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# North West Hutton Decommissioning Programme Close-out Report

**Prepared by Jee for BP**

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# Document control

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## Distribution

### Jim Blacklaws

BP Exploration Operating Company Ltd  
 New Telecoms House  
 73 - 77 College Street  
 AB11 6FD, UK  
 Tel +44 1224 576366  
 Email [blackljjf@bp.com](mailto:blackljjf@bp.com)

### Doug Johnston

BP Exploration Operating Company Ltd  
 New Telecom House  
 73 - 77 College Street  
 AB11 6FD, UK  
 Tel +44 1224 576 363  
 Email [douglas.johnston@uk.bp.com](mailto:douglas.johnston@uk.bp.com)

## Issued by

### Joe Leask

Jee Limited  
 2 Abercrombie Court  
 Amhall Business Park  
 Westhill  
 Aberdeenshire  
 United Kingdom

Tel +44 (0)1224 392 056  
 Email [joe.leask@jee.co.uk](mailto:joe.leask@jee.co.uk)

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## General terms and definitions

CA	-	Cormorant Alpha
DECC	-	Department of Energy and Climate Change
DNV	-	Det. Norske Veritas
DoL	-	Depth of Lowering
DPN	-	Disused Pipeline Notification
DTI	-	Department of Trade and Industry (now DECC)
GI	-	General Inspection
GVI	-	General Visual Inspection
IMR	-	Inspection and Monitoring Regime
IRG	-	Independent Review Group
NNS	-	Northern North Sea
NUI	-	Normally Unattended Installation
NWH	-	North West Hutton
OGUK	-	Oil and Gas United Kingdom
OSPAR	-	Oslo and Paris Conventions
SFF	-	Scottish Fisheries Federation
SSIV	-	Subsea Isolation Valve
UK	-	United Kingdom
UKCS	-	United Kingdom Continental Shelf
UKOOA	-	United Kingdom Offshore Operators Association (now OGUK)
WLGP	-	Western Leg Gas Pipeline
WoW	-	Waiting on Weather

# 1 Introduction

## Purpose

To fulfil the reporting requirements of the decommissioning of the North West Hutton (NWH) facilities, this close-out report confirms that requirements set out by the North West Hutton decommissioning document [1], which contains separate approved Decommissioning Programmes for the platform and its associated equipment, for the pipeline PL148, and for the pipeline PL147, have been implemented.

This report has been written by BP on behalf of the NWH partners.

## Background

Figure 1-1 shows the NWH field prior to the commencement of the decommissioning activities:

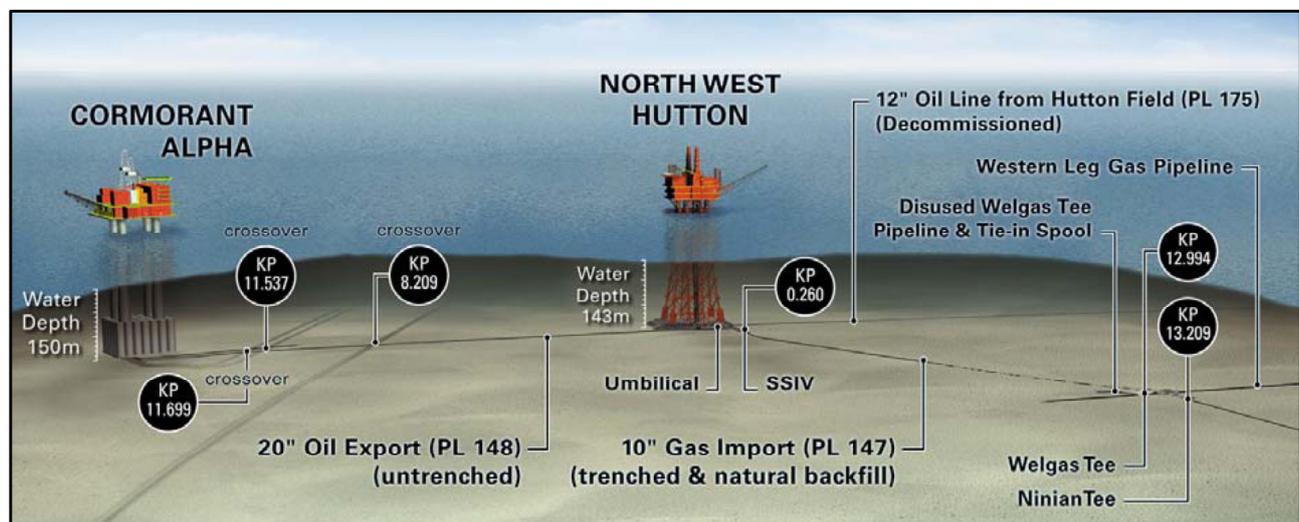


Figure 1-1 - NWH field overview

The NWH field is located in Block 211/27a of the United Kingdom area of the NNS. The platform was operated by Amoco (U.K.) Exploration Company, on behalf of Amoco U.K. Petroleum Limited and their partners in the field (hereinafter the “NWH partners”).

Production began in 1983. In May 2002, the NWH partners applied to the Department of Trade and Industry (DTI), now the Department of Energy and Climate Change (DECC), for consent to cease production. This application was approved by the DTI on 25<sup>th</sup> of June 2002 and the NWH field officially ceased production on 1st January 2003.

The decommissioning of disused offshore installations is governed under UK law by the Petroleum Act 1998. The DECC Guidance Notes for Industry on the Decommissioning of Offshore Installations and Pipelines under the Petroleum Act 1998 also incorporates the UK’s international obligations relating to the disposal of offshore installations which fall under the OSPAR conventions. OSPAR Decision 98/3 [2] allows a potential “derogation”, which is an exemption from the general presumption of total removal for all or part of the “footings” of steel installations weighing more than 10,000 tonnes, and placed in the maritime area before 9th February 1999.

The NWH owners undertook studies and comparative assessment of all identified options for reuse and removal. The findings were further considered by an Independent Review Group (IRG) consisting of

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international engineers and scientists. The conclusions reached due to the size, weight, age and condition of the jacket were that the topsides and main jacket structure should be removed and that the jacket footings should remain in-situ.

There is a single drill cuttings pile of approximately 30,000 m<sup>3</sup> which falls below the threshold values established in OSPAR recommendation 2006/5. A comparative assessment of options for the drill cuttings pile was undertaken which concluded that the best environmental option for the management of the pile is to leave it in place undisturbed to degrade naturally.

A Decommissioning Programme [1] was prepared in compliance with the Petroleum Act 1998. This programme was approved on the 12<sup>th</sup> of April 2006 and the Decommissioning Programme has now been implemented.

An as-left schematic of the NWH field is shown in Figure 1-2.

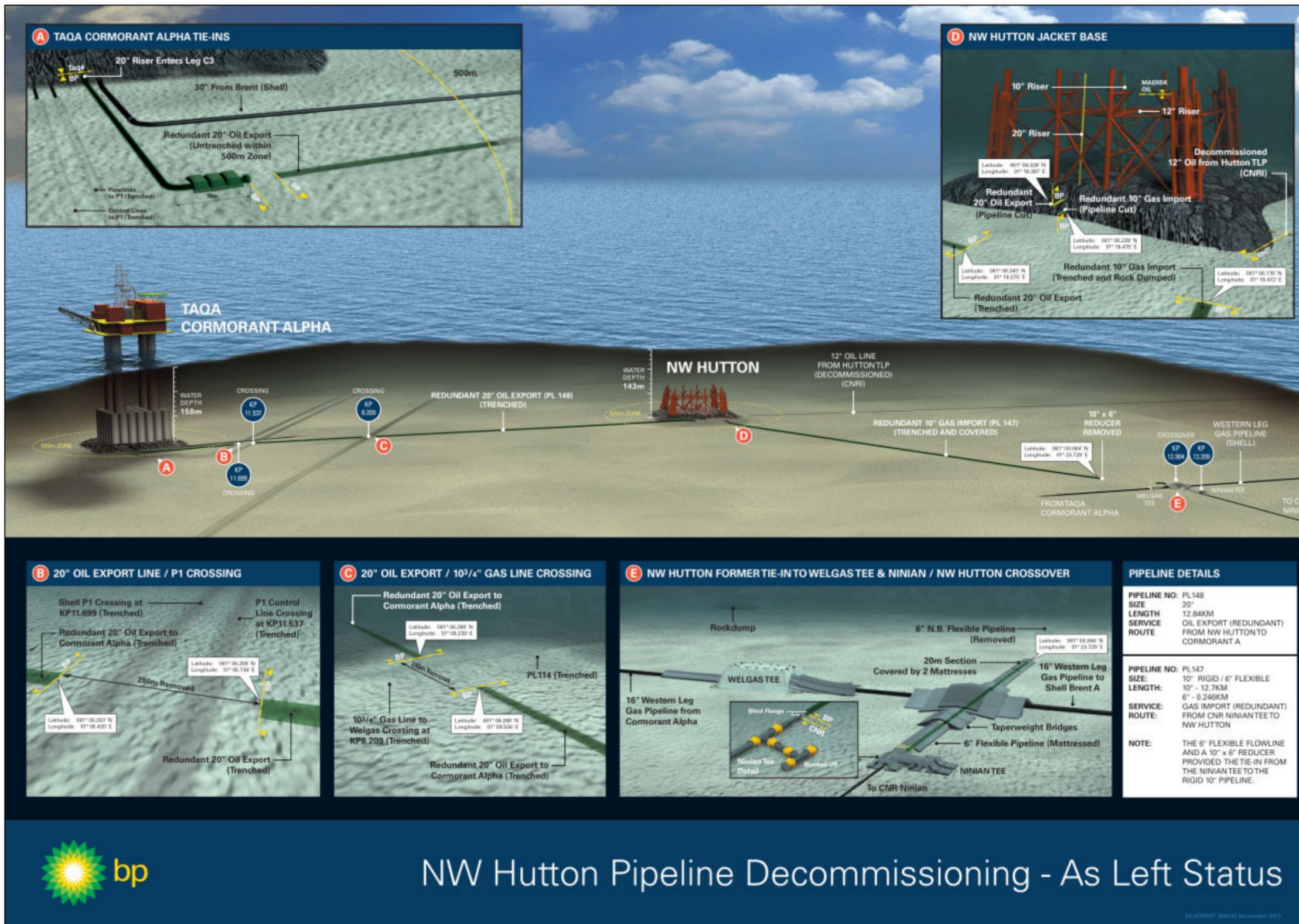


Figure 1-2 - NWH "As-left" field status

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## 2 Decommissioning activities

A summary of the decommissioning activities undertaken at the NWH field can be seen below (further description can be found in sections 3 through 6).

### Programme 1 - Decommissioning of the platform and associated equipment

- ✦ Plugging and abandonment of the wells.
- ✦ Topside decommissioning using the reverse installation technique utilising a heavy lift vessel. Modules were then transported ashore.
- ✦ Jacket decommissioning: The jacket was cut into sections subsea and then lifted using a heavy lift vessel. The jacket sections were then transported ashore. The footings remain in-situ standing 45m above the seabed in a mean sea water depth of 140m.

### Programme 2 - Decommissioning PL147 pipeline

PL147 is approximately 13km in length and when originally laid was trenched to 0.45m and allowed to naturally backfill with sections being rock dumped for stability. Decommissioning included:

- ✦ The selective cut and removal of exposed pipeline sections
- ✦ The removal of the SSIV and associated spools, umbilicals and concrete mattresses
- ✦ The disused welgas spool was included in the Decommissioning Programme [1] but during the subsea workscope this pipeline could not be found and it was concluded that it was not present

### Programme 3 - Decommissioning PL148 pipeline

PL 148, the 13 km oil export line between NWH and Cormorant Alpha, originally lay unburied on the seabed.

- ✦ During decommissioning this pipeline was trenched and left to backfill naturally
- ✦ The pipeline crossings were removed
- ✦ The section of PL 148 within the Cormorant Alpha 500m zone was not trenched for safety reasons. The pipeline is disconnected at the riser tie in spool with a 9.7m gap.

## 3 Platform and associated equipment

### Wells

Of the forty wells on NWH sixteen of these were plugged and abandoned during the platforms operational life. Between 2002 and 2004 the decommissioning of the wells was undertaken in two distinct phases:

**Phase 1** – Plug and abandon the remaining 24 wells. This was accomplished with normal well intervention techniques, including coiled tubing.

**Phase 2** – Remove the tubing, casing and conductors from 40 wells.

Phase 1 and 2 works were successfully completed as preparatory works prior to approval of the NWH Decommissioning Programme [1] and are fully discussed within that document. Of the 24 well abandonments, three were the subject of well operations programme changes due to site conditions. These changes were the subject of internal risk assessment, peer review and approval by the independent wells examiner. Two issues were raised during the Third Party Verification process with regards to the wells plugging and abandonment:

#### Issue 1: Adherence to UKOOA (OGUK) Guidelines for the Suspension and Abandonment of Wells

✦ The DNV report states that there are 19 wells with issues in adhering to these standards. All of the abandonments comply with the UK Offshore Installations and Wells (Design and Construction, etc.) Regulations DCR. The UKOOA (OGUK) Guidelines recognise that each well is unique and should be considered on an individual basis. Therefore the Decommissioning Programme obligation has been met.

#### Issue 2: Tracking of waste

✦ The verifiers concluded that all items were removed from the seabed, but there is insufficient evidence to prove that all items were handed over to the waste management contractors.

### Topsides

The physical removal of the topsides was carried out by Heerema Marine Contractors, using the semi-submersible heavy lift vessel Hermod. Works began in May 2008 and were completed in August taking a total of 117 days (95 days + 21 WoW). Reverse installation was used to dismantle the topsides (shown in Figure 3-1 below). Five barge loads were taken to the disposal yard at Teesside in the UK. A disposal summary is shown in Table 3-1 on page 12.



Figure 3-1 - Topsides decommissioning

## Jacket

The decommissioning of the jacket structure was again conducted by Heerema using the Hermod. Works took place between 8<sup>th</sup> of April 2009 and 17<sup>th</sup> of July 2009 taking a total of 100 days (86 days + 14 days WoW). The jacket was cut into sections subsea and lifted onto barges (shown in Figure 3-2 below). Four barges were used to transport the materials to the disposal yard at Teesside in the UK. A disposal summary is shown in Table 3-1 on Page 12.



Figure 3-2 - Jacket decommissioning

Overall there were a total of 248 cuts using 3 cutting methods. These were as follows:

- ✦ 105 using hydraulic shears
- ✦ 58 using diamond wire cutters
- ✦ 85 using an abrasive water jet cutting tool

58 lifts took place to remove 9,200 tonnes of the NWH steel jacket, with the heaviest lift weighing around 2,250 tonnes.

## Jacket Footings

The NWH Decommissioning Programme committed to cutting the footings at approximately 100m below sea level. However, due to cutting tool access and orientation difficulties the final cut point was made at 95m below sea level. DECC in a letter to BP dated 14th January 2009, confirmed that the difference in cut height did not constitute a change to the Decommissioning Programme. This correspondence was assured as part of the Third Party Verification process undertaken by DNV. Third Party Verification is discussed in Section 12.

Incorporated within the jacket footings is a drilling template which is of tubular steel construction, 12.8m long 12.2m wide and 3.7m high. The structure weighs 290 tonnes and is buried beneath the drill cuttings pile. The drilling template has been left in-situ.

The North West Hutton jacket footings will remain on the seabed and are marked on the relevant charts, FishSAFE, and in the Kingfisher Information Service UKCS database as an obstruction to be avoided (see Figure 8-1).

The footings, which are to be left in-situ, will be subject to an inspection and monitoring regime (IMR). This is discussed further in Section 9.

A schematic of the footings which remain in-situ is shown in Figure 3-3 below:

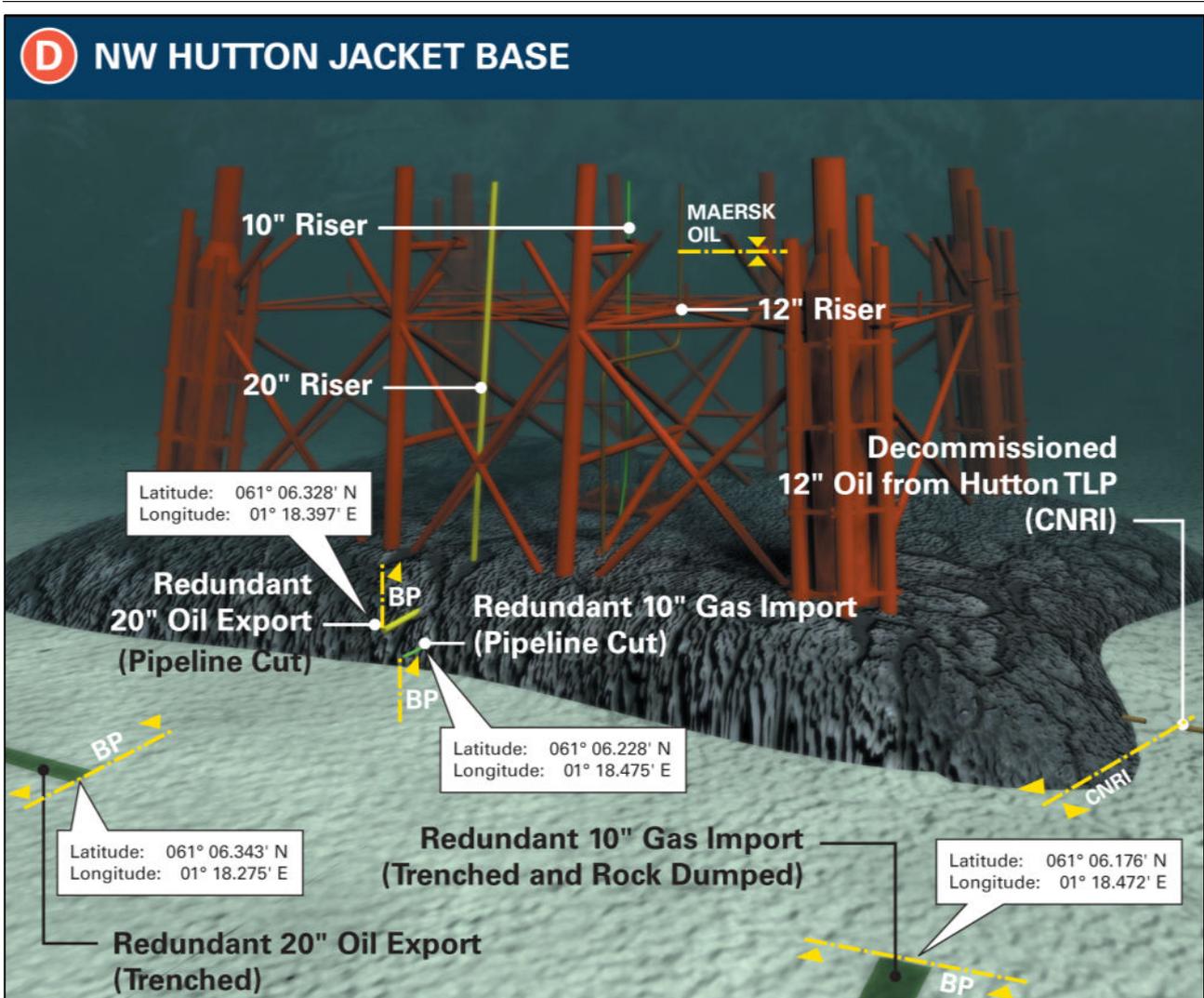


Figure 3-3 - Remaining footings

## Materials disposal summary

A high level summary breakdown of the topsides and jacket materials and recovered to shore is provided in Table 3-1 below.

Topsides and Jacket Materials Disposal Summary	
Total weight received	<b>28,427 tonnes</b>
Material re-used	<b>7,029 tonnes</b> <b>24.73%</b>
Material recycled	<b>20,925 tonnes</b> <b>73.61%</b>
Weight disposed	<b>473 tonnes</b> <b>1.66%</b>
<b>Total re-used / recycled</b>	
	<b>27,954 tonnes</b> <b>98.34%</b>
Material	Tonnes
Asbestos	5.02
Fluorescent tubes & sodium lights	1.74
Ni-Cad batteries	0.15
Smoke detectors	0.21
Mixed metals	28,010
Residual hydrocarbon sludge	21.09
LSA scale	4.43
Chemicals	9.85
Waste oil & oily water	21.44
Anodes	80.30
Other materials	272.77
<b>Total</b>	<b>28,427</b>

Table 3-1 - Jacket and topsides materials disposal summary

## Caissons

During the decommissioning of the jacket, nine caisson sections were identified as having fallen into the footings. A comparative assessment was carried out in order to determine the best option for the caissons. The options considered were; leave in-situ, diver removal, ROV removal and heavy lift vessel removal. This assessment considered these options from a safety, environmental, technical, societal and economic perspective. The process followed was consistent with DECC guidance and concluded that the best option was to leave the caissons in-situ. This was agreed by DECC in a letter dated the 9th of May 2011. These caisson sections, which amount to approximately 68 tonnes of steel, are now contained within the jacket footing envelope.

A survey of the caissons to assess their condition will be carried out during the survey of the footings. An on-going inspection regime will be determined based on the condition during this survey.

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## Drill cuttings pile

There is a single drill cuttings pile of approximately 30,000 m<sup>3</sup> which falls below the threshold values established in OSPAR recommendation 2006/5. A comparative assessment of options for the drill cuttings pile was undertaken which concluded that the best environmental option for the management of the pile is to leave it in place undisturbed to degrade naturally.

Monitoring and inspection regimes are discussed in section 9.

## Densitometers

There were 40 densitometers located on the NWH piles each containing a small low activity sealed Caesium 137 radioactive source measuring 150MBq. During the decommissioning activities all 40 sources were removed. These sources were transported safely to shore in specially designed containers and were recycled for re-use in compliance with UK legislation.

The weights of these densitometers are negligible and included in 'Other materials' in Table 3-1.

## 4 Pipeline PL147

### 10" Concrete coated section

PL 147 is a 13 km, 10" concrete coated pipeline which was originally laid trenched to a depth of 0.45 m below the seabed level. As part of the Decommissioning Programme [1] PL 147, the gas import pipeline was left in-situ as it was already trenched and partially buried over the majority of its length. Approximately 73m of exposed 10" pipeline was removed along with the associated SSIV weighing 84 tonnes.

### 6" Flexible pipeline section

A 6" flexible pipeline was used to connect PL 147 to the Ninian Tee. During the workscope 209m of this flexible pipeline was removed in 5.5m sections. 24 protective mattresses which covered the 6" flexible pipeline were also removed.

### SSIV umbilical

The SSIV control umbilical connected the NWH SSIV to the NWH installation. During the decommissioning workscope this umbilical was removed to the point where it entered the drill cuttings pile. The 51 protective mattresses which covered the umbilical were also removed.

All materials were transported ashore and handed over to the waste management contractor. A schematic of the as left status can be seen in Figure 4-1 below:

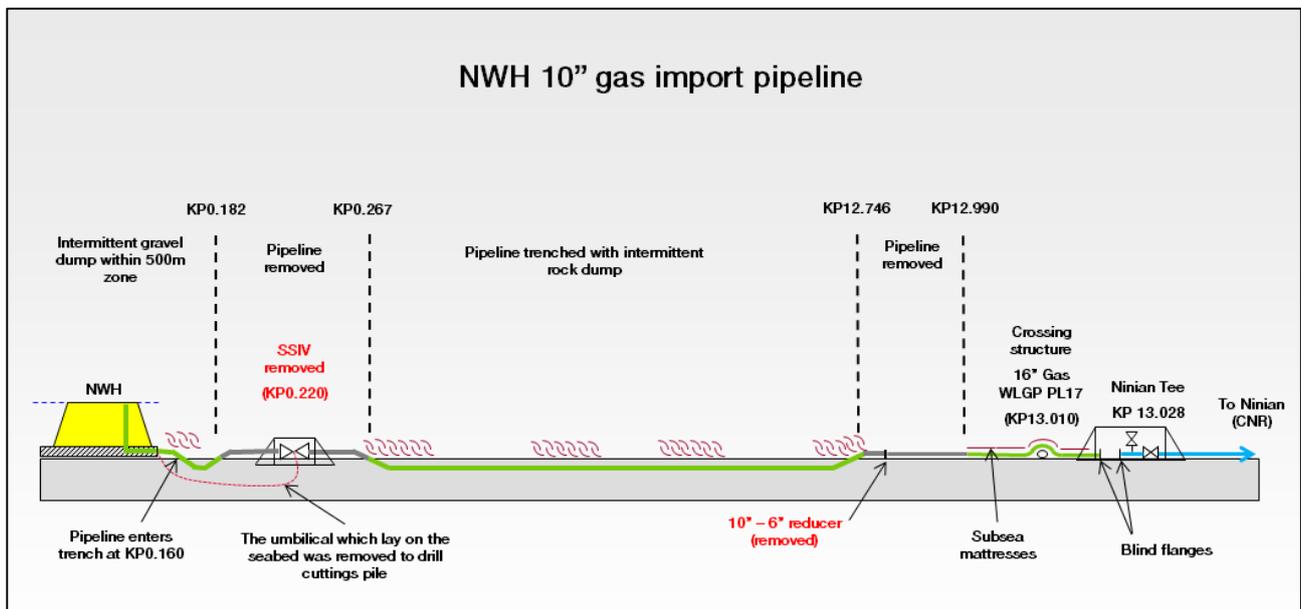


Figure 4-1 - PL147 as-left schematic

Table 4-1 below shows the equipment removed in relation to PL 147:

Location	Item	Quantity	Approximate weight (Tonnes)	Overall lengths (m)
SSIV	SSIV sections	2 + Roof	84	16x4x3m
	10" pipe sections	4	9	38m
	Control umbilical sections	48	10.5	252m
	Subsea mattresses	51	178	2x5x0.15m
6" flexible	10" pipe sections	4	8	35m
	6" pipe sections	38	18	209m
	Subsea mattresses	24	334	10x2x0.3m

Table 4-1 - PL 147 - Equipment removed

All activities regarding PL 147 have been verified during the DNV Third Party Verification process [3]. PL 147 will be subject to future monitoring and surveying. This is discussed in section 9.

### Disused Welgas spoolpiece

The NWH Decommissioning Programme [1] included the removal of the 120m disused Welgas spoolpiece that was originally used to connect PL147 to the Welgas Tee on PL17. However, once the mattresses were recovered there was no spoolpiece beneath. Divers probed the seabed to a depth of 0.6 meters and at various locations transversely across the pipeline route. An ROV search was conducted over a grid extending to 100m either side of the pipeline route in an attempt to find the spoolpiece. It was concluded that there was no spoolpiece present and that it had been removed during the workscope to alter PL 147 from gas export to gas import.

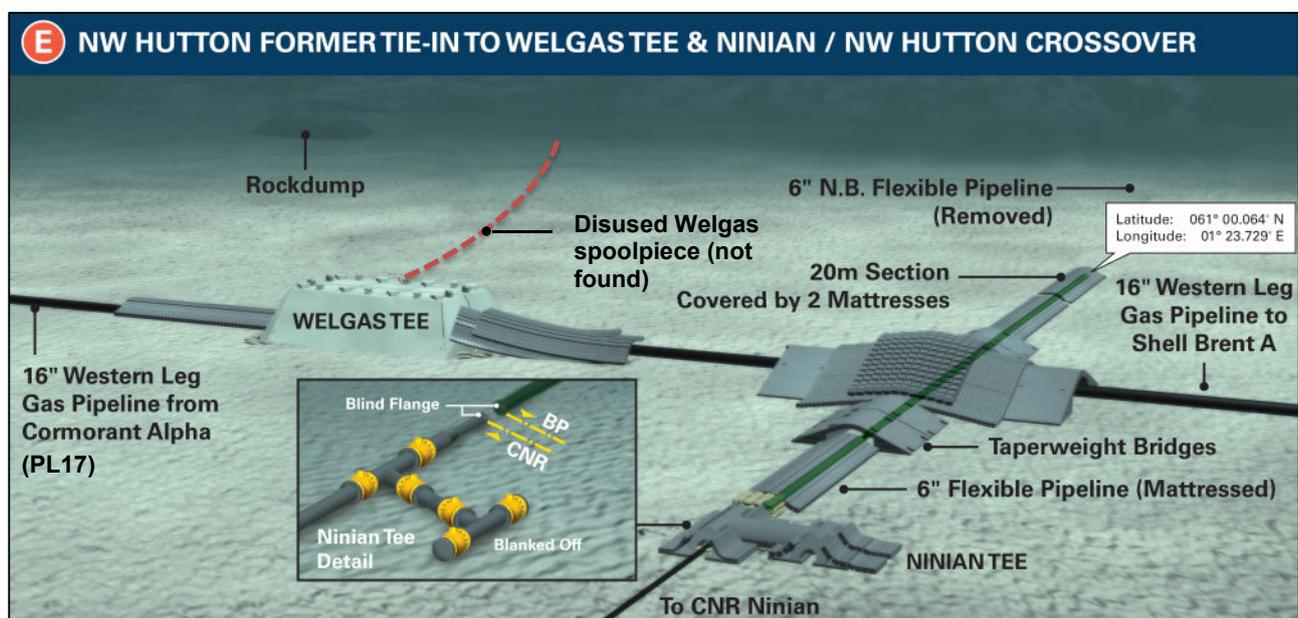


Figure 4-2 - PL 147 welgas tee area schematic

Table 4-2 below shows a summary of the items removed at the welgas area:

Location	Item	No.	Approximate weight (Tonnes)	Approximate lengths (m)
Welgas area	Subsea mattresses	11	7.5	11x2.4x0.125m

Table 4-2 - Items removed at disused Welgas spoolpiece area

The recovered mattresses were returned to shore and handed over to the waste management contractor. The absence of this spoolpiece raised 2 issues with the Third Party Verification process, these were as follows:

1. No spoolpiece was present. Therefore the spoolpiece could not be removed.
2. The spoolpiece materials could not be brought to shore for re-use recycling.

Third Party Verification is discussed in detail in Section 12.

## 5 Pipeline PL148

Pipeline PL 148 is a 13 km, 20" concrete coated pipeline which was originally laid un-trenched on the seabed. As part of the approved NWH Decommissioning Programme, PL 148 was trenched. The trenching operations took place over two offshore campaigns. The first campaign took place between the 16th July 2011 and 17th August 2011 (33 days) and the second from the 8th April 2012 to the 24th April 2012 (17 days). Figure 5-1 shows a schematic of the as-left status of PL 148.

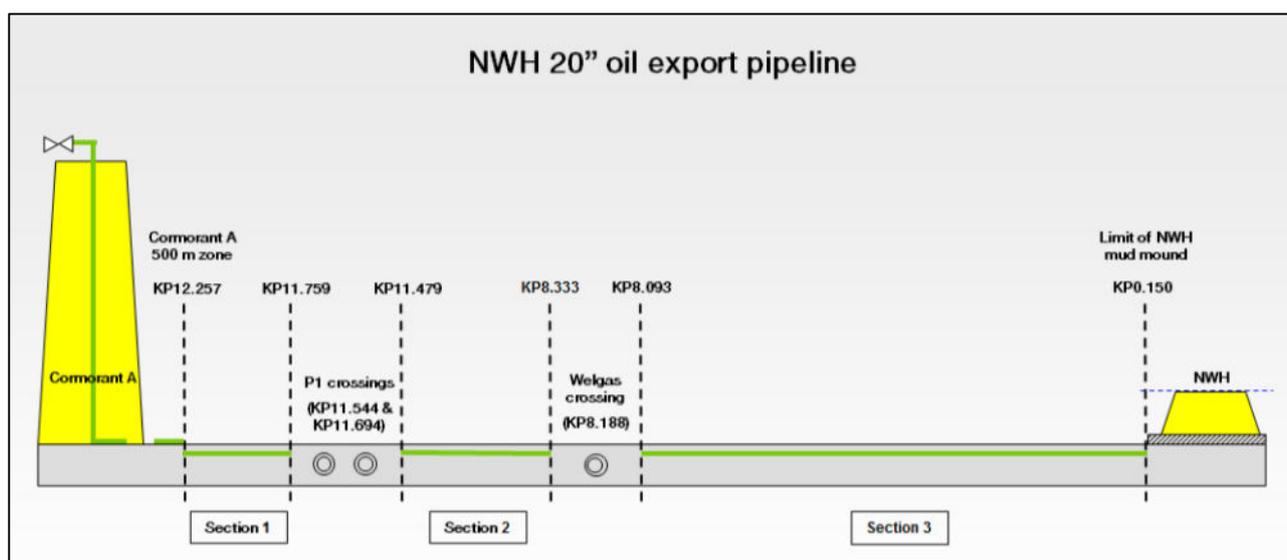


Figure 5-1 - PL 148 as-left schematic

The pipeline was trenched in sections 1, 2 and 3. As discussed in a letter to DECC dated 20th November 2012, 71.5% of the pipeline length has achieved the target depth of at least 0.6m. On average the trench depth over the pipeline length is 0.7m. Table 5-1 below shows the pipeline burial status:

Below mean sea bed	% buried	Linear meters out with
TOP > 0m	98.7%	156m
TOP > 0.6m	71.5%	3500m
TOP > 0.5m	85.1%	1829m
TOP > 0.4m	92.9%	872m
TOP > 0.3m	96.5%	436m
TOP > 0.2m	98.0%	245m
<b>Average depth</b>	<b>0.7m</b>	

Table 5-1 - Pipeline burial status

At the pipeline crossing locations and initial transition into the trench at NWH the pipeline was cut at the point where it was fully trenched. At these locations the pipeline was cut into approximately 12m lengths where possible. The lengths and weights of sections removed are shown in Table 5-2 below:

Location	Number of pipe sections	Approximate weight (Tonnes)	Approximate lengths (m)
P1 crossings	23	99	280
Welgas Crossing	20	86	240
North West Hutton Installation	9	39	150

Table 5-2 - Pipe removal details

Each pipeline section was lifted and transported ashore where they were handed over to the waste management contractors.

Schematics of the crossing locations can be seen in Figure 5-2 below:

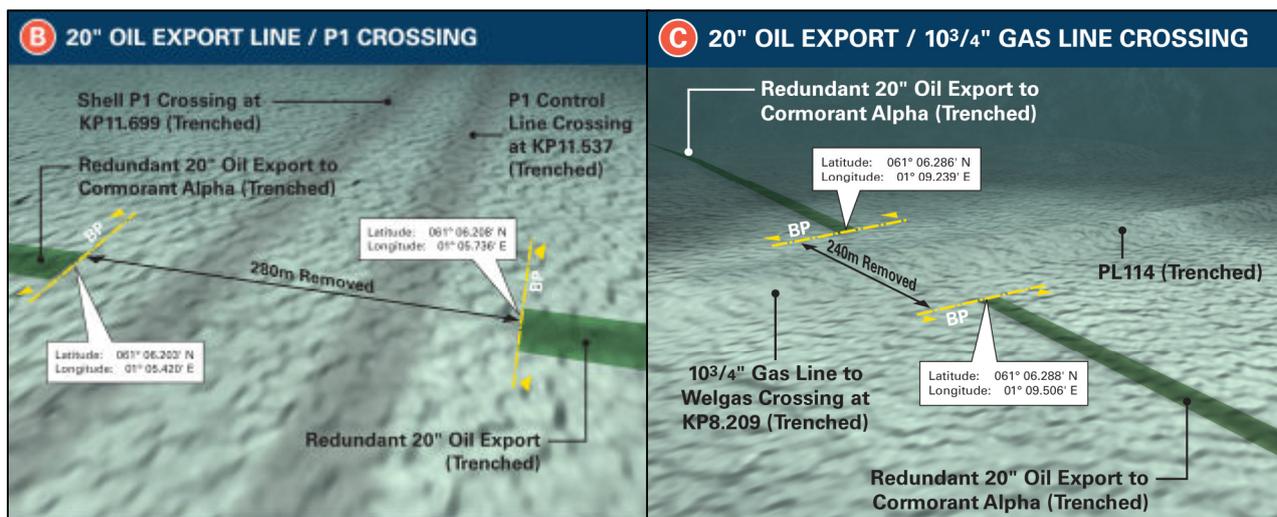


Figure 5-2 - PL148 crossing schematics

## PL 148 - Backfill

In the NWH Decommissioning Programme [1], the commitment was made to backfill the pipeline. However, the trench was not actively backfilled. This was because the trenching was not performed using a towed plough. A towed plough forms a 'V' shaped trench with the spoil from the trench displaced to either side of the pipeline. A backfill plough is then used to return the spoil to the trench and cover the pipeline. The trencher used formed a vertically sided trench of approximately 0.8m in width (marginally wider than the pipeline). No spoil heaps are formed and instead the excavated material was dispersed evenly over wide areas of adjacent seabed. Active backfilling would lower the seabed in the immediate vicinity of the trench and reduce the trench depth.

BP made a request for the Decommissioning Programme to be amended to allow for the self-burial of the pipeline as has been achieved for PL147. In a letter dated 15th July 2013 DECC approved this revision with the condition that on-going monitoring would be required including a survey of the line in 2013.

A survey of PL 148 took place in July 2013 to assess the natural backfill of the trench. In the initial section of pipeline from the NWH installation KP0.17 to around KP5.05 stiff soils were observed. It was noted that infill is occurring although at a slower rate than seen elsewhere in the line. The section of pipeline is entirely within its trench and below the natural seabed. Over time, this section is expected to continue to naturally infill with local soils.

The remainder of the pipeline from KP 5.05 to the Cormorant A 500m zone (KP12.26) has effectively backfilled except for a few isolated areas at KP6.16, KP6.54, KP7.07, KP9.5, KP10.8, and KP11.25. While these areas have in-filled the pipeline still remains visible. From the 2013 survey it is concluded that over

time the pipeline will naturally backfill. Future surveys will confirm this. Figure 5-3, Figure 5-4 and Figure 5-5 below show examples of the pipeline exposed, in partial cover and fully covered.

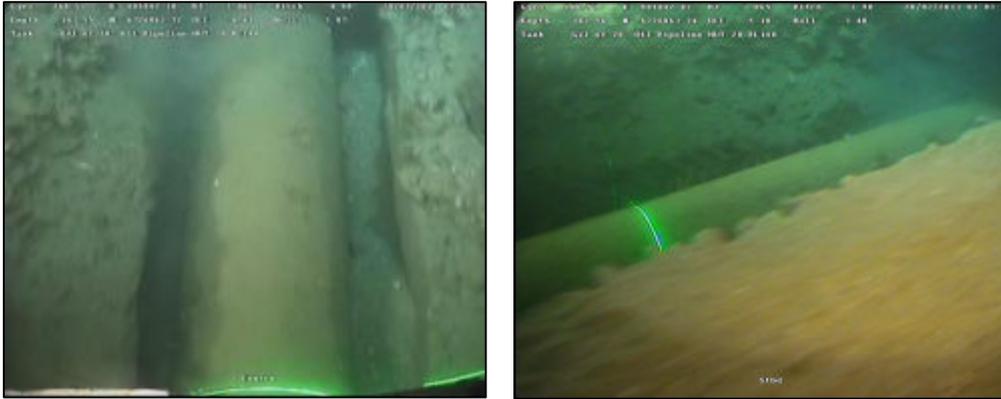


Figure 5-3 - Example visible pipeline (KP 7.065)

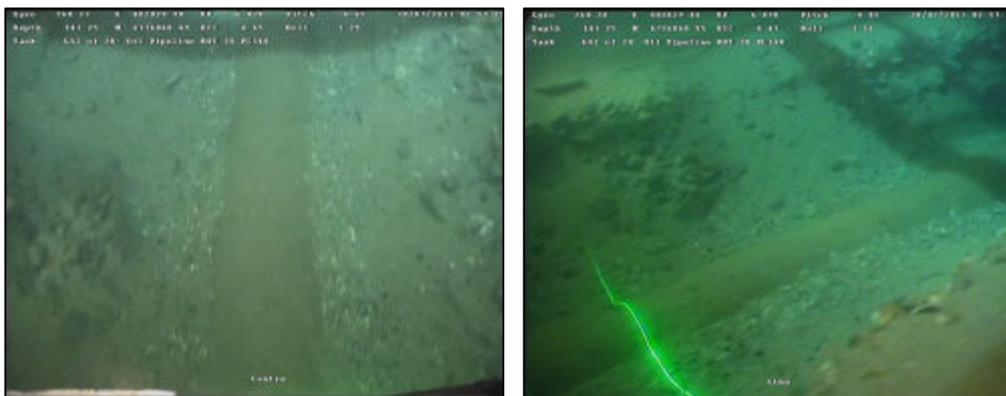


Figure 5-4 - Example partial cover (KP6.878)

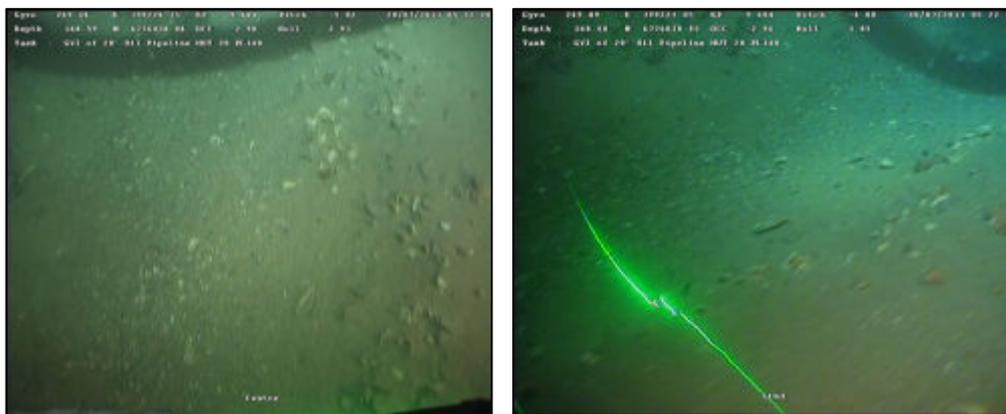


Figure 5-5 - Example full cover (KP9.684)

Table 5-3 below gives an overview of the level of coverage of the pipeline observed in the 2013 survey:

KP	Level of Coverage
0.064 – 0.171	Pipeline removed
0.171 – 0.210	Fully covered
0.210 – 0.410	Exposed pipeline in trench – stiff soils
0.410 – 0.790	Sand build up with some areas of top of the pipe exposure
0.790 – 0.830	Fully buried
0.830 – 0.940	Exposed pipeline in trench – stiff soils
0.940 – 1.090	Fully covered
1.090 – 1.110	Exposed pipeline in trench
1.110 – 2.050	Sand build up with some areas of top of the pipe exposure
2.050 – 2.075	Exposed pipeline in trench
2.075 – 2.750	Sand build up with some areas of top of the pipe exposure
2.750 – 3.050	Exposed pipeline in trench – stiff soils
3.050 – 3.425	Sand build up with some areas of top of the pipe exposure
3.425 – 3.525	Exposed pipeline in trench
3.525 – 3.800	Sand build up with some areas of top of the pipe exposure
3.800 – 4.050	Exposed pipeline in trench – stiff soils
4.050 – 5.825	In full cover / slight cover / sand build up
5.825 – 6.125	Pipeline exposed in trench
6.125 – 6.200	Sand build up with some areas of top of the pipe exposure
6.200 – 6.525	Full cover
6.525 – 6.575	Crown – pipeline above seabed
6.757 – 6.850	Full cover
6.850 – 7.075	Sand build up with some areas of top of the pipe exposure
7.075 – 7.125	Full cover
7.125 – 7.275	Exposed pipeline in trench
7.275 – 8.081	Full cover
8.081 – 8.320	Pipeline removed
8.320 – 9.475	Full cover
9.475 – 9.505	Crown – pipeline above seabed
9.505 – 10.800	Full cover
10.800 – 10.810	Pipeline exposed in trench
10.810 – 11.225	Full cover
11.225 – 11.250	Pipeline exposed in trench
11.250 – 11.490	Full cover
11.490 – 11.775	Pipeline removed
11.775 – 12.275	Full cover
12.275 – 12.287	Sand build up with some areas of top of the pipe exposure
12.287 – End	Pipeline laid on seabed

Table 5-3 - Level of coverage after 2013 survey

## PL 148 – Cormorant Alpha 500m Zone

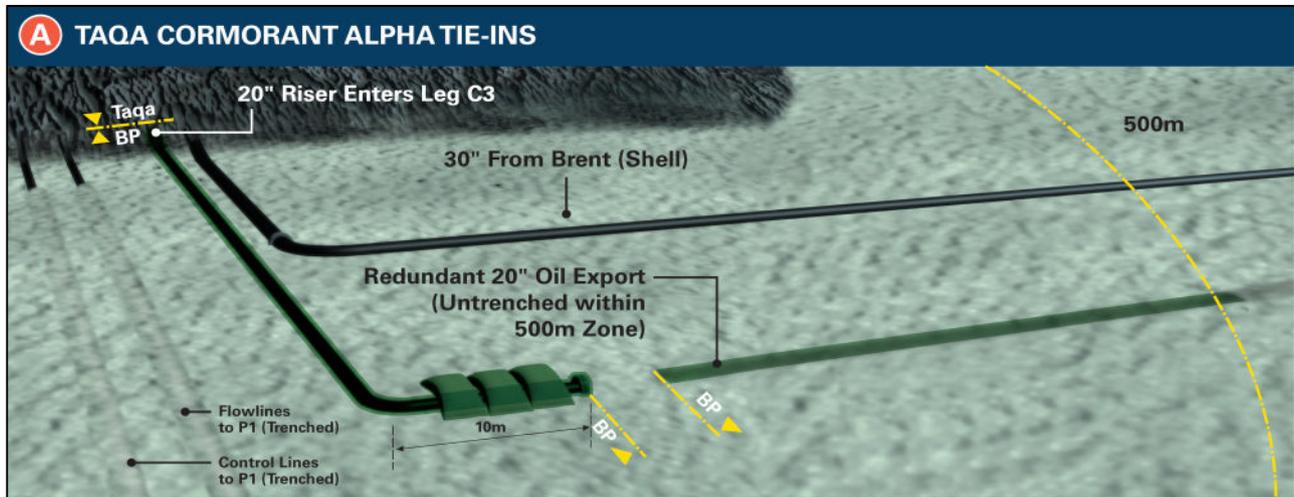


Figure 5-6 - Cormorant alpha 500m zone schematic

The section of PL 148 within the Cormorant Alpha 500m zone (shown in Figure 5-6 above) was supposed to be trenched as part of the decommissioning activities. A change to the NWH Decommissioning Programme was sought for this section to remain un-trenched on the seabed. This was due to the high consequence low probability risk of a NWH vessel colliding with the Cormorant Alpha installation. One of the controls to prevent this risk was to avoid the pipeline trenching activities within the Cormorant Alpha 500m zone. DECC accepted this change in a letter dated the 22nd of Feb 2012. This section of PL 148 will be decommissioned at the same time as the Cormorant Alpha installation.

All correspondence with DECC with regards to PL 148 has been verified during the DNV Third Party Verification process [3]. PL 148 will be subject to future monitoring and surveying. This is discussed in section 12.

## 6 Debris clearance and trawl tests

Debris clearance was required to remove any debris from the NWH 500m zone and pipeline corridors which could represent an obstruction to a fishing trawler once the NWH assets had been decommissioned. Debris clearance took place during the subsea decommissioning workscope at NWH. Vessels contracted to undertake the subsea workscope identified and cleared any debris present at each work location. Debris clearance was completed in November 2012.

Over-trawl tests were undertaken to demonstrate that no snagging hazards for fishermen and other third party users of the sea remain present on site. These over-trawl tests were carried out by the 'MFV Excel' over the 200m pipeline corridors (PL147 & PL148) and within the NWH 500m zone to provide assurance that debris had been cleared. The SFF issued a clearance certificate to verify these successful trawl sweeps (appendix A).

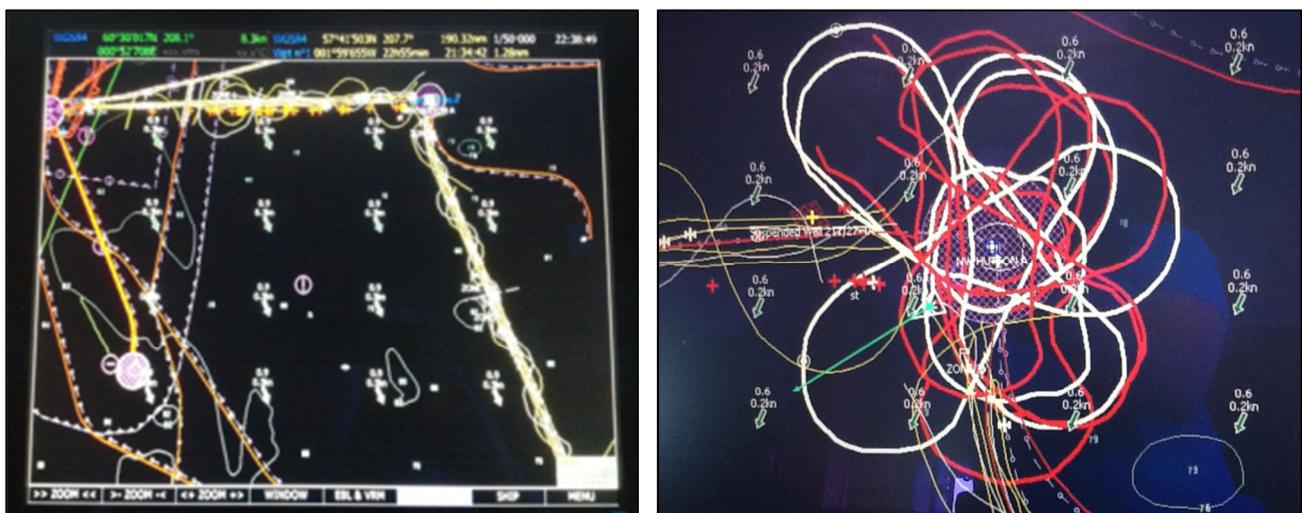


Figure 6-1 - Trawl test overview

## 7 Future decommissioning liabilities

There are items in the NWH field for which decommissioning has been deferred. The NWH partners will continue to be responsible for the ultimate decommissioning of these items. All items left in-situ will be included in a monitoring / inspection regime which is discussed in section 9. The items which require decommissioning in future are as follows:

Item	Deferred	Liability
PL 147	The section of PL147 which crosses the Shell UK Limited operated WLGP PL17 remains in place	To be removed when PL17 is decommissioned
PL 148	The section of PL148 within the Cormorant Alpha 500m zone remains in-situ	To be decommissioned along with Cormorant Alpha.

Table 7-1 – Future decommissioning

## 8 Information to third party users of the area

Appropriate information about the status of the NWH footings has been conveyed in accordance with guidelines the terms of the permit to dispose. The UK Hydrographic office has been informed and the NWH footings have been marked on nautical charts. The size and location of the footings has been communicated to the Fisheries Legacy Trust Company, recorded in the Kingfisher bulletin and the FishSAFE database has been updated (see Figure 8-1 below). This information was subject to Third Party Verification which concludes that the commitments made with regards to informing third party users of the area have been achieved [3].

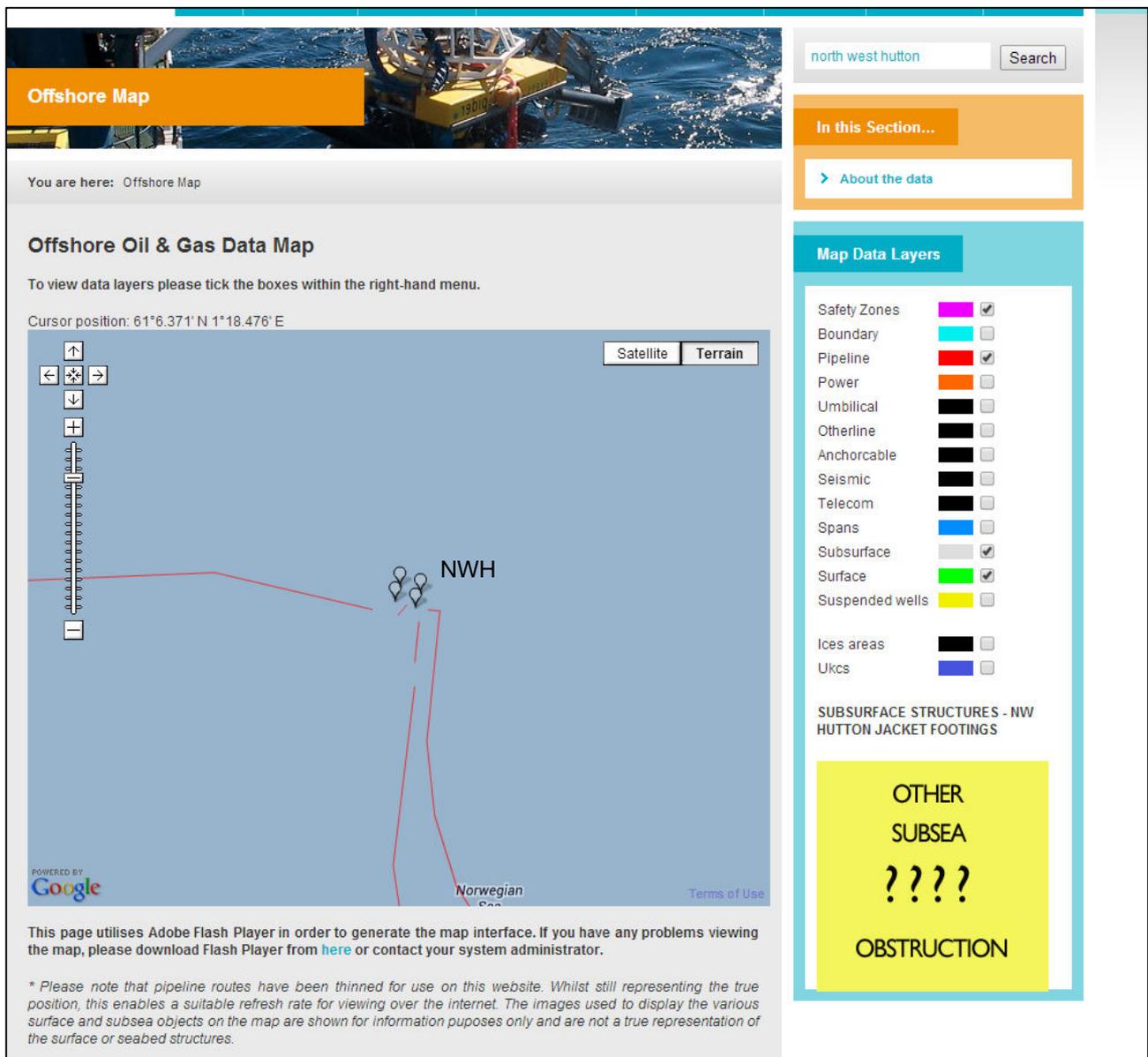


Figure 8-1 - FishSAFE screenshot

## 9 Monitoring / Inspection

A NWH post-decommissioning seabed sampling survey was undertaken in 2013. This survey assessed the temporal recovery of the seabed around the NWH footing and cuttings pipeline by comparing post-decommissioning results with those recorded in previous surveys. The survey also determined the spatial distribution of cuttings around the platform footings and estimated the current extent of the footprint of contaminated seabed around the platform. No immediate consequences of the decommissioning activities have been observed.

Upon completion of the decommissioning works, both pipeline corridors to 100m either side of the pipelines were subject to as-left surveys in 2012 which included GVI of the pipelines, sonar searches for surrounding debris and independent third party trawl sweeps. A further GVI survey of PL148 was undertaken in 2013 to assess the self-burial of the pipeline. In order to build up a comparative data set, these pipelines will be surveyed again in 3-5 years' time. An IMR will be developed based on these results. The monitoring activities for NWH are shown in Table 9-1 below.

As-left surveys, to assess the condition of the footings and caissons, were conducted on completion of the jacket removal workscope in 2009. The footings were also observed during the as found surveys for the densitometer removal workscope in 2012. There will be a physical survey of the NWH footings which will include the caissons conducted in 2014 or 2015. These surveys will provide the baseline data which will determine the frequency and scope of future surveys.

All survey results will be submitted to DECC and used to determine the scope and frequency of subsequent surveys as part of on-going consultation.

Item	Survey	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PL147	GI	-	-	-	-	-	-	Frequency and scope to be determined based on results from baseline surveys and agreed with DECC			
	GVI	✓	-	-	✓ <sup>1</sup>						
PL148	GI	-	-	-	-	-	-	-	Frequency and scope to be determined based on results from baseline surveys and agreed with DECC		
	GVI	✓	✓	-	-	✓ <sup>1</sup>					
Footings, including caissons	GI	-	-	-	-	Frequency and scope to be determined based on results from baseline surveys and agreed with DECC					
	GVI	-	-	✓	-						
Drill cuttings	GI	-	-	Frequency and scope to be determined based on results from baseline surveys and agreed with DECC							
	GVI	-	✓								
Sampling	Environmental	-	✓								
<p><i>Notes</i></p> <p>1. Follow up survey for pipelines is planned between 3-5 years from initial baseline study</p>											

Table 9-1: Post decommissioning monitoring schedule

Review of initial surveys will inform the scope definition and frequency of future survey requirements which will be agreed with DECC.

## 10 Schedule

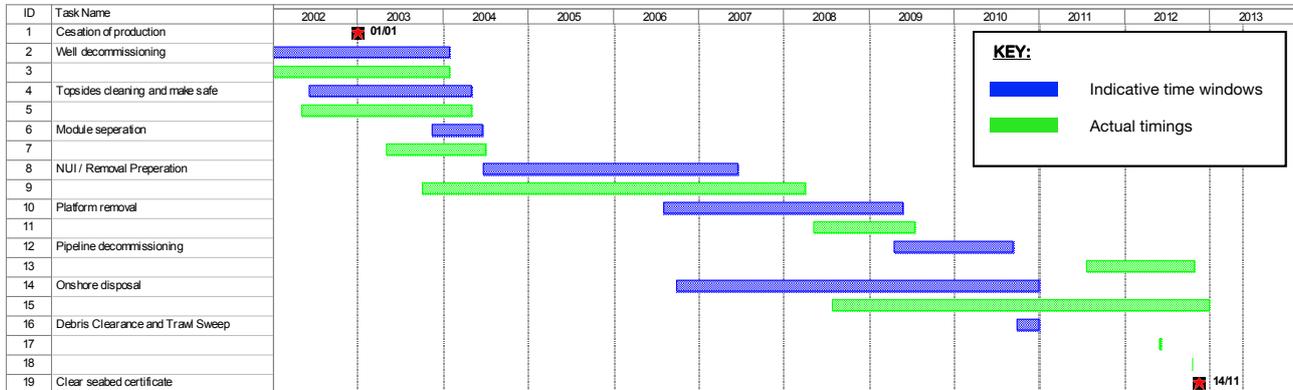


Figure 10-1 - Project Schedule

Figure 10-1 shows a high level schedule of the decommissioning workscope. Items marked in blue are the indicative time windows for each activity as stated in the NWH Decommissioning Programme [1]. Items marked in green show the actual dates for the decommissioning activities.

NWH officially ceased production on the 1st of January 2003 and the platform was made ready for decommissioning. Well plugging and abandonment activities were completed on the 22nd of January 2004.

The removal of the topsides began in May 2008 and was completed in August taking a total of 117 days. The removal of the jacket structure was completed between April and July 2009 taking a total of 100 days to complete.

Pipeline and other subsea decommissioning activities took place between July 2011 and November 2012. The delay indicated in Figure 10-1 for this activity between plan and actual was due to the intention to combine the NWH decommissioning scope with other works to enable technical synergies and cost efficiencies. This was agreed by DECC, in a letter dated 9th December 2009, and no change to the Decommissioning Programme was required. Subsea decommissioning was followed immediately by trawl sweeps of the pipeline corridors and within the NWH 500m zone. The SFF issued a clear seabed certificate on the 14th of November 2012 (Appendix A).

## 11 Cost summary

Description	Predicted Decommissioning Programme cost	NWH Decommissioning project final cost
Programme one – the NWH platform and associated equipment	£154 Million	£230 Million
Programme two – the gas pipeline PL147	£3 Million	£5 Million
Programme three – the oil pipeline PL148	£3 Million	£10 Million
<b>Total project cost</b>	<b>£160 Million</b>	<b>£246 Million</b>

Table 11-1 - Actual total spend versus predicted total spend

Table 11-1 shows the actual cost against the predicted cost for the removal and disposal of the NWH facilities. Initial estimates were unrealistically low due to the lack of available benchmarking data at the time the Decommissioning Programme was submitted. The main reasons for these differences are as follows:

### Programme one - the NWH platform and associated equipment

Once budgets were set on the basis of quotations received from Contractors then costs were contained within industry norms.

### Programme two – the gas pipeline PL147

The soil conditions around NWH led to the dredging activities required for pipeline cutting and removal taking longer than expected. This resulted in scheduling issues which in turn entailed additional vessel mobilisations to complete the required workscope.

### Programme three – The oil pipeline PL 148

Trenching activities took significantly longer than scheduled due to the soil type encountered around the NWH field. Two campaigns were required to achieve a satisfactory result entailing additional mobilisation and schedule delay. The initial cutting technologies employed were acceptable but inefficient for the large number of cuts required. A change of technique and equipment very successfully resolved this issue but delays had been incurred.

## 12 Independent verification

In accordance with the conditions of the permit to leave in place the steel footings an independent verification of scope was undertaken.

The services of Det Norske Veritas (DNV) were contracted to conduct this verification [3] .

DNV identified 38 requirements for verification of the NWH field related to 8 different categories. DNV's verification concluded that 34 of the 38 requirements had been met. Table 12-1 is an extract from the DNV Third Party Verification report [3] and provides a summary of the results. Those requirements which had not been met are discussed below.

Category	Identified requirements	Requirements met	Requirements not met
Topsides	2	2	-
Jacket	2	2	-
Wells	3	1	2
Pipelines	19	17	2
Drill cuttings	1	1	-
Debris Clearance	3	3	-
Nautical charts & Fish SAFE programme	1	1	-
Monitoring and surveys	5	5	-
Other	2	2	-
<b>Totals</b>	<b>38</b>	<b>34</b>	<b>4</b>

Table 12-1 - Third Party Verification Results

### Wells issues raised

Requirement number 5 – All wells (40 wells) are fully abandoned

⚡ The wells are plugged according to UKOOA (OGUK) Guidelines for the Suspension and Abandonment of Wells

The DNV report states that there are 19 wells with issues, however it only identifies 18 of these and one (A12) fully meets both the well operations programme and the criteria for verification. Over one hundred plugs were set and some of these could not be tagged. It is a recommendation of the UKOOA guidelines that plugs should be tagged. Whilst it is acknowledged that tagging of plugs is good practice accurate tagging is not always achievable. Two plugs are identified as not having been pressure tested however in both instances these constitute secondary barriers which do not require testing to comply with the guidelines. These issues account for 14 wells.

The remaining three wells are those associated with the well operations programme changes already noted in Section 3.1. Revision of the wells operation programmes were necessitated due to the downhole conditions encountered. The revised programmes were approved and the programmed activities planned and completed in such a manner as to reduce the risks to as low as reasonably practicable.

All of the abandonments comply with the UK Offshore Installations and Wells (Design and Construction, etc.) Regulations DCR. The UKOOA (OGUK) Guidelines recognise that each well is unique and should be considered on an individual basis. Therefore the Decommissioning Programme obligation has been met.

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Requirement number 6 – The removed conductors, casings, tubing, wellhead/Xmas trees are handed over to the waste management providers for re-use or recycling

DNV concluded that all items were removed from the seabed, but there is insufficient evidence to prove that all items were handed over to the waste management contractors.

The issue here is the lack of records and not that the materials were not sent to the waste management contractors for re-use or recycling. Approximately 50% of the wells waste records have been identified. This gives confidence that the process was in place and operational at the time. Therefore the Decommissioning Programme obligation has been met.

### **Pipeline issues raised**

Requirement number 10 – The following equipment related to PL 147 is removed:

- ✦ The disused Welgas Tee pipeline and tie-in spool associated with the North West Hutton

DNV concluded that all items were removed apart from the disused Welgas Tee pipeline as it could not be found.

Subsea interventions found and recovered the mattresses associated with the Disused Welgas Spool, but were unable to physically find the spool. Given this situation, there will be no impact on other users of the sea and the impact on the Decommissioning Programme obligations is assessed as minor.

Requirement number 12 – The following equipment related to PL 147 is handed over to the waste management providers for recycling:

- ✦ The disused Welgas Tee pipeline and tie-in spool associated with the North West Hutton

As there was no spoolpiece recovered, it was not handed over to the waste management contractors.

All materials which were found relating to this spoolpiece (mattresses and seabed debris) were recovered and handed over to the waste management contractors. Therefore the Decommissioning Programme obligation has been met.

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## 13 References

- [1] BP, “North West Hutton Decommissioning Programme (Consisting of a topsides and jacket programme and programmes for PL147 and PL148),” Approved 12th of April 2006.
- [2] OSPAR, “ANNEX 33 - OSPAR Decision 98/3 on Disposal of Offshore Installations,” in *Ministerial Meeting of the OSPAR Commission*, 22-23 July 1998.
- [3] DNV, “VERIFICATION OF THE NORTH WEST HUTTON FIELD DECOMMISSIONING: FINAL REPORT (report no: 2013-0553),” 2013.

# Appendices

## Appendix A – Seabed Clearance Certificate



**SFF  
SERVICES  
LIMITED**

SFF Services Limited  
24 Rubislaw Terrace  
Aberdeen, AB10 1XE  
Scotland UK

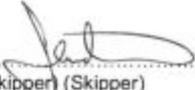
T: +44 (0) 1224 646966  
F: +44 (0) 1224 647078  
E: [sff.services@sff.co.uk](mailto:sff.services@sff.co.uk)  
[www.services.sff.co.uk](http://www.services.sff.co.uk)

Date: 14th November 2012

**(HELIX ENERGY) : (NORTH WEST HUTTON) :  
POST DECOMMISSIONING CLEARANCE / VERIFICATION TRAWL SWEEPS**

This is to certify that the MV "Excel" BF110 has carried out a full post decommissioning sea bed / trawl verification sweep of the Pipelines leading to the North West Hutton Field and safety zone. The 500 safety zone was swept, taking into consideration the remaining footings of the decommissioned NW Hutton Platform and has found, to the best of our knowledge, belief and using best endeavours and practice available, that the areas mentioned : excluding the Ninian Tee and to within 100 metres of the footings have been successfully cleared of all equipment / infrastructure to allow normal fishing to be resumed safely. See further observation note below.<sup>1</sup>

Signed for on behalf of the Owners of the MV "Excel" BF110

  
.....  
(Name of Skipper) (Skipper)

Signed for on behalf of SFF Services Limited

  
.....  
(Name) (Designation)

<sup>1</sup> Ninian Tee has been cut and rock dumped, but no verification sweep performed due to the close proximity of another operators pipeline.

A company wholly owned by the Scottish Fishermen's Federation    VAT Reg. No: 498 420 807  
Registered in Scotland Company No: SC 098563    Registered Office: 24 Rubislaw Terrace Aberdeen, UK, AB10 1XE



**Registered office**

Jee Limited  
Hildenbrook House  
The Slade  
Tonbridge  
Kent TN9 1HR  
United Kingdom

Tel +44 (0)1732 371 371  
Fax +44 (0)1732 361 646  
Email [info@jee.co.uk](mailto:info@jee.co.uk)  
[www.jee.co.uk](http://www.jee.co.uk)

Offices: Aberdeen, London, Tonbridge



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