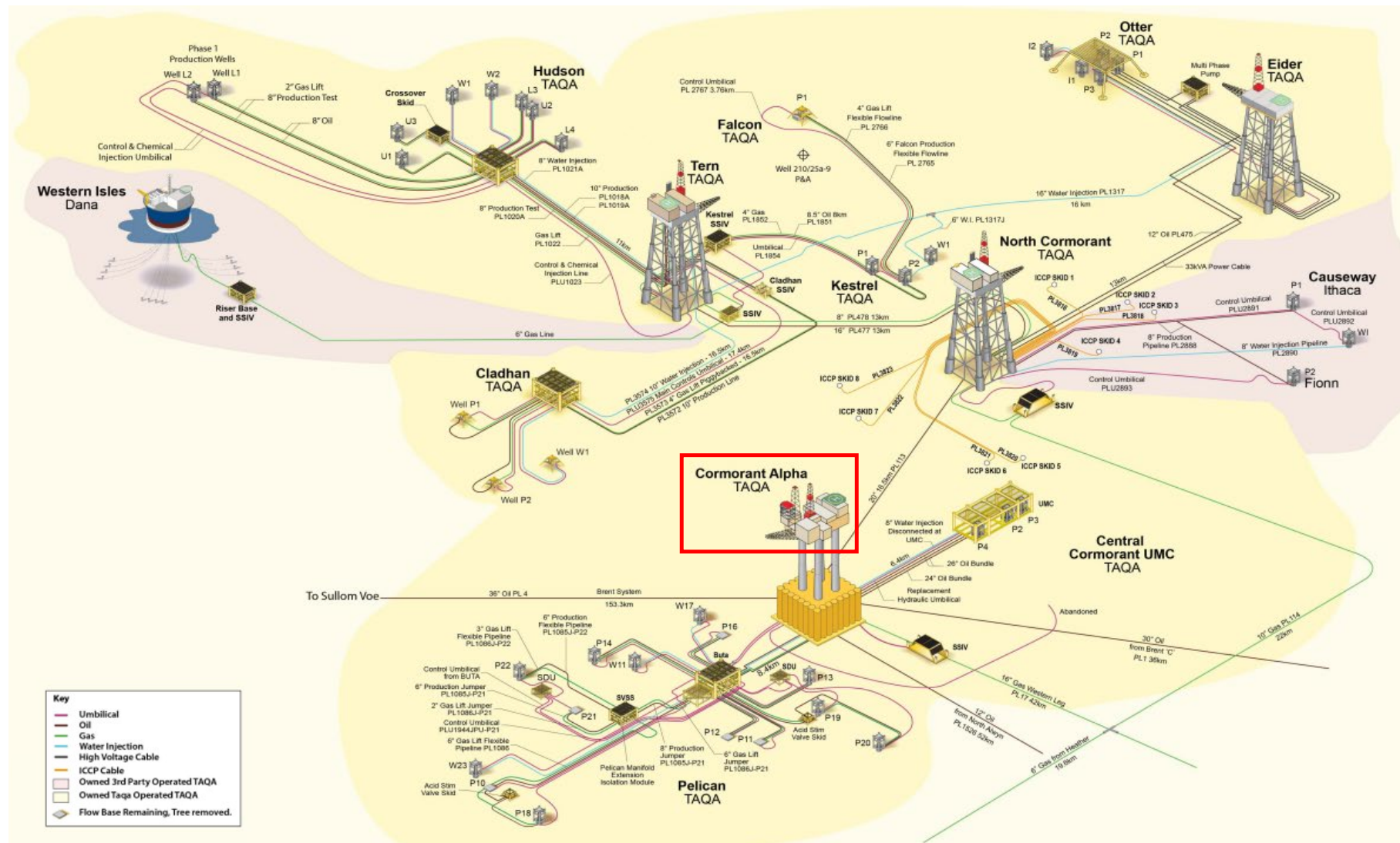
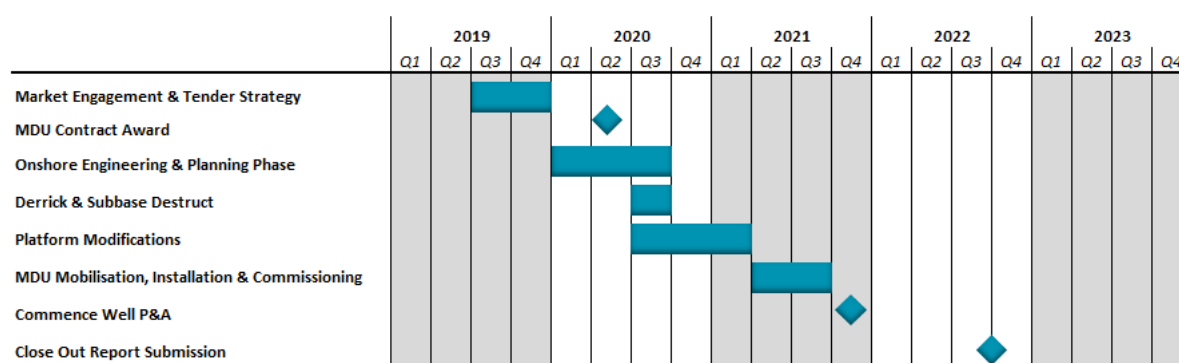


Figure 1-3: NNS Field Layout (COA highlighted in red)

## 1.2 Project Delivery against the Approved Schedule

### Cormorant Alpha Planned Derrick Destruct & MDU Installation Decommissioning Schedule (2020)



### Cormorant Alpha Actual Derrick Destruct & MDU Installation Decommissioning Schedule

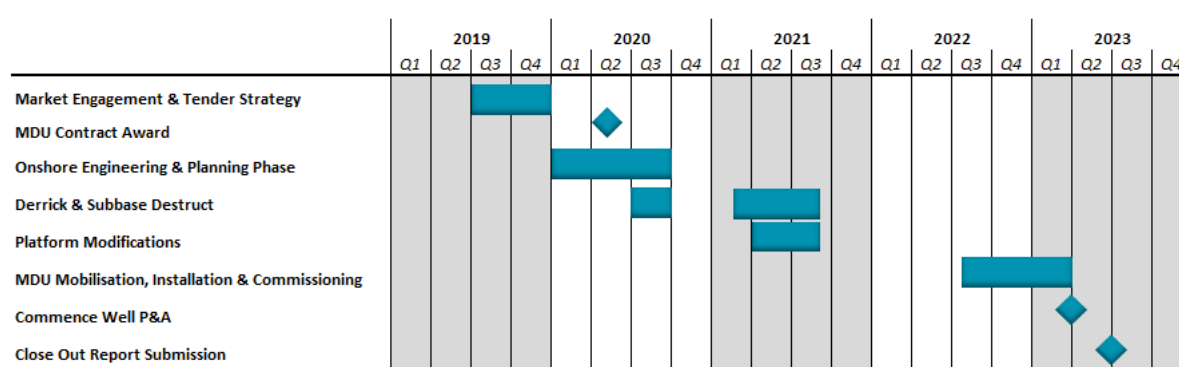


Figure 1-4: Comparison of Planned vs Actual Decommissioning Schedules

Figure 1.4, shows the originally intended schedule for decommissioning of the existing drilling equipment (above) compared to the actual schedule (below). The difference is due to a number of factors including the impact of the COVID-19 pandemic on offshore Personnel on Board (PoB) levels, MDU readiness to ship offshore, and poor weather offshore. Additional time was also required as the system integration and commissioning effort required to bring the system to a state where it was fit to safely carry out well Plug and Abandonment (P&A) operations was greatly in excess of that originally envisaged. Given that the work took place on an operational installation, this had limited impact, beyond the additional time taken.

## 1.3 Project Overview

The Cormorant Alpha offshore production platform is nearing the end of its economic life. TAQA is obligated to undertake effective well plug and abandonment of the existing well stock on the installation, numbering 22 wells in total.

The original drilling equipment set is unserviceable and has proven uneconomic and impractical to reactivate for this purpose. Throughout 2018/19 alternative solutions and contracting mechanisms were evaluated for consideration. The final contract strategy for the undertaking of this well P & A obligation was approved internally in July 2019 - being the removal of the existing drilling derrick structure, and

the mobilisation and operation of a modular drilling unit system to undertake the well P & A works and its subsequent removal from the installation.

In February 2020 TAQA Board approved the award of the Derrick Removal works, MDU installation and P&A phase contract to ARCHER Drilling (utilising the TOPAZ MDU), which had been selected following a competitive tender exercise carried out in 2019.

The overall deployment and operation of a modular drilling unit system and the undertaking of the well plug and abandonment activity consists of several key steps, which can be categorised into two distinct phases, pre-operational and post operational. The scope of the DP only covers the pre-operational activities as below:

- (i) Derrick removal.
- (ii) CoA modifications and interface works
- (iii) MDU onshore test build and acceptance, reinstate selected CoA systems for MDU
- (iv) MDU offshore install to system handover

The waste materials were managed by Augean North Sea Services (ANSS), refer to Section 5 for further information.

## 1.4 Associated Decommissioning Approvals

Table 1.5: Associated Decommissioning Approvals	
Platform Well Plug and Abandonment (P&A)	<p>At the time of writing (March 2023), a WIA is in place for chemical and oily discharges once the MDU is operational, WIA/1410, including CP/3010/0 and OTP/1313/0.</p> <p>*WIA = Well Intervention Application *CP = Chemical Permit *OTP = Oil Term Permit</p>
Topsides (Rig / Derrick Removal) Preparation	<p>No specific offshore environmental permits were required under Cormorant Alpha derrick structure DP, production permits and discharges continue under the Cormorant Alpha PRA/91.</p> <p>The Safety Case Material Change for the MDU installation was accepted by the Health and Safety Executive in May 2022. The Operations Safety Case (for post MDU installation – Operations) phase is planned to be completed prior to the MDU commissioning in 2023.</p> <p>*PRA = Production Operations Application</p>
Rig / Derrick Removal and MDU Installation	<p>As noted above, no offshore environmental permits were required for the rig / derrick removal works, however, a WIA is in place for chemical and oily discharges once the MDU is operational, (WIA/1410). In addition, oily discharges through the topside production process are included on PRA/91 and OLP/57.</p> <p>The Safety Case Material Change for the MDU installation was accepted by the Health and Safety Executive in May 2022.</p> <p>As part of the MDU installation, 8 diesel combustion generators were required (6 for power generation and 2 for the cement/pumping skids). These units were added to PPC/54/10 under PRA/91 and UK ETS Permit DTI8000 (UK-D-IN-13209).</p> <p>*OLP = Oil Life Permit *PPC = Pollution Prevent Control *ETS = Emission Trading Scheme</p>

## 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
Augean (Augean North Sea Services – ANSS)	Provision of Waste Management Services	December 2017
Archer	Provision of Modular Drilling Unit and Associated Services	April 2020
D3 Consulting	Material Inventory & Waste Assurance Services	April 2020
Tidewater Marine UK Ltd	Provision of Platform Supply Vessel (to ship MDU offshore)	February 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 Milestones	
Activity	Date
Tender for Derrick Removal, MDU and P&A Services	Throughout 2019
Contract Award	June 2020
Commencement of offshore destruct activity	August 2020
Commencement of Dismantling, Disposal & Recycling	August 2020
Completion of offshore destruct activity	August 2021
Completion of Dismantling, Disposal & Recycling	September 2021
MDU Mobilisation	July 2022
MDU Mechanical Completion	October 2022
Completion of Commissioning	March 2023
Commencement of P&A Operations	March 2023

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

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

There are no environmental surveys or debris clearance associated with this Cormorant Alpha derrick structure DP. Such surveys will be undertaken following future Cormorant full field decommissioning.

## 2.4 Stakeholder Engagement

**Table 2.4: Stakeholder Engagement**

TAQA consulted a wide range of interested parties during the decommissioning planning stages, preparation and compilation of the Decommissioning Programme and Environmental Appraisal. These included:

- OPRED Environmental Management Team
- OPRED Offshore Decommissioning Unit
- Health & Safety Executive (HSE)
- Marine Scotland
- Scottish Fishermen's Federation (SFF)
- National Federation of Fishermen's Organisations (NFFO)
- Northern Irish Fish Producers Organisation
- North Sea Transition Authority (NSTA) (formally OGA)
- Scottish Environment Protection Authority (SEPA)
- Global Marine Systems Limited

Information regarding TAQA's decommissioning activities is also available to other interested parties and the general public via the TAQA Decommissioning Website:

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

TAQA continued to provide regular updates and engage with the regulators during the offshore project execute phase and during the onshore final processing of the waste material.

This included:

- Health and Safety Executive
- OPRED – Offshore Decommissioning Unit (ODU), Environment Management Team (EMT), Inspectorate
- NSTA
- SEPA



## 3 Impact on Environment

### 3.1 Activities

There was one environmental incident that occurred during the removal of the Cormorant Alpha Rig / Drilling Derrick:

- Release of residual Oil Base Mud (OBM) – On 20<sup>th</sup> July 2021. As part of the drilling derrick removal, the mud filling lines were required to be removed from the drilling package. As the last cut was completed, a small amount of residue was released, which the work party contained using spill pads. However, the destructed line contained further OBM residue, and this was left on open gratings over the sea, and a bronze sheen was observed. PON1/10492 was raised with an estimated 7.8 Kg of OBM being released to sea. Coaching was conducted with the drilling destruct team and the permit Performing Authority (PA) to raise awareness of pipework removal risks and also to ensure that site visits are scheduled during work.

There were no other regulated activities covered by environmental permits, as noted in Section 1.4, the oily discharge and combustion permits were updated under PRA/91 and WIA/1410 for the operational phases of the well abandonment campaign.

Ad hoc inspections of seabird activity on and surrounding the Drilling Derrick were conducted during the preparation and removal phases to ensure compliance with the Wild Birds Directive. There continues to be no evidence of nesting bird activity on the platform.

### 3.2 Greenhouse Gas Emissions

TAQA has developed an Emissions Management Strategy which details how TAQA 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. In addition, platform specific Emission Reduction Action Plans (ERAPs) have been produced covering all stages of an asset's life (production to topside removal) and this approach aligns with the NSTA's Stewardship Expectation 11 (Net Zero), demonstrating TAQA is an environmentally responsible operator.

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 is responsible asset stewards and already aim 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 is dedicated to minimising GHG emissions from decommissioning operations, as far as is reasonably practicable for each project. TAQA is committed to working with the supply chain and joint ventures as part of meeting these commitments. Atmospheric emissions, energy efficiency, and the circular economy are an element of the assessment process during tender reviews. TAQA issue an energy efficiency and circular economy questionnaire with each tender, and this is reviewed as part of the evaluation.

TAQA has assessed the emissions associated with the derrick removal project.

The scope encompassed the following elements:

- Transfer of the removed derrick material from offshore to shore
- Material processing at the onshore yard
- Transportation from yard to the initial processing/disposal sites
- Transportation to the smelter
- Smelting

The emissions associated with the additional burden on the platform were considered to be negligible when compared to normal production operations on Cormorant Alpha and have been excluded from the calculation. These will be captured on the annual platform operational atmospherics returns.

The results from the assessment show a total of approximately 325 tonnes of CO<sub>2</sub> (Carbon Dioxide) can be attributed to the Cormorant Alpha derrick removal project. This figure is below the estimate presented in the DP. The figure reported here is derived from detailed consideration of the fate of the materials removed from the platform and informed by TAQA's experience of other, completed, decommissioning projects. [Figure 3-1](#) below shows the contributing sources to the overall total of CO<sub>2</sub>.

Taking the total mass of material returned to shore and processed (considering all the elements listed above), this produced a rate of 0.4 tonnes CO<sub>2</sub> per tonne of material decommissioned. This compares to the Institute of Petroleum Standard (2000)<sup>1</sup> of 1.889 tonnes CO<sub>2</sub>/tonne material processed which would be emitted to manufacture the equivalent mass of new steel.

Over the course of the project the following emission reduction opportunities were realised:

- Utilising normal operational logistics (when possible) thus avoiding additional vessel shipments
- Scrap metal consignments were bulked to reduce number of transfers and associated emissions
- Scrap steel consigned to electric arc furnaces powered by renewable energy

---

<sup>1</sup> Guidelines for the Calculation of Estimates of Energy Use and Gaseous Emissions in the Decommissioning of Offshore Structures. Institute of Petroleum, 2000

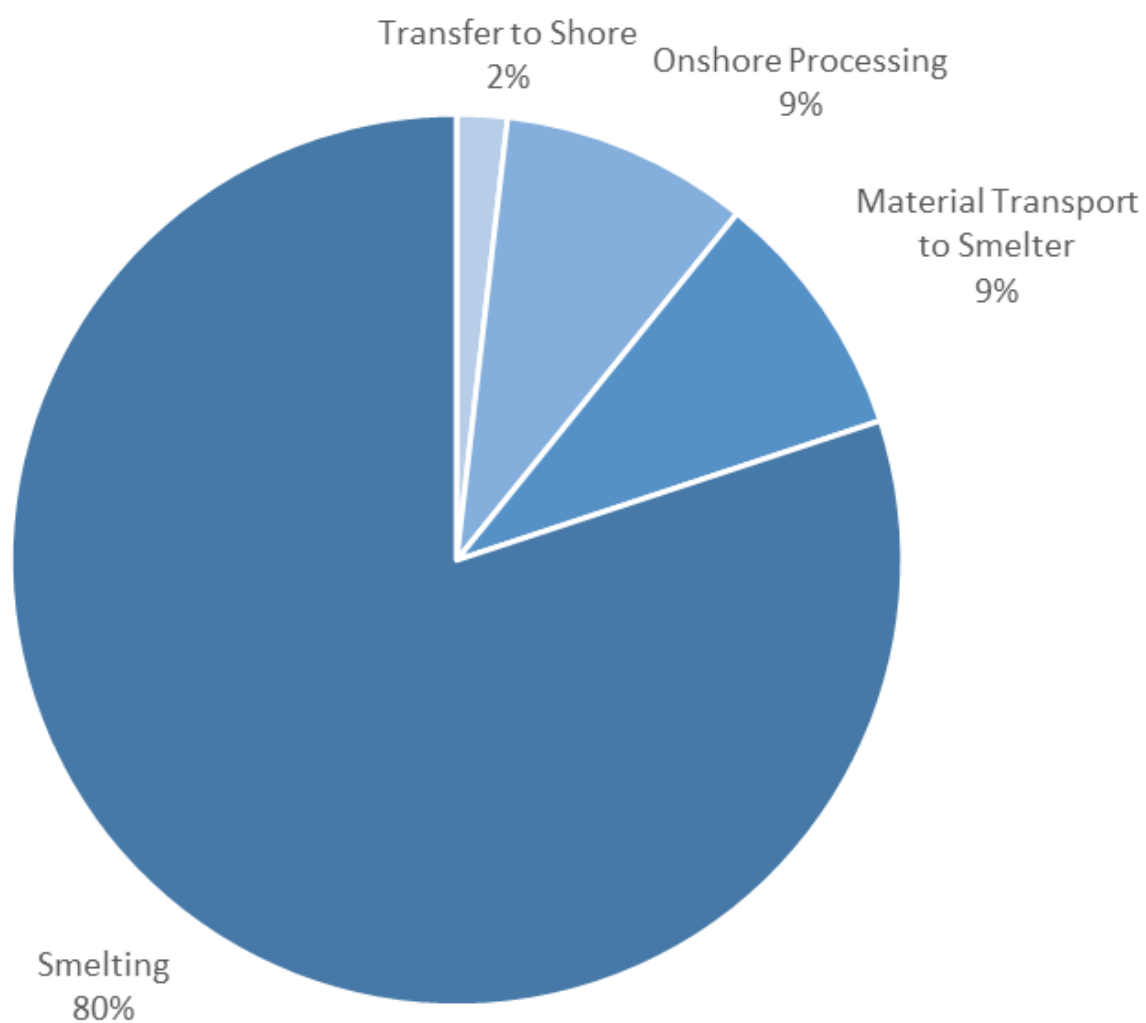


Figure 3-1: Contributing Sources of CO<sub>2</sub>

### 3.3 Future Monitoring

There is no future monitoring associated with the Cormorant Alpha drilling derrick structure DP.

## 4 Impact on Health Safety & Environmental Performance

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

Decommissioning of the Cormorant Alpha Derrick in situ via piece meal/piece small downsizing was a highly complex project involving a team comprising personnel from multiple companies, and disciplines. Those involved in the decommissioning activities all brought a strong safety focus to the project and this was emphasised throughout all phases of the project including project management, planning, engineering, and worksite activities. The project team aligned to the TAQA Intelligent Safety behavioural safety culture, participating in raising observation cards on the platform throughout all stages of the work. The project also had a very strong and collaborative safety culture, with a key focus on managing simultaneous operations and deck space constraints including waste skips and movement of scrap during downsizing.

There were two Regulatory Reportable Injuries recorded during the project activities for injuries to the hands and thumb. There were three minor first aid events from June 2020 to February 2023. Based on the number of people working on the project, and the nature of the work, (for example, there was a significant amount of manual handling work involved) this was an excellent outcome for the project. The three first aid events consisted of slip, debris in eye and a nipped finger.

The project also recorded five other incidents. These were events with consequences, but no adverse impact on personnel, including a minor OBM release to sea (environmental impact) and equipment failure (asset damage). The importance of these cases being reported by the personnel is to enable the events to be fully investigated by project personnel and actions put in place to ensure that reoccurrence of events of this nature or similar, with a potentially more serious outcome, were prevented.

The personnel from all companies involved in the project worked very well together resulting in a strong safety culture throughout the project. This collaborative approach between the Cormorant Alpha production, maintenance, engineering, and services teams also 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's role as Waste Producer and the inherent waste Duty of Care, TAQA developed an Active Waste Management Plan (AWMP) in preparation for decommissioning the drilling derrick. The AWMP 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 (WBS1) to completion of onshore materials management (WBS8).

The AWMP 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 the waste management routes for the decommissioning work

TAQA engaged with SEPA during a meeting on the 20<sup>th</sup> of July 2020 to discuss the Northern North Sea decommissioning plans, including the AWMP for the Cormorant Alpha Derrick / Rig Removal Project. No specific concerns or actions were raised as part of the Derrick / Rig Removal AWMP meeting which documented the use of the operational incumbent waste management services, Augean North Sea Services (ANSS), as provider of waste services for this decommissioning programme.

To provide assurance to TAQA that ANSS and the AWMP were appropriate for the project, an audit was also completed on 10<sup>th</sup> of July 2020, however, due to COVID-19 restrictions, this was completed remotely. No legal non-compliances were raised against ANSS as part of the audit and opportunities for improvement were added to the TAQA action management system.

The table below provides a summary of the waste and materials identified within the pre-destruct materials inventory, including European Waste Catalogue (EWC) classification.

**Table 5.1: Materials Inventory**

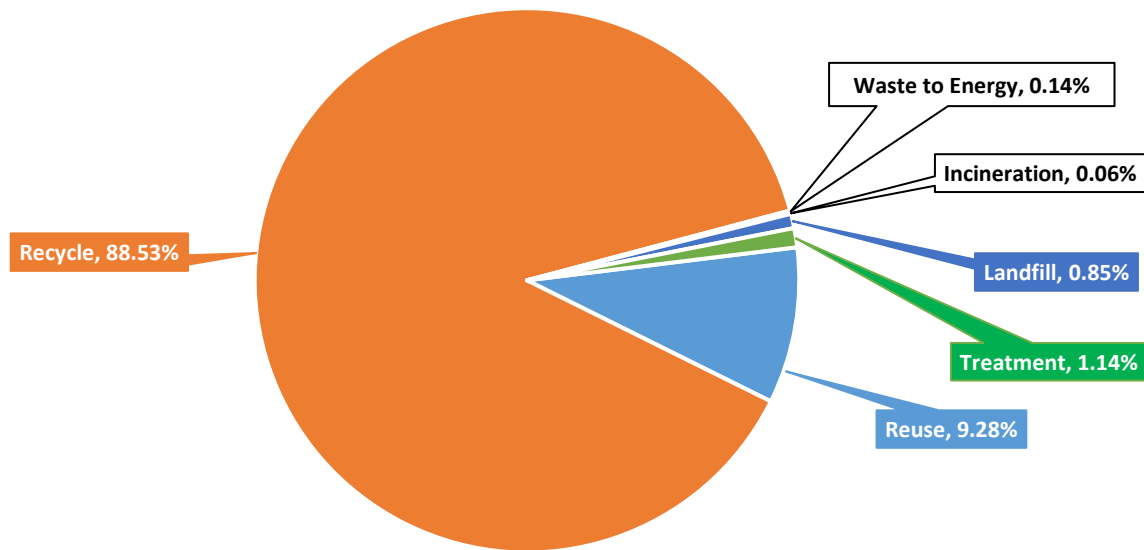
Module	EWC	EWC Description	Weight in Inventory (Te)
PIPE DECK	17 04 05	Iron and steel	3.76
	17 04 07	Mixed metals	21.09
SKID BASE	16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	0.57
	17 04 05	Iron and steel	84.36
	17 04 07	Mixed metals	21.51
	17 04 11	Cables other than those mentioned in 17 04 10	1.50
	17 06 01*	Insulation materials containing asbestos	0.02
SUBSTRUCTURE / DERRICK	08 01 11*	Waste paint and varnish containing organic solvents or other hazardous substances	2.00
	16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	2.57
	17 04 05	Iron and steel	465.89
	17 04 07	Mixed metals	133.17
	17 04 11	Cables other than those mentioned in 17 04 10	16.08
	17 06 01*	Insulation materials containing asbestos	0.10
	17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03	5.50
	17 09 04 03	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	4.45
Total			762.57

**Table 5.2: Final Waste Volumes and Destinations Following Removal/Disposal**

EWC	EWC Description	Description	Weight removed (Te)	Disposal Contractor	Disposal Type	Consignment Paperwork In	Consignment Paperwork Out
13 02 05*	Mineral-based non-chlorinated engine, gear and lubricating oils	Grease	0.45	Taylors	Incineration	SC50546246	SA50826866
13 02 08*	Other engine, gear and lubricating oils	Oily Sludge	8.235	Tradebe	Treatment	SC50546255 SC50546256	SA02159995
16 01 21*	Hazardous components other than those mentioned in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14	Hoses contaminated with oils	4.7	Taylors	Landfill	SC50546216 SC50545950 SC50546231	SA50811838 SA50790582 SA02159961
17 04 07	Mixed metals	Scrap Metal	115.516	Panda Rosa	Recycle	N/A	N/A
17 04 07	Mixed metals	Scrap Metal	521.632	John Lawrie	Recycle	N/A	N/A
17 04 07	Mixed metals	Elmagco System	63.72	Reused within TAQA	Reuse	IM 11000004484	N/A
17 04 07	Mixed metals	HPU Claws and Ram	3.46	Reused within TAQA	Reuse	S340909	N/A
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03	Insulation	0.99	A&M Smith	WTE	0587780	35002
17 06 05*	Construction materials containing asbestos	Asbestos	1.465	Taylors	Landfill	SC52193779	SA02159944
20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	WEEE – Electrical Waste and Fittings	3.651	WEEE Solutions	Recycle	SC50545918 SC50546247 SC50546247	SA50811863 SA02159946 SA02159946

The total estimated waste from the Materials Inventory was 762.57 Te and the final total of materials removed/disposed of was 723.82 Te (variance of 5%).

Figure 5-1 below shows the percentages of material for each waste stream. In total, the combined reuse and recycle percentage was 97.81% which exceeds the project aim of 97%.



**Figure 5-1: Waste Destinations**

The final destination for the scrap metal that was consigned to Panda Rosa via ANSS in Aberdeen was Spain, via transportation within a vessel.

In addition, John Lawrie also received scrap metal through the TAQA ANSS contract. Scrap metals are segregated based on metal composition and processed to meet the acceptance criteria of the receiving smelter. Once material was processed at the scrap merchant, it is bulked with other client waste, effectively becoming “common waste” i.e., unidentifiable from other similar scrap from other sources.

The bulked material was then exported as Green List material to mainland Europe for smelting and remanufacture. It is noted that John Lawrie Metals dispatch ~5,000te consignments to electric arc furnaces powered by renewable energy in order to minimise the emissions associated with the recycling process. By exporting on a short sea basis, the emissions related to the transport of materials were also reduced when compared to the equivalent road transport. Utilising a port close to the scrap processing facilities also reduced the risks associated with transportation including road handling and crane lifts.

## 6 Lessons Learned

Throughout all phases of the scope covered by the Cormorant Alpha Drilling Rig DP, lessons learned sessions have been held regularly and a comprehensive register has been generated. Below are what are considered by TAQA to be the top lessons.

1. As this was a relatively small project and the destruct vendor (Archer) provided detailed progress updates it was possible to track items/areas of the structure as they were removed and update the materials inventory database accordingly. However, in this process it became obvious this approach would not be practical or be an efficient exercise on a larger project. In addition, for future projects it would be more appropriate to summarise the inventory by EWC code or BEIS code and track the waste, with focus on the hazardous waste streams.
2. There was also a difference between the EWC codes used by Augean and those in the inventory. EWC codes are not an exact science and there will always be some degree of interpretation by the individual coding wastes. Therefore, in the future the disposal contractor could review the inventory and assess if any codes are missing or different to those they would use. An example of this is 17 04 05 Iron and Steel versus 17 04 07 Mixed Metals, many of the items were steel so were coded in the inventory as 17 04 05, however when removed were put in a skip with other metals so were coded 17 04 04 by Augean. This is of no real consequence for waste management as both Iron and Steel and Mixed Metals would go to the same disposal route (recycling) but could have commercial implications if different credit rates were applied to mixed metals vs Iron and steel.
3. There was a change of government guidance on classification of waste electronic, equipment waste in June 2020 to classify different types of waste: electronic and electrical equipment - GOV.UK ([www.gov.uk](http://www.gov.uk)). This meant that waste electronic and equipment waste originally coded in the inventory as non-hazardous (16 02 14, 17 04 11) but was considered as hazardous by Augean at time of disposal (16 01 21\*, 20 01 35\*).
4. There was value conducting environmental audits prior to mobilisation and during commissioning of the MDU on Cormorant Alpha, ensuring any risks/actions could be identified prior to installation and then checks of compliance when the rig was in situ. An environmental audit of the MDU was carried out at Sandnes port, Norway in March 2022. The objective was to review the rig prior to mobilisation to Cormorant Alpha focusing on fluid containment and environmental compliance. No significant environmental concerns were raised at the time of the audit and six minor observations were noted for minor environmental issues or improvements. In addition, following downsizing and re-building/commissioning a further environmental audit was completed when the MDU was on Cormorant Alpha in January 2023. Again, no significant containment risks were identified, with recommendations made to improve environmental management prior to plug and abandonment operations.
5. The requirement for separate waste skips and units for segregating the operational and decommissioning waste streams was made clear prior to any destruct works. Various forms of communication were utilised to make the offshore teams aware including pre-execute meetings, reviews of the Active Waste Management Plan, engagement with the waste contractor and Archer team. Therefore, the offshore teams had a clear understanding of the need to segregate operational and decommissioning waste and materials, resulting in an excellent reconciliation rate, at nearly 98% of the estimated waste / materials inventory.



---

## 7 Cost Summary

### 7.1 Cost Progress Summary

Submitted to OPRED in confidence.

## 8 Photographs



Figure 8-1: Cormorant Alpha with original Drilling Derrick Structure in situ



Figure 8-2: Close up of original Drilling Derrick Structure, adjacent to Telecoms Tower



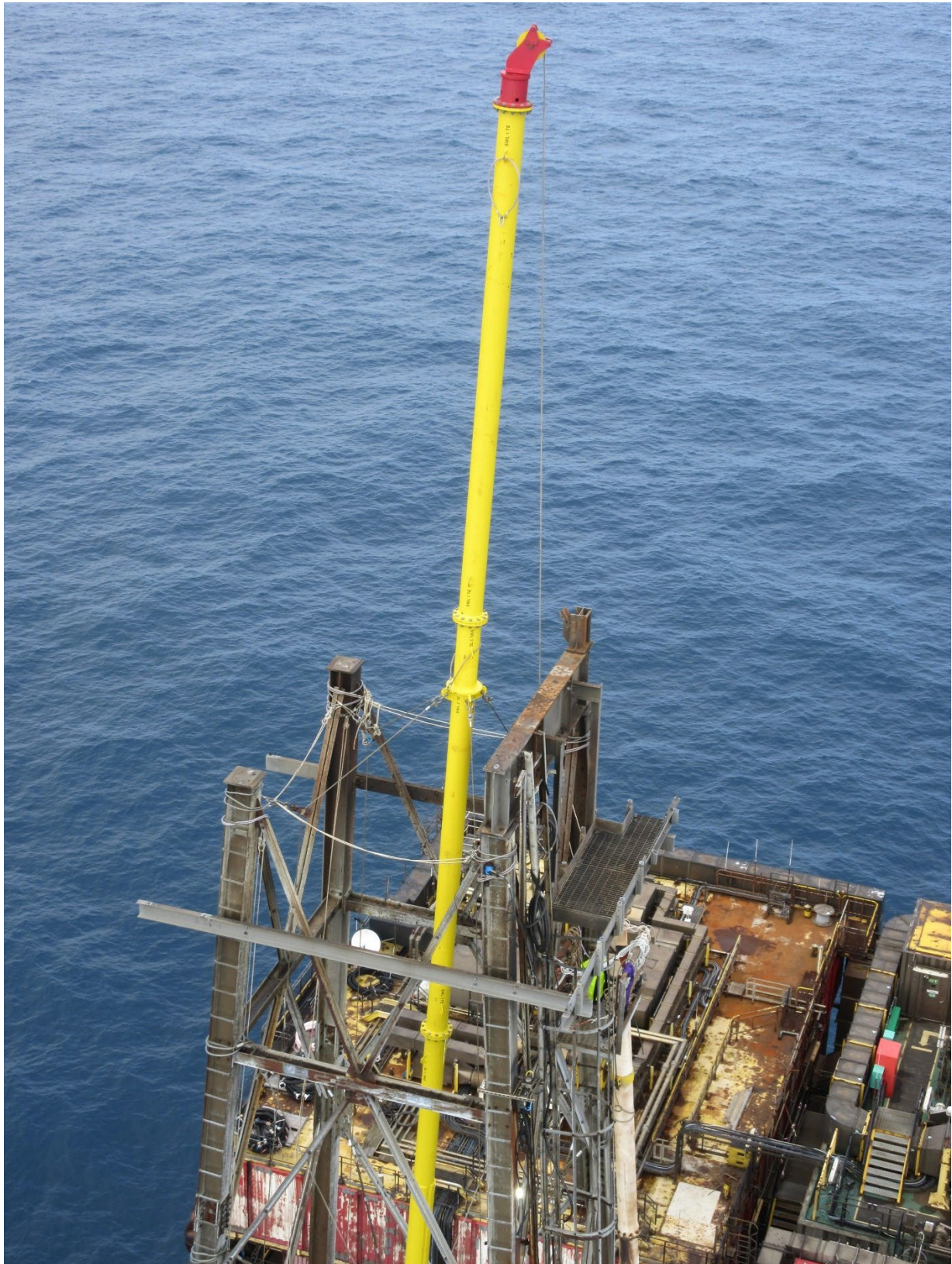


Figure 8-3: Commencement of Derrick Destruct using floating gin pole





Figure 8-4: Ongoing Derrick Destruct





Figure 8-5: Clear pipe deck (above) and skid deck (below) ahead of MDU Construction





Figure 8-6: Commencement of Construction





Figure 8-7: Ongoing MDU Construction



Figure 8-8: Ongoing MDU Construction





Figure 8-9: Mast Installation





Figure 8-10: Power Generation Units Installed



Figure 8-11: Palfinger Crane Boom Installed



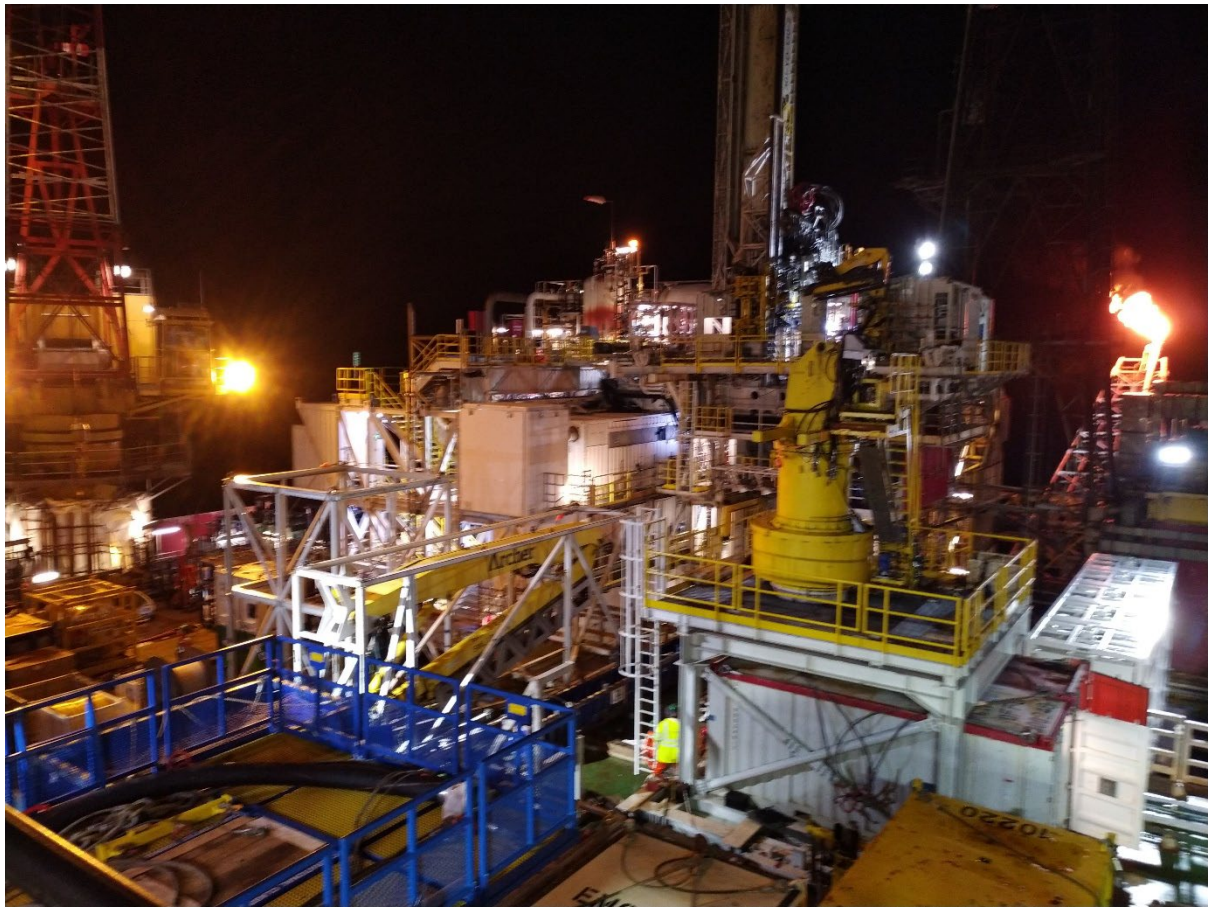


Figure 8-12: MDU Emergency Lighting Energised



Figure 8-13: Derrick Destruct Waste Segregation (Cable, Steel & Electrical Equipment)



Figure 8-14: Derrick Destruct Waste Segregation (Scrap Metal)





Figure 8-15: Environmental Audit of MDU at Sandnes, Norway (March 2022)



Figure 8-16: MDU Commissioning Environmental Audit (January 2023)



## CONTACT

TAQA Bratani Limited  
TAQA House  
Prime Four Business Park, Kingswells,  
Aberdeen, AB15 8PU,  
Scotland UK

Tel: +44 (0)1224 275275

[www.taqa.com](http://www.taqa.com)

