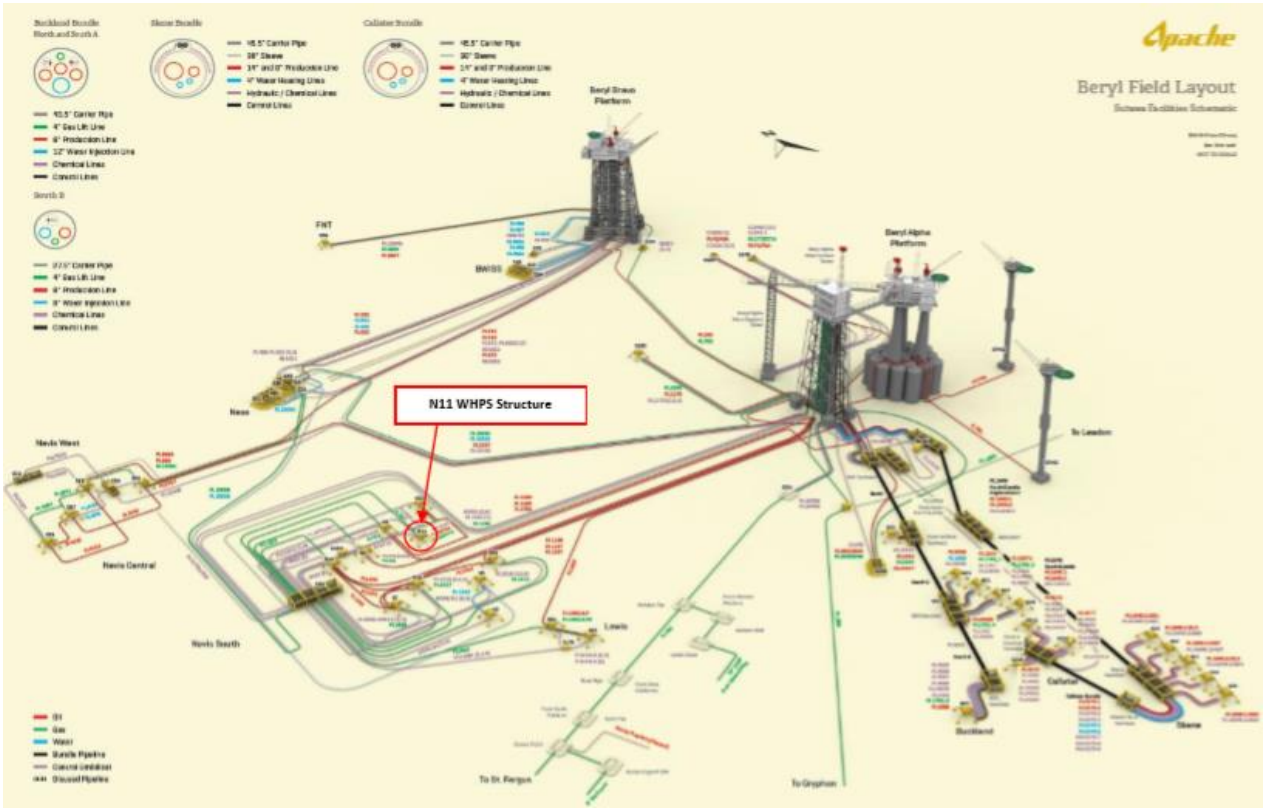
EXPLORING WHAT'S POSSIBLE



N11 WHPS
Decommissioning Close out Report

06/09/2022

Contents

Terms and Abbreviations

Abbreviation	Explanation
DP	Decommissioning Programme
KM	Kilometre
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
P&A	Plug and Abandon (wells)
WHPS	Wellhead Protection Structure

Appendices

Appendices	
Appendix A	Clear seabed certificate
Appendix B	Waste Management Summary

1 SUMMARY

1.1 Introduction

The Nevis South subsea well cluster is located in UKCS blocks 9/12 and 9/13 7.5km West of Apache's Beryl Alpha complex. The field was discovered in 1974 by well 9/13-4 with first oil being produced 17 September 1996.

N11 was a suspended well in the Nevis South cluster originally sidetracked in 2010 from the N6z wellbore. An influx of sand was identified during an intervention campaign in Q2 2014 where the objective was to isolate a watered-out reservoir and add up-dip perforations to produce the gas cap of the Beryl reservoir. The high angle through the reservoir required a tractor to reach TD but the sand restricted access with a HUD of 9625ft MD, approximately 3000ft MD from the top most perforation. In Q3 2014, a suspension and tree recovery campaign was executed to prepare N11 as a donor slot for future sidetrack by suspending the well with deep and shallow elastomeric tubing plugs installed in the completion, with the tubing punched above the deep production packer. The work to prepare the slot was done under the premise that the existing reservoir would be fully abandoned within the following year (2015) as part of the continued Beryl Subsea drilling plan.

After the work was completed, it was suspected through a study on an analogue well, that the fatigue life of the wellhead was likely outwith engineering tolerances for further well work (sidetracking). An engineering study specific to N11 in Q12015 confirmed that the N11 wellbore did not have sufficient fatigue life. Long term well suspension using elastomeric seals inappropriate for long term suspension therefore the decision was made to permanently abandon the well.

A drill string deployed mechanical rotary cutter assembly was run and the Conductor and 20" casing were cut 13ft below the seabed and wellhead assembly was recovered. The wellhead assemblies were recovered to the rig at 19:30hrs on 21/04/18. The wellhead was taken onshore for disposal.

Production pipeline PL1194 was flushed with treated seawater in April 2014, to displace any hydrocarbon fluids towards Beryl Alpha. PL1194, along with gas lift flowline PL1207 were disconnected from N11 flowbase in June 2017 by diver intervention.

1.2 Activity Summary

This section provides an overview of the P&A works performed by the Awilco WilPhoenix semi-submersible drill unit.

Date/Time	Activity
5th April 2018 @22.30	Commencement of operations – refer to section 1.3 for a detailed account of activities.
23rd April 2018 @15.00	Completion of operations. Awilco WilPhoenix departs 500 meter zone.
Total Duration:	**17.7 Days**

1.3 Detailed Account of P&A Operation

The Awilco WilPhoenix performed the abandonment operation on 9/13a-N11 with operations commencing at 22:30hrs on 5th April 2018. The rig moved onto the N11 location and the BOPs were run. The tubing hanger running and orientation tool was RIH on dual bore riser, surface bleed off package rigged up to handle any hydrocarbons, and the pre-installed HRED cycled open. The tubing hanger was unlocked, the well circulated to seawater, through the previously performed tubing punches, and the completion POOH.

The production packer and pre-installed bridge plug were pressure tested, with a cement plug providing 1,000ft of cement isolation set from 7,693ft to 6,693ft isolating the Beryl reservoir and Heimdal formations.

The well was displaced to 10.2ppg WBM to balance the mud behind the 9⅝" casing and the seal assembly recovered. The 9⅝" casing was cut at 4,404ft, the annulus circulated and, with gas levels of 18% observed, the mud weight was increased to 10.5ppg and the 9⅝" casing POOH. A 13⅜" bridge plug was set at 4,351ft, pressure tested and a cement plug providing 1,200ft of cement isolation set from 4,350ft to 3,150ft isolating the Sele, Frigg and Heimdal.

The 13⅜" seal assembly was recovered, the 13⅜" casing cut at 2,094ft and after several attempts the casing came free. The casing annulus was circulated with large amounts of contaminated cement and soft claystone observed. The 13⅜" casing was POOH and a clean out run carried out to 2,000ft to remove any debris from inside the 20" casing. An inflatable bridge plug was set at 1,970ft, pressure tested and a cement plug providing 500ft of cement isolation set from 1,970ft to 1,470ft isolating the Grid sands.

The BOPs were recovered, the flowbase recovered, the 20" casing and 30" conductor cut at 434ft and the wellhead recovered before the rig was de-ballasted and towed out of the Nevis South 500m zone where operations ceased at 15:00hrs on 23rd April 2018. The operation took 17.7 days in total.

1.4 Summary of Approved Decommissioning Programme

- Well P&A for N11 activities were completed on 23rd April 2018
- The Nevis N11 wellhead protection structure (WHPS) was removed from wellhead using the vessel crane and wet-stored by the Seven Falcon vessel on 11th April 2018
- The Decommissioning programme for the WHPS was formally approved by OPRED on 5th June 2019
- The N11 WHPS was recovered from wet-store location on 26th June 2019 using the Seven Atlantic vessel and returned to shore for recycling
- A summary of the infrastructure decommissioned and the approved decommissioning option is outlined in the tables below
- Consultation on the Decommissioning Programme commenced on 7th March 2019 and ended on 5th April 2019. No significant consultee comments were received from any party.

1.5 Notice Holders

Table 1.1. provides details of all parties to the approved programme. The registered company number for Apache Beryl I Limited has been included for completeness. (The Decommissioning Programme only referenced the branch number).

Table 1.1: Notice Holders

Section 29 Notice Holder(s)	Registration Number	Equity Interest (%)
Apache Beryl I Limited	FC005975 (Company Number) BR001327 (Branch Number)	57.18%
Chrysaor Limited	06418649	42.81%
Beryl North Sea Limited	BR015691	0%
Enterprise Oil Limited	01682048	0%
Hess Limited	00807346	0%
Siccar Point Energy E&P Limited	01504603	0%

1.6 Associated Decommissioning Approvals

Table 1.2: Associated decommissioning Approvals	
Marine License – Wet Storage and removal Ref. ML/294/1	12th March 2018
Subsea Well P&A	Completed 23rd April 2018
Abandonment Consent WONS/10430/0/AB3/1	6th February 2018

1.7 Overview of Infrastructure/pipelines Decommissioned

Table 1.3: Overview of Installation(s) decommissioned			
Subsea Installation(s)		Number of Wells	
Number	Type	Platform	Subsea
1	WHPS	N/A	1

Table 1.4: Completed Decommissioning Activity against proposed decommissioning solution	
1. Subsea Installation(s)	
Approved Decommissioning Solution	**Completed Decommissioning Activity**
Flushing of Production Line PL1194	7500bbls water was flushed through PL1194 In April 2014 clearing of oil hydrocarbons.
Flowline disconnection (PL1194 and PL1207)	Production and gas lift flowlines were disconnected from N11 flowbase in June 2017 by diver intervention.

Complete relocation of WHPS to wet store location	DSV on location and completed wet store scope on 11th April 2018. . Divers disengaged locking pins and installed rigging. Vessel crane lifted WHPS and relocated to wet store location.
Complete removal of the WHPS from the seabed	DSV on location and Commenced WHPS removal and recovery work scope 26th June 2019. Divers installed rigging and vessel crane recovered to deck. Complete offload of WHPS onshore 28th June 2019.
Recycling and disposal of the WHPS	All waste materials were returned to shore and recycled using appropriately licenced, waste management and recycling contractor, Scotoil Services (A Tradebe Company) of Miller Street, Aberdeen. On return to shore, the WHPS was taken for cleaning of the marine growth, prior to disposal.
2. Wells	
Approved Decommissioning Solution	**Completed Decommissioning Activity**
Well previously plugged and abandoned, wellhead recovered & 3m of top of conductor cut and removed	The well was plugged with cement plugs as per the agreed work plan submitted to the OGA via WONS in April 2018. All tubular cutting was performed using standard drill pipe deployed casing cutting knives. The conductor and 20" casing were cut at 13ft below mudline.

1.8 Schematic of Installation Being Decommissioned

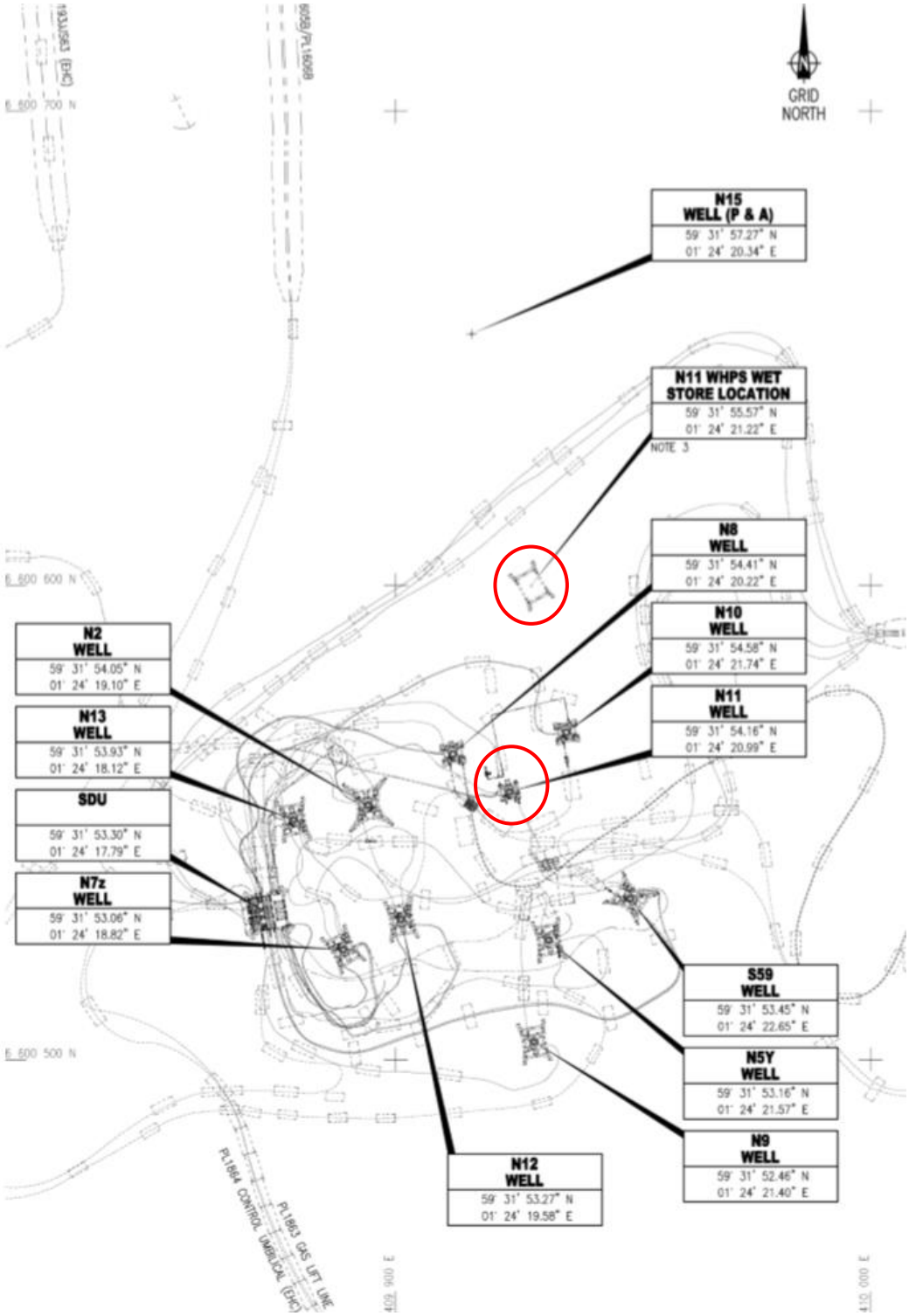


Figure 1.1 : Nevis Field prior to Decommissioning activities

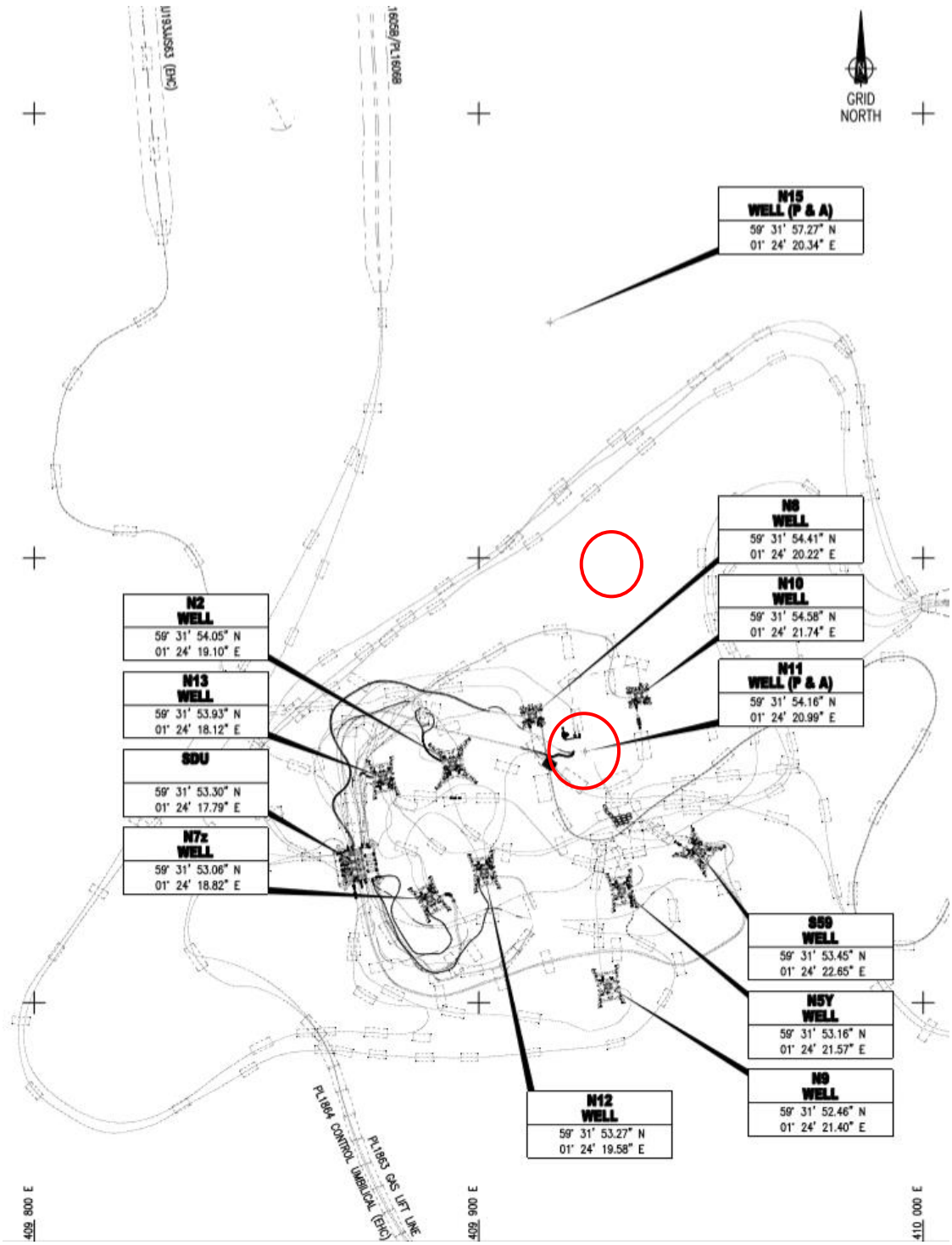


Figure 1.2 : Nevis Field on conclusion of Decommissioning activities

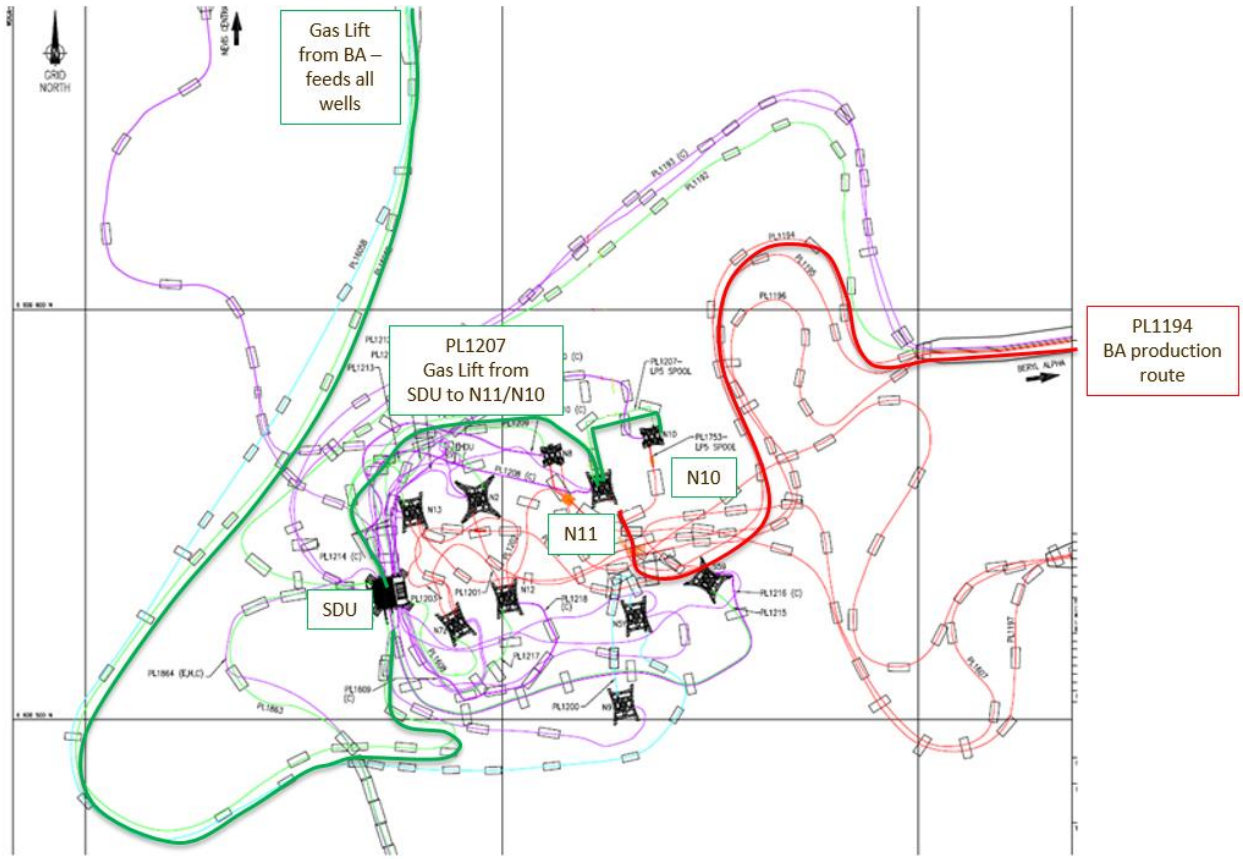


Figure 1.3 : N11 Field Layout with Flowlines identified – Production (red), Gas Lift (green)

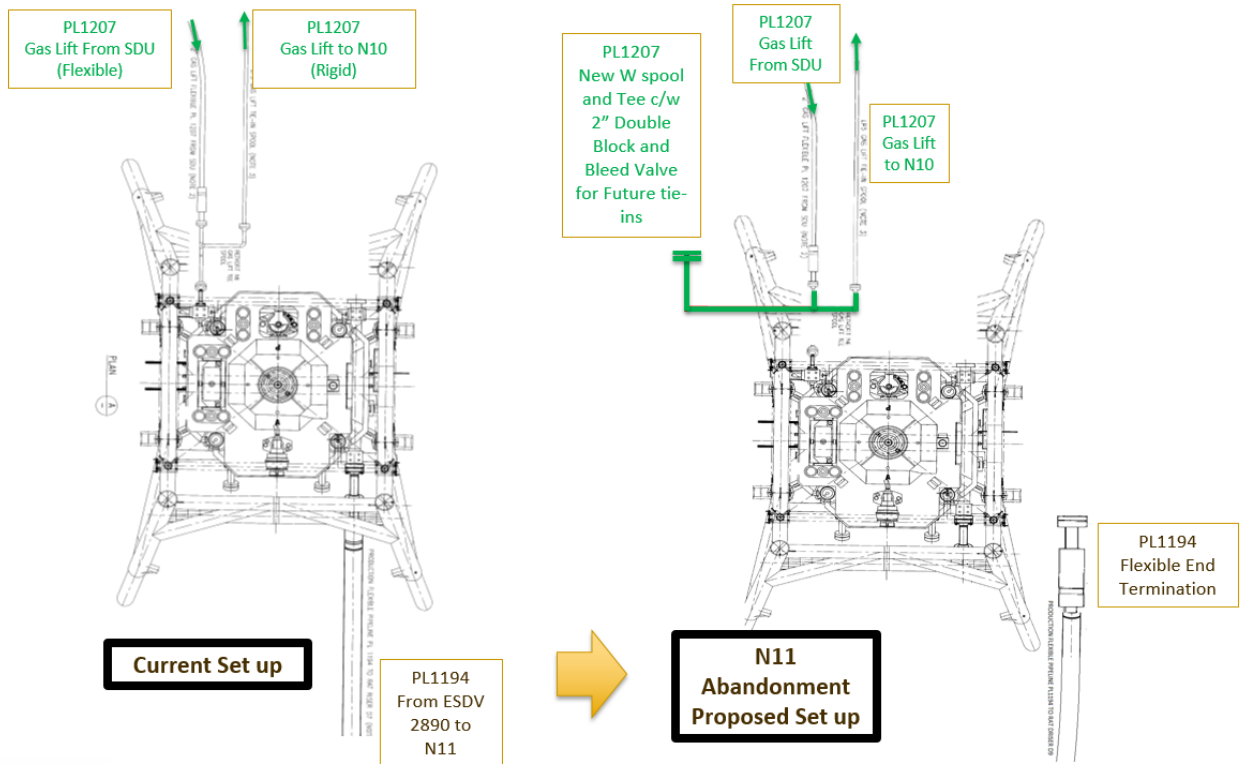
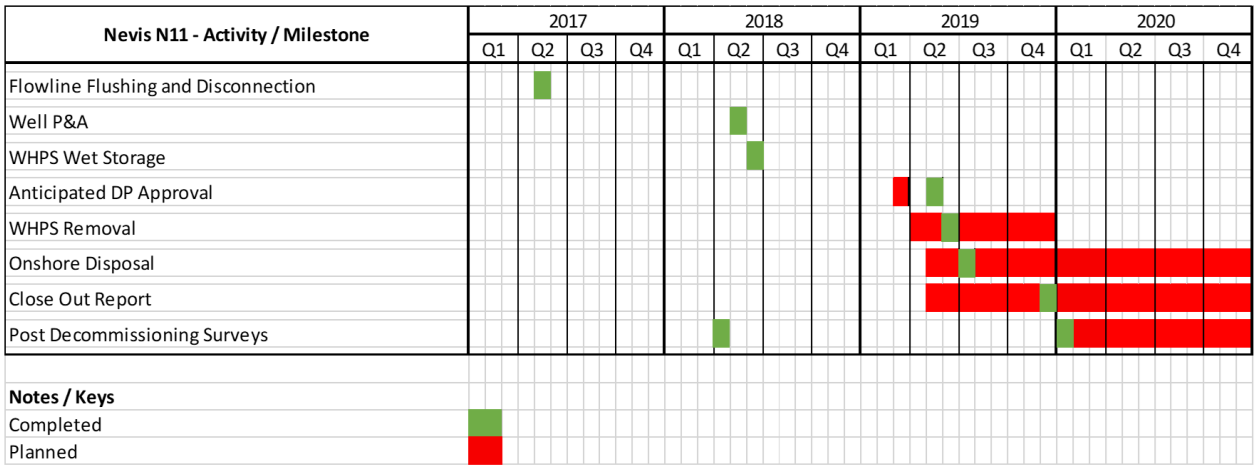


Figure 1.4 : N11 Flowline configuration following abandonment

1.9 Gantt chart / Actual completion dates against approved schedule

The following schedule shows the planned decommissioning activities against the actual executed. All decommissioning activities were completed within the approved schedule.



2 AS-LEFT STATUS

No infrastructure has been left in-situ as part of this decommissioning programme, however a further decommissioning programme for the remainder of the field will be submitted at a later date.

Table 1.5: As Left status of infrastructure / pipelines left in situ
1. Pipelines, Flowlines & Umbilicals
PL1194 and PL1207 are currently out of service. Gas lift has been terminated with a spool and DBB value for future tie-in. PL1194 has been filled with treated seawater to maintain its integrity for potential future re-use. Please refer to schematics in figures 1.3 and 1.4). Pipelines are partially buried and are crossed by existing live lines. Mattress protection exists in the vicinity of these crossings.
2. Pipeline stabilisation features
N/A
3. Debris Clearance Survey
A site survey was performed on 25th January 2020 – No additional debris was noted out-with those identified as existing items on the layout drawings. Please refer to Appendix A, N11 WHPS Site Survey Report.

3 FUTURE MONITORING AND MANAGEMENT PLAN

The following table summarises the plans for future monitoring and surveys of the N11 well and WHPS wet-store locations.

Table 1.6: Future Surveys and Monitoring proposals
1. Pipelines, Flowlines & Umbilicals
Pipelines will be monitored until full field decommissioning and that discussions are ongoing with OPRED to determine a strategy for future monitoring.
2. Pipeline stabilisation features
N/A
3. Environmental Surveys
A post decommissioning debris survey was undertaken on 25th January 2020, the results of which can be found in Appendix A of this report. A full post decommissioning environmental survey will be completed following full field decommissioning. These results will be discussed with OPRED and will determine proposals for ongoing surveys.

4 SEABED CLEARANCE VERIFICATION

An ROV as-left seabed clearance survey was conducted in April 2018. The as-left seabed clearance survey is provided in Appendix A. No anomalies were found. The debris identified during this survey are included below for reference.. Apache will remove any identified oil and gas debris upon completion of full field decommissioning.

Table 1.7: Seabed conditions		
Observations	**Eastings**	**Northings**
Scaffold Debris	409918.6	6600578.7
Wire	409928.6	6600577.2
Cargo Strap	409928.5	6600592.4
Scaffold Debris	409934.2	6600601.6
Scaffold Debris and cargo strap	409934.7	6600598.3
Doors	409923.7	6600682

The decision was taken to perform an ROV visual survey due to the scale of the project footprint, in an effort to minimise any additional seabed disturbance. The survey was performed on the 21st April 2018.

On recovery of the WHPS to the vessel, divers provided visual confirmation of full recovery and a clear seabed.

A further ROV site survey of the wet store location and surrounding area was completed in January 2020 confirming no anomalies caused by the removal and recovery of the WHPS.

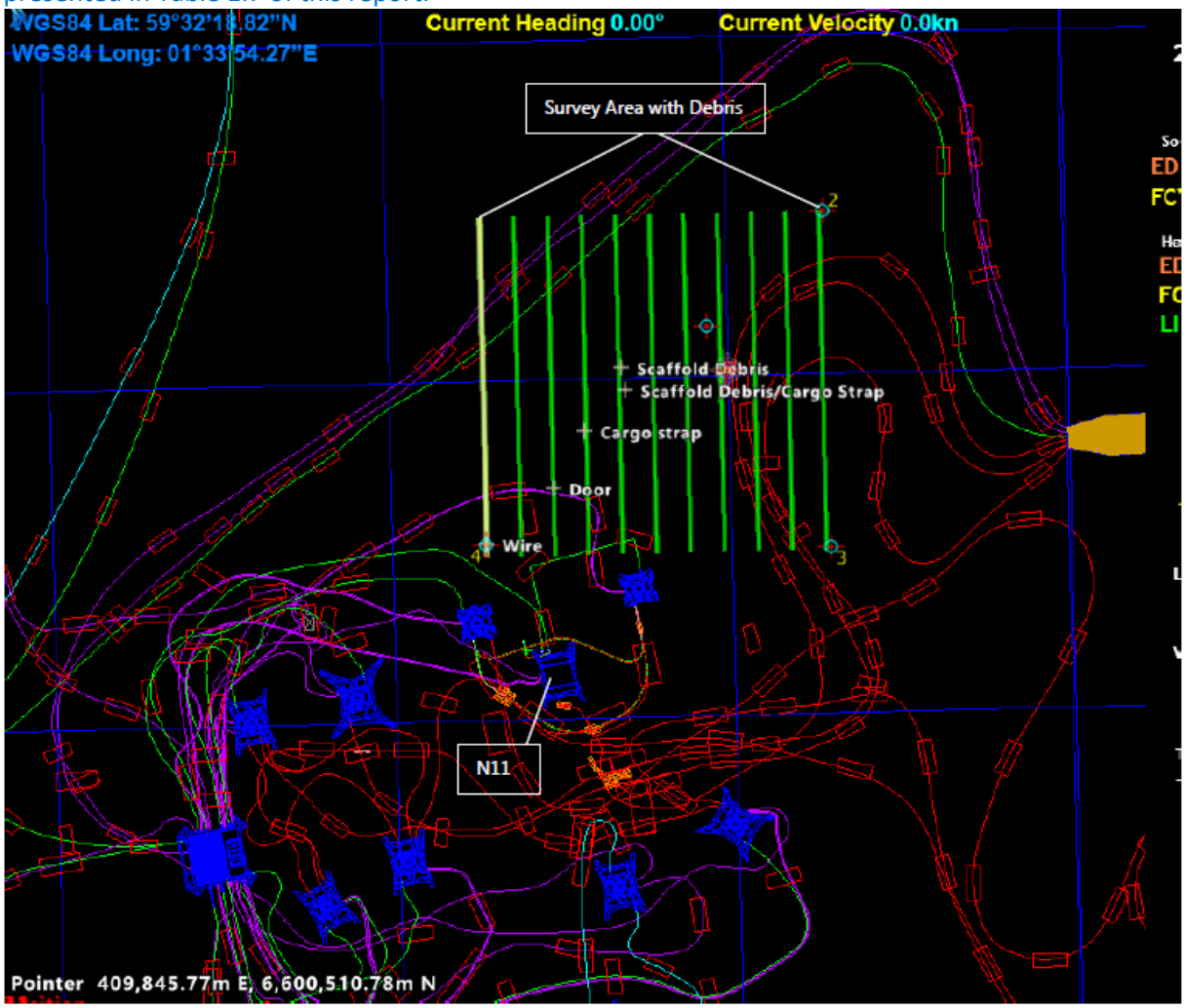
5 ENVIRONMENTAL IMPACTS

A post decommissioning debris survey was completed by ROV in January 2020 on the Edda Sun. A grid area around the N11 WHPS stored location was set up and surveyed with several items of debris noted including scaffolding, cargo straps, wire and trawl boards.

The results of the debris survey are presented in Appendix A. A summary is contained below for reference.

A full post decommissioning environmental survey will be completed following full field decommissioning.

The figure below presents the area survey and the locations of the observations. Actual coordinates are presented in Table 1.7 of this report.



Photographs of each item is included below:

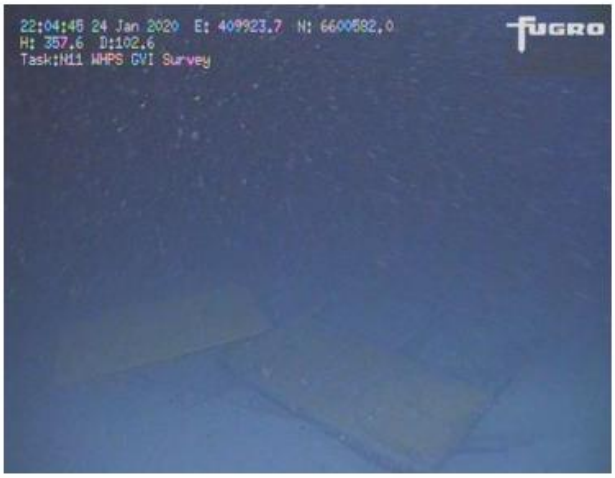
1. Scaffold Debris

2. Wire

3. Cargo Strap

4. Scaffold Debris

5. Scaffold Debris and Cargo Strap



6. Doors

6 MATERIALS/WASTE

All waste materials were returned to shore and recycled using appropriately licenced, waste management and recycling contractor, Scotoil Services (A Tradebe Company) of Miller Street, Aberdeen. On return to shore, the WHPS was taken for cleaning of the marine growth, prior to disposal.

The following amount of waste was generated and disposed from the decommissioning of the WHPS, no hazardous waste was identified (see Appendix B):

Table 1.7: Waste generated and disposed of following decommissioning Activity	
Structural material (metals and cables)	19.82 tonnes
Non-hazardous waste (mixed demolition waste/general waste)	0.22 tonnes
Hazardous waste (asbestos and fluorescent tubes)	0.0 tonnes

Note: Weight in air of WHPS on installation 21.5 tonnes. The differential of 1.68 tonnes is expected to have been lost to corrosion over service life.

Structural material was recycled by John Lawrie Metals Ltd. Marine growth was disposed to landfill by Taylors Industrial Services.

7 LESSONS LEARNED

Early engagement with the regulator when progressing a Decommissioning Programme is crucial.

8 COST

There was generally a good correlation between estimated and actual costs, with no major discrepancies noted.

Costs for recycling were not considered initially as the WHPS was to be recovered and inspected with the view to refurbish and re-use at a later date. Recycling was only to be considered should refurbishment not be available.

9 PHOTOGRAPHS

The following photograph of the N11 WHPS was taken on the back deck of the vessel Seven Atlantic in June 2019.

The WHPS was then reduced in size, sent to Scotoil in Aberdeen for marine growth removal, and sent offsite for recycling (metal) and disposal (marine growth) – as per below photo.

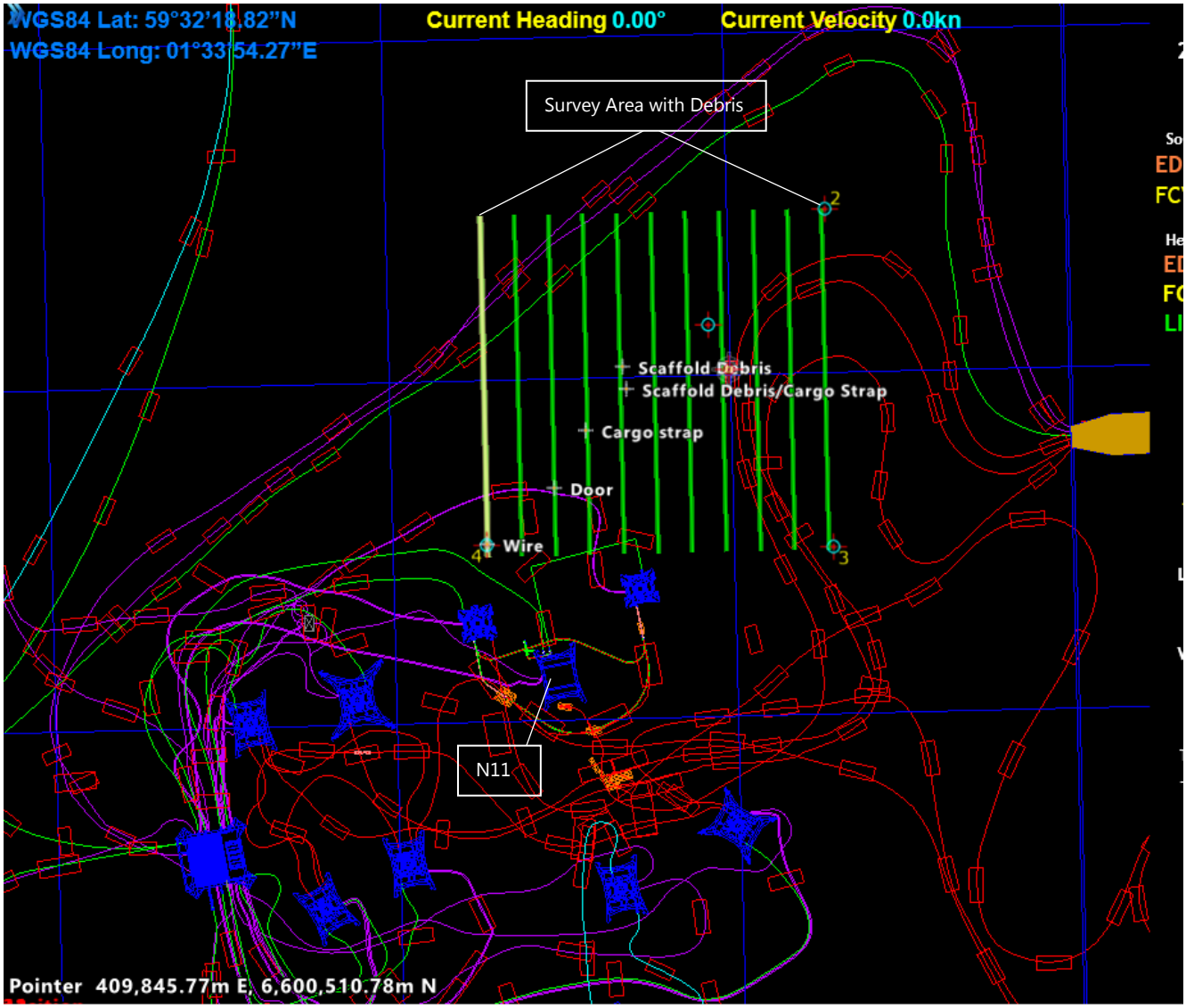
10 APPENDICES

Appendix A – As-left Seabed Clearance Survey Report

To:	Charlotte Talbot	Apache Client Rep
CC.	George MacFarlane	Fugro OVM
	Leo Versteeg	Fugro Project Manager
From:	Jason Lynch	Fugro Project Engineer
Date	25/01/2020	
Ref.	Apache – SPM 2 Messenger line Recovery	
Re:	N11 WHPS Site Survey	

INTRODUCTION

Apache has requested that Fugro carry out survey work at the N11 WHPS site. Seabed conditions and any debris found on the site were to be noted.



SUMMARY OF RESULTS

Seabed conditions were found to be normal with no anomalies.

Screen grabs of any as found debris below:

Observation	Eastings	Northings
1. Scaffold Debris	409918.6	6600578.7
2. Wire	409928.6	6600577.2
3. Cargo Strap	409928.5	6600592.4
4. Scaffold Debris	409934.2	6600601.6
5. Scaffold Debris and cargo Strap	409934.7	6600598.3
6. Doors	409923.7	6600682

IMAGES

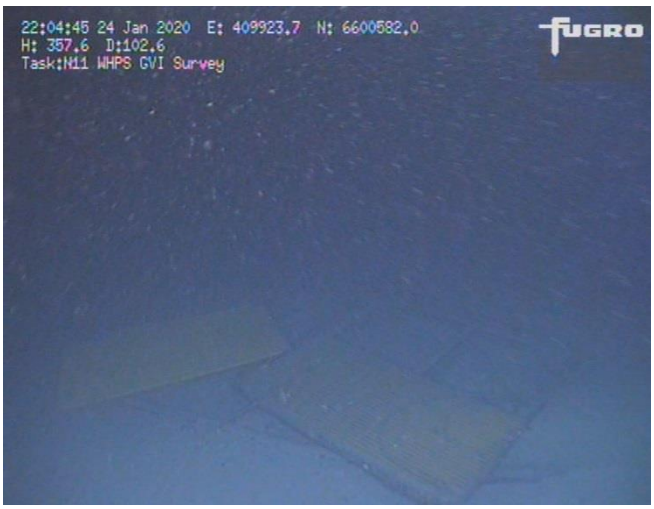
1. Scaffold Debris

2. Wire

3. Cargo Strap

4. Scaffold Debris

5. Scaffold Debris and Cargo Strap



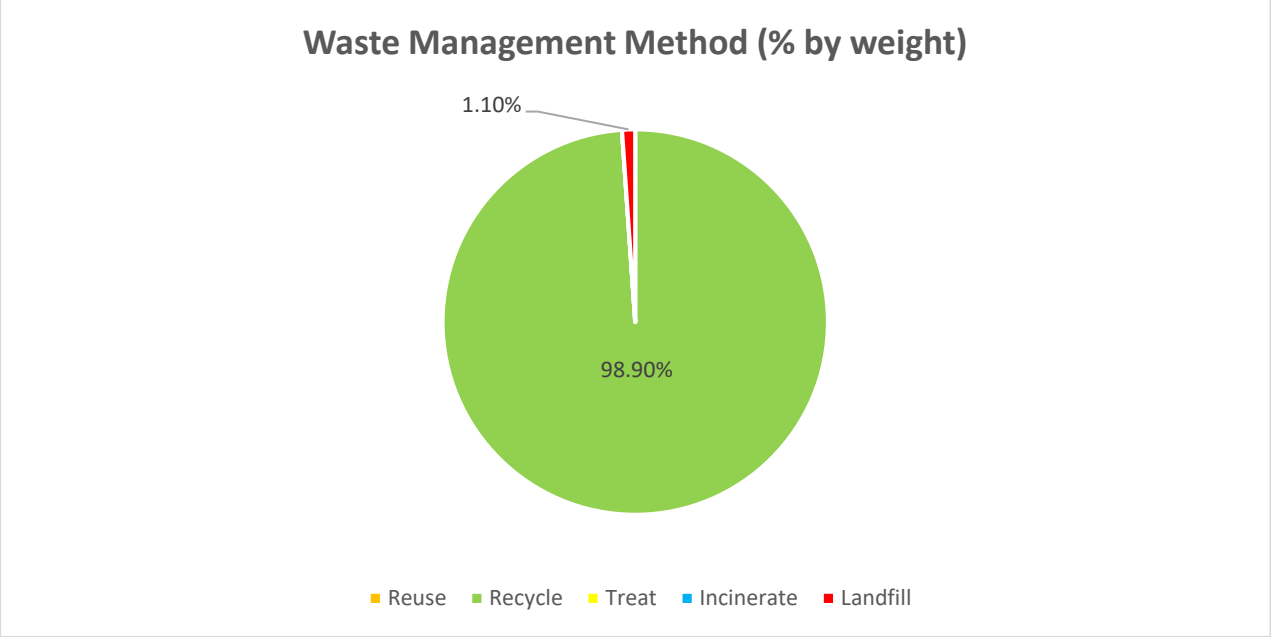
6. Doors

Appendix B – Waste Management Summary Report

SCOTOIL SERVICES
A TRADEBE COMPANY

Scotoil Client Waste Management Summary

Client Name	Norsea Group (Apache)
Client Reference	N11 Overtrawl Structure
Job Number	11449 (Outgoing scrap reference 11450)
Waste Type	Decommissioning waste
Total weight of waste	20,040 kg
Weight of NORM	0 kg



Reuse	0 kg (0.00%)
Recycle	19,820 kg (98.90%)
Treatment	0 kg (0.00%)
Incineration	0 kg (0.00%)
Landfill	220 kg (1.10%)
Total percentage recovered (by weight)	**19,820 kg (98.90%)**

SCOTOIL SERVICES
A TRADEBE COMPANY

Waste Management Facilities Used

Name of disposal/recovery facility	Company	Authorisation number	Waste type sent	Waste Management Method
Greenbank Road	John Lawrie Metals Ltd	WML/N/20154	• Scrap protection structure sections	Recycling
		Total weight	**19,820 kg**	
Taylors Industrial Services, Easter Hatton	Taylors Industrial Services	PPC/A/1016127	• Marine growth	Landfill
		Total weight	**220 kg**	

JOB 11449

Taylors Industrial Services Ltd
Adria House, Hareness Circle
Altens Industrial Estate, Aberdeen,
AB12 3LY
Tel : 01224 872972
Email : info@taylorsindustrial.co.uk
Web : www.taylorsindustrial.co.uk

Waste Pre-treatment Delivery & Transfer Note

Carrier Licence: SNO/038841/CB
VAT Reg: GB553 2483 45

Customer
SCOTOIL SERVICES LTD

Site Address
DAVIDSON HOUSE, MILLER STREET, ABERDEEN

Contact Info
SIMON 01224 571491

Ticket No. 21850
Date 05-July-2019
Account No. SCOT 004
Order Number
Movement Type

Area	Vehicle Reg	Driver
ABERDEEN	SV16NSZ	THOMASZ SWIDERSKI

Skip Size 8 CUY OPEN SKIP	**Waste Type** GENERAL WASTE	**EWC Code** 20 03 01
Conf Waste Type GENERAL WASTE		**SIC Code**
Special Instructions *******MUST SEE ALAN BEFORE TIPPING******		

Warning - Under the Duty of Care Environmental Protection Act 1990, the hirer is responsible for informing the driver of the contents of the skip.

Business / Commercial - all work is completed in accordance with our Standard Terms and Conditions, available on both our website and any signed Annual Duty of Care Document.
Domestic - all work is completed in accordance with our Domestic / One off Hire Terms and Conditions available on our website.

THE FOLLOWING MUST NOT BE PUT INTO THE CONTAINER UNLESS AGREED: Asbestos, Gas Bottles, Fridges, Aerosols of any kind, Oil Drums - Full or Empty, Paint Tins - Full or Empty, Batteries, Any form of hazardous chemicals, Gripfill Tubes - Full or Empty, Plasterboard, Fluorescent Tubes, Freezers, Pesticides, Televisions or Tyres.

SKIPS WILL NOT BE REMOVED FROM SITE IF THEY HAVE BEEN MOVED OR LOADED ABOVE THE SIDES.

DISPOSAL POINT TAYLORS ENVIRONMENTAL VILLAGE IN	**HAULIER**
Waste Disposal Licence No: PPC/A/1016127	**Driver Signature:**
Weighbridge Ticket No: 21877	
Gross Weight: 11340	**Driver Print Name:** THOMASZ SWIDERSKI
Tare Weight: 11120	**Date:** 05-July-2019
Net Weight: 220 Michelle Watt	**Time On Site:** 15:24 **Time Complete:** 15:24

I confirm that I have fullfilled my duty to apply the waste hierarchy as required by Section 34 of the Waste (Scotland) Regulations 2012.

Customer Signature:

Customer Print Name: Simon Davies

An Electronic copy of this Waste Transfer Note is available on request.