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Report

Environmental Scoping Report for Brent Field Decommissioning EIA

Shell (UK) Exploration & Production

Report no/DNV Reg No.: EP021428 / 12NA8UG-7

Shell Brent Decommissioning Report No. BDE-F-GEN-HE-0702-00004

Rev 5, 24 May 2011

Environmental Scoping Report for Brent Field Decommissioning EIA	
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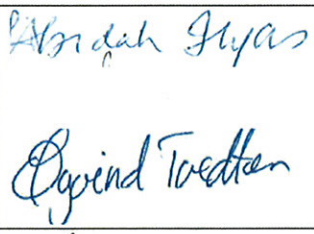
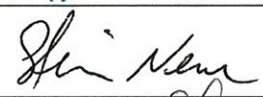
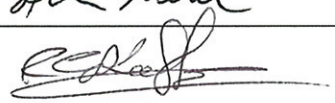
Date of First Issue:	4 June 2010	Project No.	EP021428
Report No.:		Organisation Unit:	Safety & Environmental
Revision No.:	Rev 5 (24 May 2011)		

Summary:

Shell Exploration and Production UK (Shell UK) is presently preparing the plan to decommission the Brent Field, DNV was requested to prepare an environmental Scoping Report for the Decommissioning EIA of Brent Field and Facilities. The key objective of this Scoping Report is to identify the potentially significant environmental, social and health impacts in the Brent Field decommissioning programme that will require examination in detail in the EIA. The scoping methodology used was the European Commission scoping guidelines.

Prepared by:	*Name and Position* Abidah Ilyas Senior Consultant Mark Purcell Principal Consultant Stavros Yiannoukas Consultant Øyvind Tvedten Senior Consultant (Norway)	
Verified by	*Name and Position* Steinar Nesse Director (Norway)	
Approved by:	*Name and Position* Robert O'Keeffe, Associate Director	

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Rev. No. / Date:	Reason for Issue:	Prepared by:	Verified by:	Quality Check	Approved by:
Rev 0 / 04/06/10	For Client Comment	ABI / PUR /VIND	SNE		FRANKK
Rev 1 / 14/07/10	Revised Report	ABI / PUR / STAVR / VIND	SNE	GAFL	FRANKK
Rev 2 / 12/10/10	Final Draft Report	ABI / PUR / STAVR / VIND	SNE	GAFL	FRANKK
Rev 3 28/10/2010	Final Report	ABI / PUR / STAVR / VIND	SNE	GAFL	FRANKK
Rev4 11/05/2011	Final Report – IRG comments incorporated	ABI	PUR	GAFL	ROK
Rev 5 24/05/2011	Final Report – Table 3.3 and format issues	ABI	PUR	LHOLL	ROK

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ABBREVIATIONS

AET	Apparent Effects Threshold
BA	Brent Alpha
BB	Brent Bravo
BC	Brent Charlie
BD	Brent Delta
BS	Brent South
DECC	Department of Energy and Climate Change
DNV	Det Norske Veritas
EC	European Commission
E&E	Energy and gaseous Emissions
ERM	Effects Range Medium
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
FLAGS	Far- north Liquid And Gas System
GBS	Gravity Base Structure
HLV	Heavy Lift Vessel
HP	High Pressure
HSE	Health, Safety & Environment
LP	Low Pressure
NLGP	Northern Leg Gas Pipeline
PLEM	Pipeline End manifold
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
ROV	Remotely Operated Vehicle
THC	Total Hydrocarbon Content
SSIV	SubSea Isolation Valve
Tscf	trillion standard cubic feet
OSPAR	The Oslo and Paris Commissions
UKCS	United Kingdom Continental Shelf
VASP	Valve Assembly Spool Piece
WLGP	Western Leg Gas Pipeline

EXECUTIVE SUMMARY

Shell Exploration and Production UK (Shell UK) is presently preparing the plan to decommission the Brent Field, one of the largest hydrocarbon accumulations on the United Kingdom Continental Shelf. The Brent Field has four platforms (Brent Alpha, Bravo, Charlie and Delta), three are concrete gravity base structures (GBS) and one is a steel jacket.

Decommissioning of offshore oil and gas facilities has the potential to impact both the environment and society, and an Environmental Impact Assessment (EIA) will need to be conducted to ensure issues are identified and then managed responsibly.

DNV was requested to prepare an environmental Scoping Report for the Decommissioning EIA of Brent Field and facilities. The key objective of this Scoping Report is to identify the potentially significant environmental, social and health impacts in the Brent Field decommissioning programme that will require examination in detail in the EIA.

There are a number of alternative decommissioning options that are covered in this Scoping Report. As planning and preparation for the decommissioning of the field continues, some of the options examined in this scoping report may be modified. In addition, some options may not be taken forward into the full EIA because they pose unacceptably high technical and safety risks. The report covers all stages of decommissioning: preparation, clean-up, removal operations, transport, onshore recovery/destruction/dismantling and final use/disposal.

This report:

- Provides general descriptions of the Brent Field structures, including Brent Alpha, Bravo, Charlie and Delta, pipelines and Brent South (Section 2).
- Describes the environmental baseline of the study area, highlighting the key environmental sensitivities, characterising the drill cuttings (physical and chemical), and describing current knowledge regarding the GBS cell contents (Section 3).
- Outlines the various alternative decommissioning options being considered (Section 4).
- Describes the approach and the systematic scoping methodology (EC scoping guidelines) that was applied at a DNV scoping workshop in Norway to identify the potentially significant issues (Section 5).
- Identifies and discusses the potentially significant environmental, social and health impacts in the Brent Field decommissioning programme that will require examination in detail in the EIA (Sections 6 & 7).
- Discusses the broad approach to how the EIA could be conducted, discusses key issues (such as legacy issues) and highlights the further studies that may be required for the EIA (Section 8).

1 INTRODUCTION

The Brent Field, discovered in 1971, was one of the largest hydrocarbon accumulations on the United Kingdom Continental Shelf (UKCS). The field has four platforms (Brent Alpha, Bravo, Charlie and Delta); three are concrete gravity base structures (GBS) and one is a steel jacket. Oil is transported by pipeline through the Brent system to Sullom Voe, Shetland Islands. Gas is transported to the St. Fergus Scottish terminal via the FLAGS (Far-North Liquid and Gas System) pipeline. Decommissioning of the Brent Field is likely to be the largest decommissioning project in the UK sector of the North Sea.

Decommissioning of offshore oil and gas facilities has the potential to impact the environment and society, both in the short- and long-term, owing to the hydrocarbons contained within the facilities and other issues such as hazardous substances, waste production, energy consumption, drill cuttings, and impact on shipping and fisheries. As a result, it is important to examine the potential impacts by conducting an Environmental Impact Assessment (EIA) to ensure issues are identified so that they can be managed responsibly and effectively.

Following a meeting with the Shell UK Brent Decommissioning HSE Manager and Environmental Advisor on the 3rd March 2010, DNV UK was requested to prepare an environmental Scoping Report for the Decommissioning EIA of Brent Field and Facilities, drawing on the offshore decommissioning experience of DNV Norway.

This Scoping Report provides a description of the installation, summarises the current environmental baseline of the study area, and identifies the issues with potential for significant impact that will require examination in the EIA.

1.1 Objective

The key objective of this Scoping Report is to identify the potentially significant environmental, social and health impacts in the Brent Field decommissioning programme that require examination in detail in the EIA.

DNV have conducted this scoping study based on an accepted European Commission scoping methodology, using data provided by Shell UK.

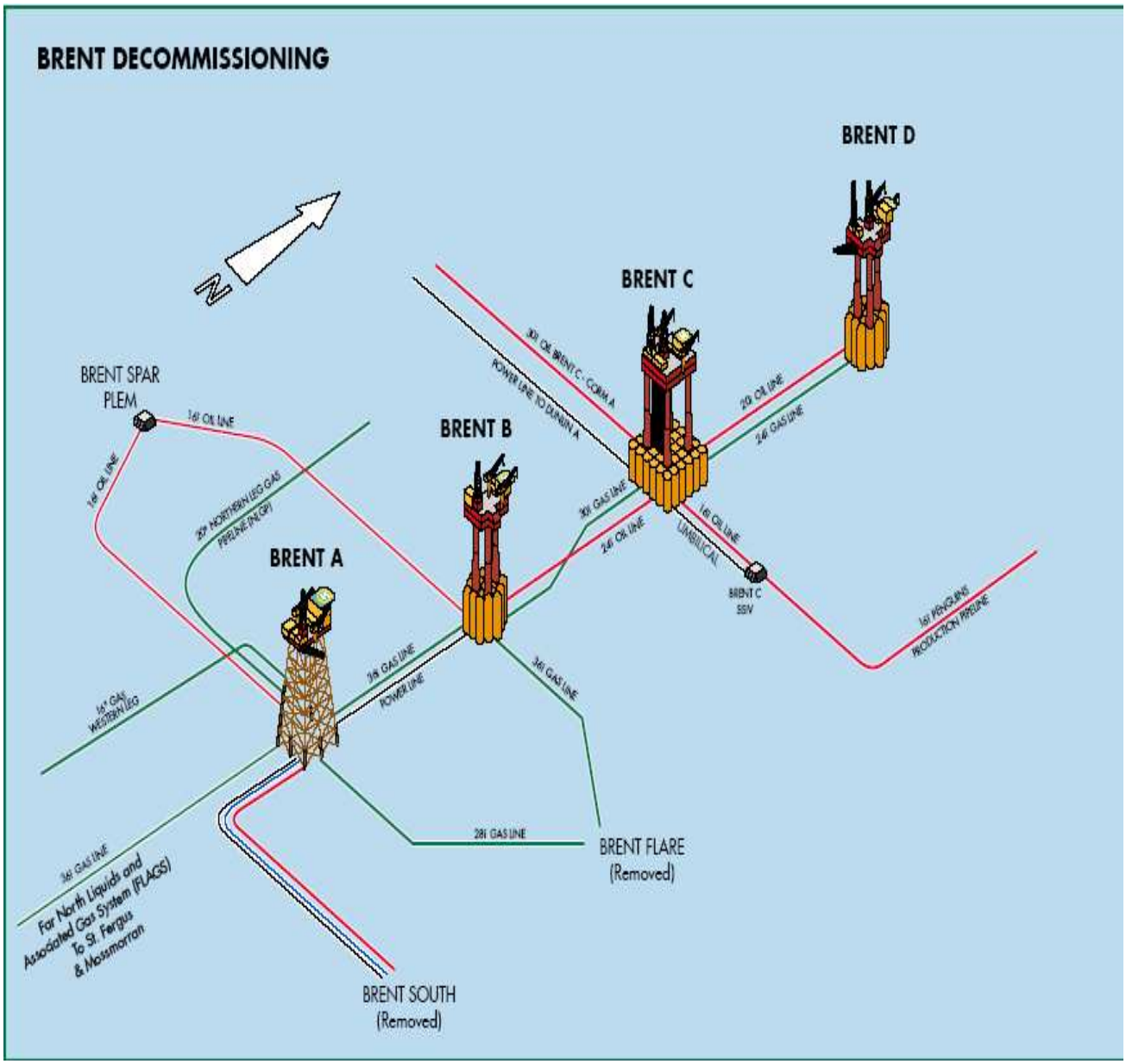
1.2 Scope

The Scoping Report covers the facilities listed below and all stages of the decommissioning process, namely preparation, clean-up, removal operations, transport, onshore recovery/destruction, and final use/disposal:

- 4 Topsides -Brent Alpha, Bravo, Charlie and Delta
- 1 Jacket - Brent Alpha
- 3 Gravity Base Structures (GBS) – Brent Bravo, Charlie and Delta
- External Drill Cuttings pile at Brent Alpha, Bravo, Charlie, Delta and Brent South
- Content and Sediment inside GBS storage cells (Cell sediments) at Brent Bravo, Charlie and Delta
- Pipelines and Umbilicals - Brent Field, Brent South, and pipelines/PLEM (Pipeline End manifold) to Brent Spar (removed).

For each of the facilities, Shell (UK) has identified one or more decommissioning options, and these are examined in this Scoping Report (see Section 4). No baseline data was collected as part of this scoping study, and no site visit was undertaken.

Figure 1.1: Brent Facilities



1.3 Approach

The broad approach taken in conducting the scoping study is outlined below:

- Kick Off Meeting: this was held on 21 April 2010 between DNV and Shell UK at DNV Aberdeen office to agree and finalise:
  - the scope
  - the suitability of EC Guidance on Scoping EIA methodology (refer to Section 5.0 for description)

  - the decommissioning options being considered for the various facilities.
- Information Review: Data provided by Shell UK and reviewed by DNV included:
  - Environmental baseline details for the Brent facilities and surrounding area
  - General descriptions of the Brent Field structures and status
  - Programme of Works and various documentation on Shell's evaluation of different re-use, decommissioning and disposal options.
- 2 – day DNV internal Scoping Workshop in Stavanger, Norway using agreed methodology
- Reporting
- Presentation of findings to Shell UK by DNV in Aberdeen.

1.4 Regulatory Context

The Brent Field decommissioning project will be subject to the requirements of UK and EU legislation, in addition to other international treaties and agreements. Legislation in relation to the environmental issues with the project will apply to the removal of the platform and infrastructure as well as to the subsequent disposal of the removed material.

The UK's Department of Energy and Climate Change (DECC) operates a comprehensive regime controlling the decommissioning of oil and gas installations and pipelines. Some key pieces of legislation are:

- ***The Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) (Amendment) Regulations 2007***

The Regulations implement in the UK for offshore oil and gas operations the requirements of EC Directive 85/337/EEC on The Assessment of the Effects of Certain Public and Private Projects on the Environment.

- ***Petroleum Act 1998***

The Petroleum Act 1998 sets out requirements for undertaking decommissioning of offshore installations and pipelines including preparation and submission of a Decommissioning Programme. The Decommissioning Programme must include a summary of the comparative EIA.

Guidance notes are provided by DECC to those engaged in preparing decommissioning programmes; *Decommissioning of Offshore Installations & Pipelines under the Petroleum Act 1998* (revised in 2010).

- ***OSPAR Decision 98/3***

OSPAR Decision 98/3 mandates that offshore facilities are re-used, recycled or finally disposed of on land. The topsides of all offshore platforms must be returned to shore and all installations with a steel substructure (jacket) weight of 10,000 tonnes or less must be completely removed to shore.

The OSPAR decision also recognises that there may be difficulty in removing some structures and as a result exceptions from the main rule, known as derogations, can be granted. The assessment criterion for granting derogation requires that any proposal for an alternative approach must be demonstrated to be preferable to complete removal. Where such options involve an

intolerable safety risk or major unacceptable environmental risk, these will be ruled out without further consideration. Otherwise the assessment will be based on a balanced judgement of safety, environmental, technical, societal and economic risks.

Decommissioning will normally remove the whole of the installation but derogation may be considered for:

- Footings of large steel jackets weighing more than 10,000 tonnes. (With respect to the Brent Alpha jacket, 'Footings' means those parts of the steel installation which are below the highest point of the piles which fix the jacket to the seabed.)
- Concrete gravity base structures
- Exceptional circumstances, for example, where for safety or technical reasons it can be demonstrated that structural deterioration or damage would make removal of the installation impossible.

OSPAR Decision 98/3 requires that assessment of a decommissioning option takes into account the cumulative environmental and socio-economic effects of other platforms being decommissioned and left in place in whole or part in the general area.

- ***OSPAR Recommendation 2006/5 on a management scheme for offshore cuttings piles***

This outlines the approach for the management of cuttings piles offshore, with the purpose of reducing the impacts of pollution by oil and/or other substances to a level that is not significant.

The cuttings pile management regime is divided into two stages.

- Stage 1 requires the initial screening of all cuttings piles within 2 years of the Recommendation taking effect (30 June 2006).
- Stage 2 calls for a Best Available Technique (BAT) and/or Best Environmental Practice (BEP) assessment and should, where applicable, be carried out in a timeframe determined in Stage 1.

The Stage 1 screening is to be carried out by assessing the rate of oil loss from the cuttings pile to the water column over time, compared to a threshold (10 tonnes per year). The persistence of the cuttings pile should be assessed on the basis of the area of the seabed where the concentration of oil in the sediment remains above 50 mg/kg compared to a threshold of 500km^{2}yrs. Where both the rate and persistence are below the thresholds and no other discharges have contaminated the cuttings pile, no further action is necessary and the cuttings pile may be left *in situ* to degrade naturally.

Where either the rate of oil loss or the persistence are above the thresholds, Stage 2 should be initiated, taking into account the rate of oil loss, the persistence over the area of seabed contaminated and the timing of the decommissioning of the associated installation.

2 PROJECT DESCRIPTION

The Brent Field is located in the East Shetland Basin of the Northern North Sea approximately 100 nautical miles northeast of Shetland, as illustrated in the two figures below.

Figure 2.1: Location of Brent Field

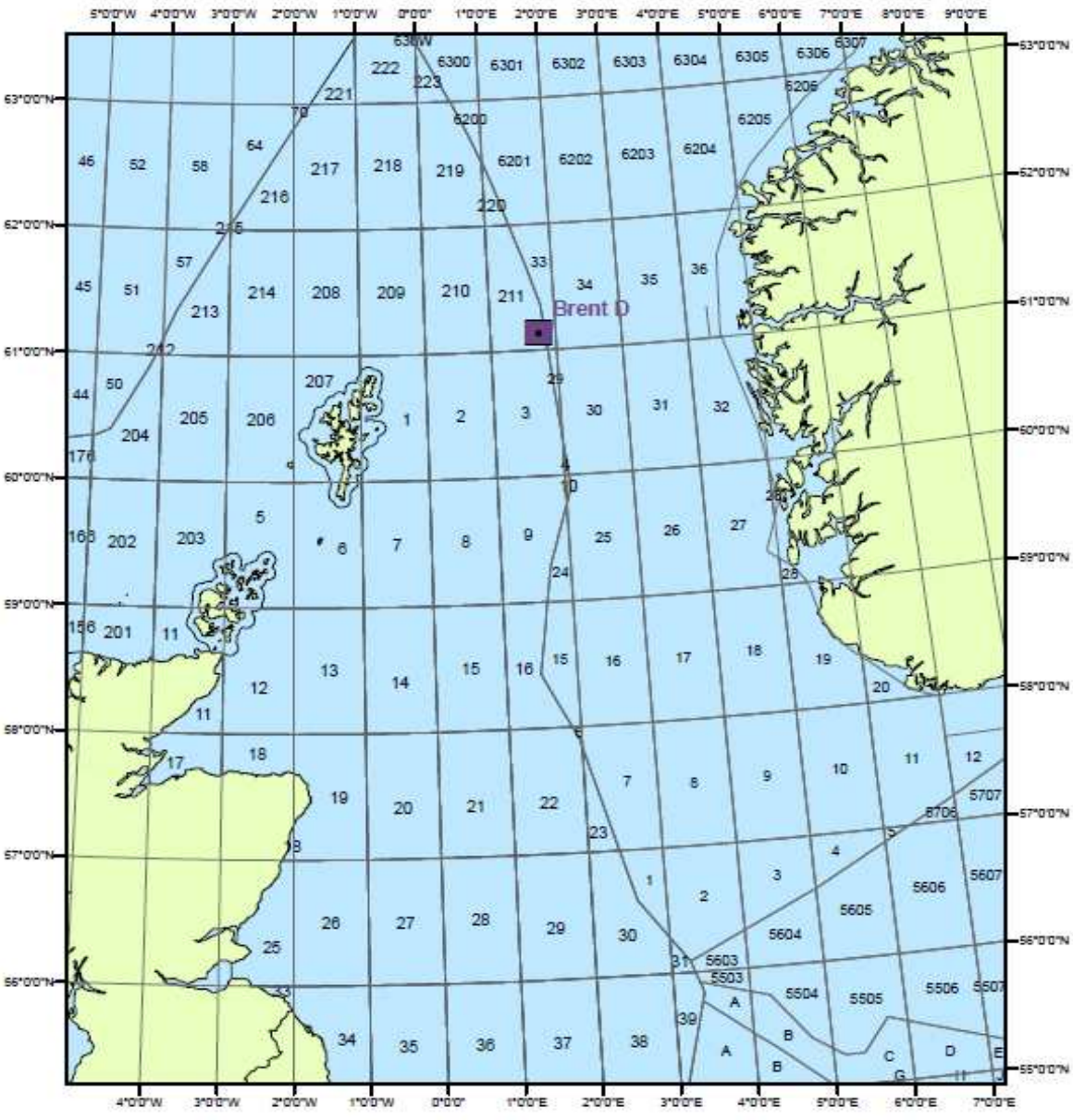
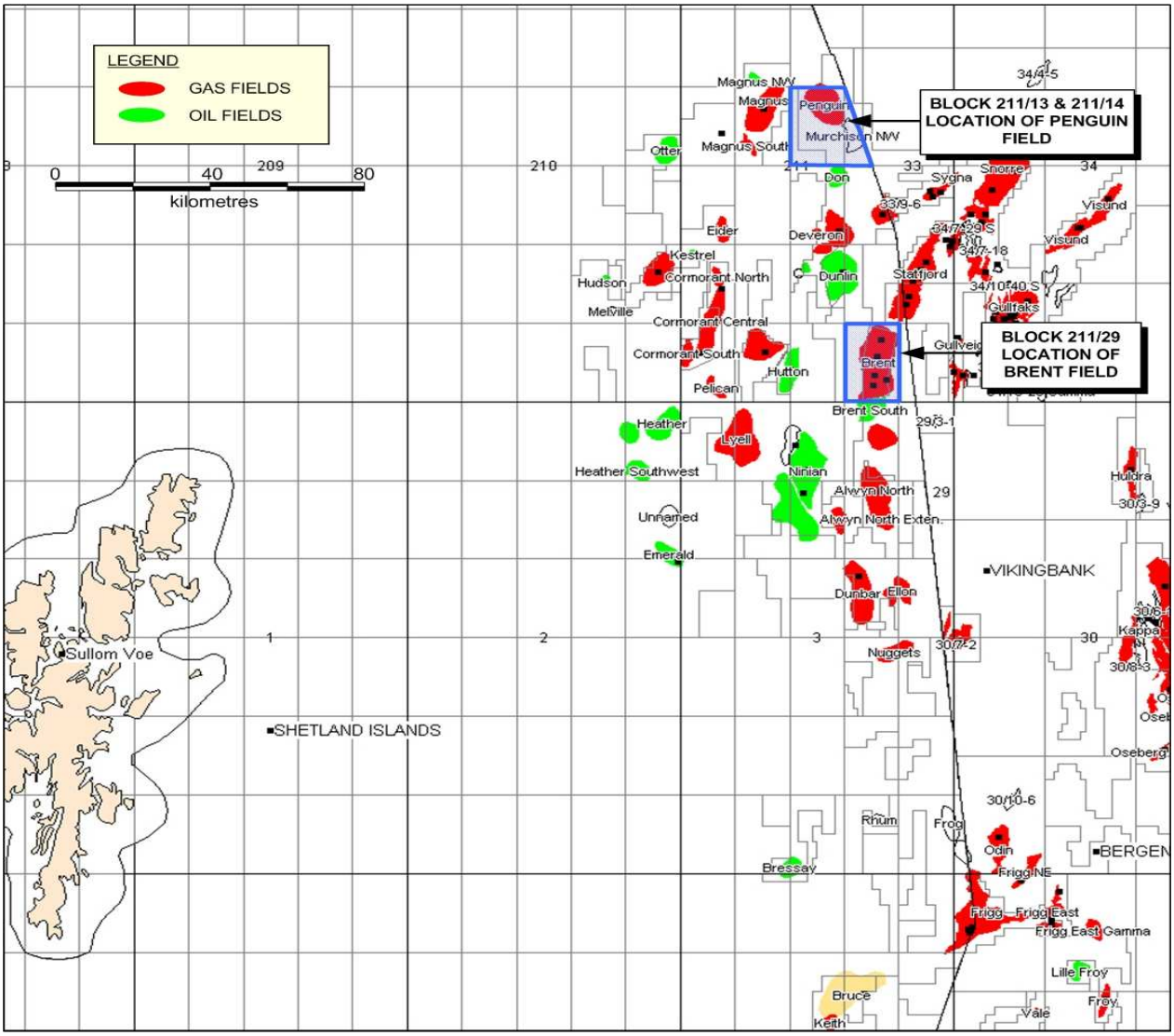


Figure 2.2: Location of Brent Field



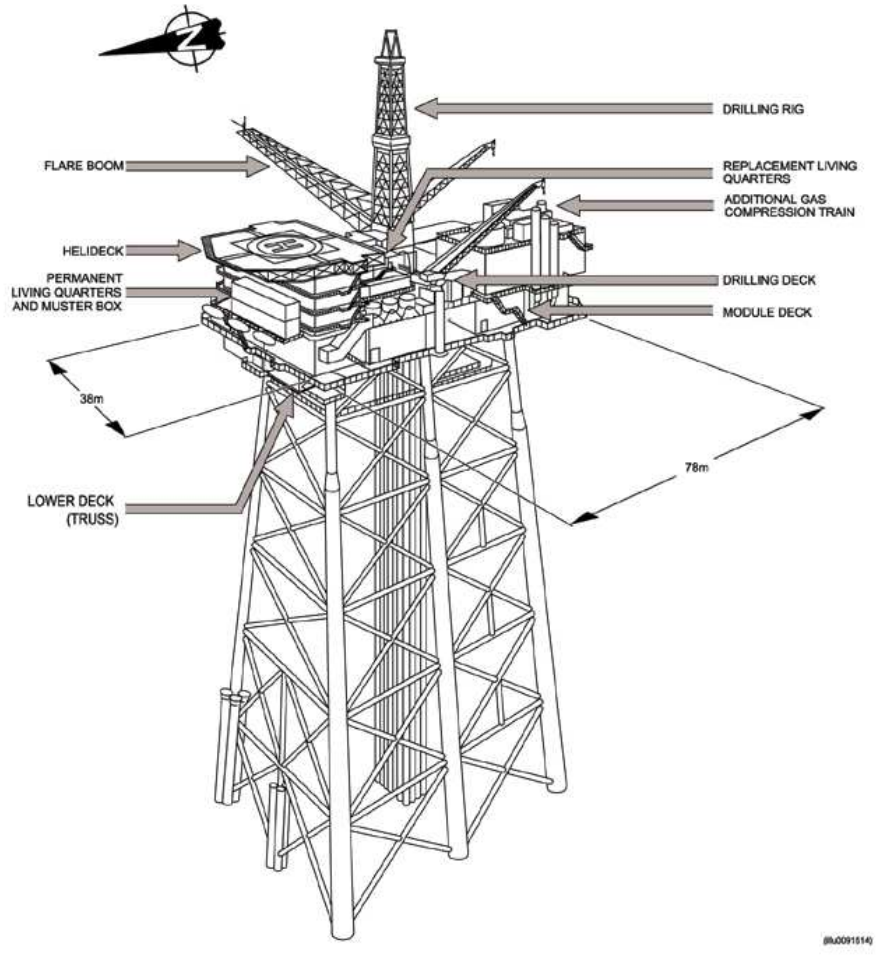
2.1 Brent Alpha Overview

Brent Alpha (Figure 2.3) is a fixed steel jacket installation comprising six tubular steel legs and a fabricated plate girder truss. The installation stands on the seabed in a water depth of approximately 140m, and is secured to the seabed by piles at the base of each of the six main legs. A fabricated steel truss deck is supported on the jacket, together with modules containing facilities including Production Modules, Living Quarters and Drilling Modules. Two pedestal cranes are installed on the Installation; one on the east side, the other on the west side. A flare boom is also mounted. Total topside dry weight is estimated to be 16,605 tonnes. Jacket weight (in air) is estimated to be 14,225 tonnes (excluding piles and grout).

A remote flaring facility was located 3.1km from Brent Alpha but this was removed during 2005. A decommissioned subsea tieback (Brent South) historically produced over the installation, but has since been disconnected although the Brent South pipelines are within the scope of this study.

Oil and gas processing on Brent Alpha has now ceased with all production now tied back to Brent Bravo. There are a number of pipelines also connected to Brent Alpha (see Figure 1.1).

Figure 2.3: Brent Alpha General Configuration



2.2 Brent Bravo Overview

Brent Bravo (Figure 2.4) is a three leg concrete gravity base structure (GBS), with a base of 19 reinforced concrete cells (of which three form the leg bases and 16 can be used for oil or ballast water storage). The installation stands on the seabed, in the water depth of approximately 144.2 metres. A cellular lower deck, formed from interconnecting steel deep plate girders, supports modules containing facilities.

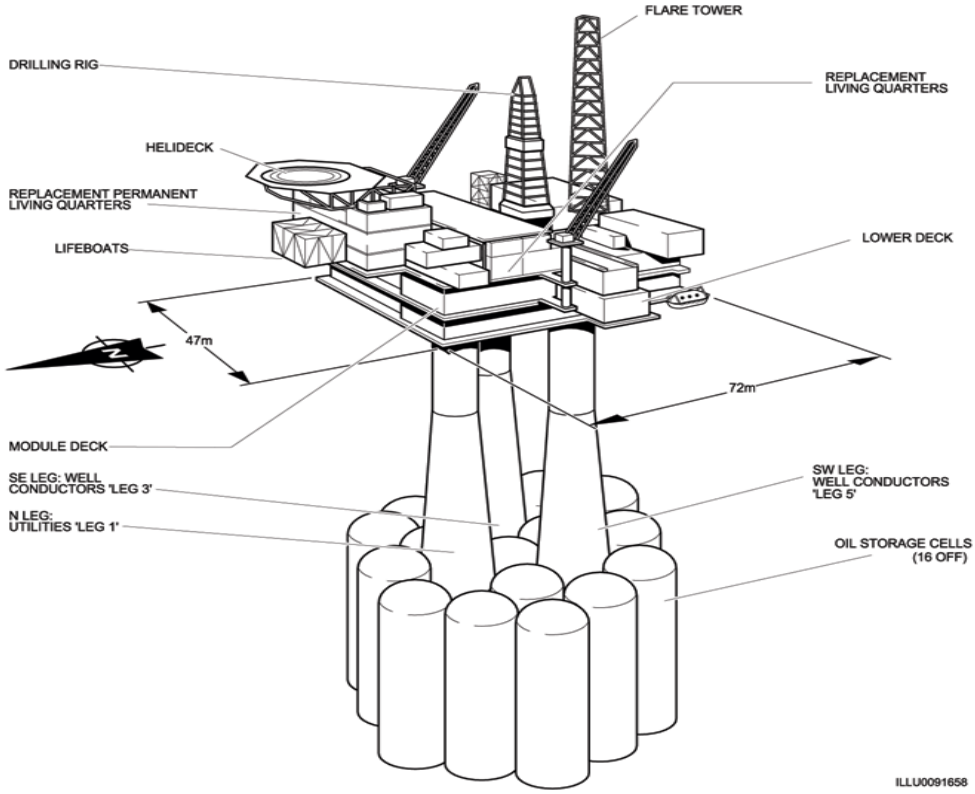
The Brent Bravo substructure is a "Condeep" design and comprises a total of 19 cells which are arranged in a hexagonal-shaped honeycomb caisson which sits on the seabed. The caisson is secured laterally by 4m steel skirts which penetrate the seabed.

Three of the cells extend upwards to form the supporting legs whilst the remaining 16 are capped off below sea level to form cells for storing crude oil. The storage cells operate in a completely flooded condition. The storage cells are connected into four groups in respect of oil input. In general, one group is filled with oil, two groups are settling and one group is for exporting oil.

The total substructure base area is 6,360m^2 and its estimated dry weight in air is 308,064 tonnes including ballast. The 16 storage cells are each approximately 56 metres high and the three supporting legs are each 163 metres high.

The three legs support the topsides, see Figure 2.2, which comprise the cellar/lower deck with the module deck situated above this structure, and the drilling deck located at the top. The flare tower is situated at the southern end of the Installation on top of the Replacement Process Module. Total topside dry weight is estimated to be 24,095 tonnes. There are a number of pipelines also connected to Brent Bravo (see Figure 1.1).

Figure 2.4: Brent Bravo



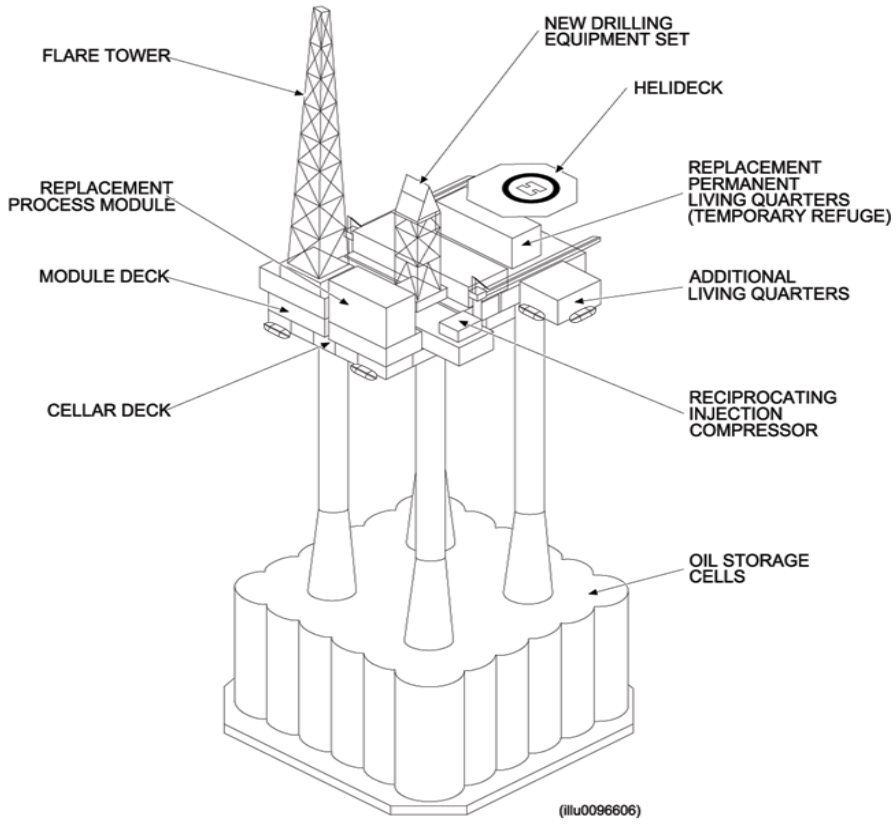
2.3 Brent Charlie Overview

The Brent Charlie Platform (Figure 2.5) is a concrete gravity base installation of a Sea Tank design. The substructure comprises a 57.3 m high caisson consisting of 32 cells and four concrete legs which extend upward from the floor of the caisson to a height of 148.9 metres above the seabed. The superstructure comprises the lattice girder cellar deck compartments, module deck and drilling deck modules. It is supported on four steel transition pieces, each 15.7 metres high, which are connected to the top of the concrete legs.

The total substructure base area is 10,340 m^2 and its overall weight in air is approximately 290,516 tonnes including ballast. The cells operate in a completely flooded condition. Ten of the cells are used for oil storage, and are arranged in 4 independent groups in respect of oil input. In general production operations, one group is filling with oil, one group is used for exporting oil, one group is used for storage and one set is designated for use as diesel storage. There are a number of pipelines also connected to Brent Charlie (see Figure 1.1).

Dry topsides weight is estimated to be 31,048 tonnes.

Figure 2.5: Brent Charlie General Arrangement



2.4 Brent Delta Overview

Brent Delta (Figure 2.6) is a three leg concrete gravity structure of a 'Condeep' design, similar to that of Brent Bravo.

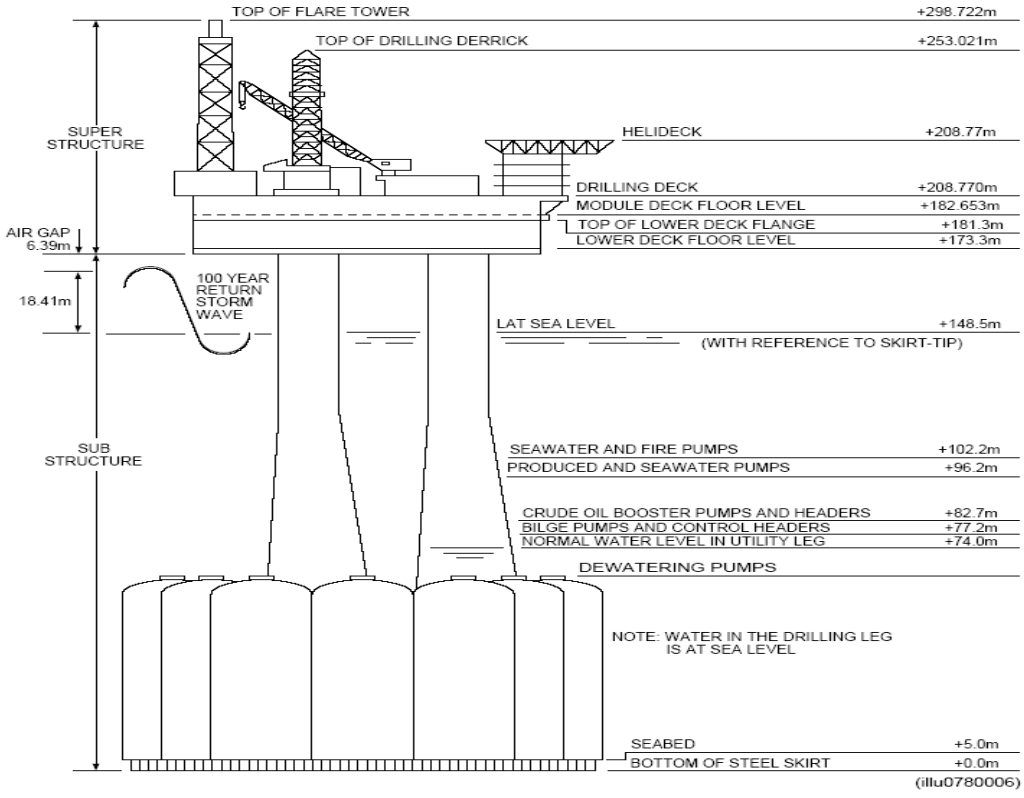
The Brent Delta substructure comprises a total of 19 cells which are arranged in a hexagonal-shaped honeycomb caisson which sits on the seabed. The caisson is secured laterally by 5m steel skirts which penetrate the seabed (approximately 143.5 metres below LAT).

Three of the cells extend upwards to form the supporting legs whilst the remaining 16 are capped off below sea level to form cells for storing crude oil.

The total substructure base area is 6,360m^2 and its weight in air is 318,850 tonnes including ballast. The 16 storage cells are each approximately 60 metres high and the three supporting legs are each 166 metres high.

The three legs support a cellular lower deck, formed from interconnecting steel deep plate girders. This supports the topsides, which comprise the module deck and the drilling deck located at the top. The flare tower is situated at the southern end of the installation on top of the Replacement Process Module. Total topside dry weight is estimated to be 23,500 tonnes. There are a number pipelines connected to Brent Delta.

Figure 2.6: Brent Delta General Configuration



2.5 Pipelines Overview

All the pipelines will be decommissioned at the end of field life. However, the platform decommissioning will be phased; therefore some reconfiguration of the pipeline system may be required to maintain export routes from the Brent system until cessation of production. A reconfiguration study is currently under way and has identified a number of possible options for reorganising the subsea system.

The Brent subsea facilities under assessment in this study are summarised in the following two tables.

Table 2.1: Brent System Pipelines and Umbilicals in Current or Future Use[1]

Line No.	Service	From	To	Size (inch)	Length (km)
N0301	Oil export (now drains line)	Brent A	Brent Spar PLEM	16	2.8
N0302	Oil export (now drains line)	Brent B	Brent Spar PLEM	16	2.3
N0304	Oil Production	Brent D	Brent C	20	4
N0303	Oil Production	Brent B	Brent C	24	4.6
N0405	Gas Export	Brent D	Brent C	24	4.2
N0404	Gas Export	Brent C	Brent B	30	4.4
N0501	Oil Export	Brent C	Cormorant A	30	35.9
N0403	Gas Export	Brent B	Brent A	36	2.3
N0310	**Oil Production**	Brent A	Brent B SSIV	14 Flexible	2.3
N0311	Oil Production	Brent A	Brent B SSIV	12 Flexible	0.27
N2801	Control Umbilical	Brent B	Brent B SSIV	2.5	0.4
N0201	Gas Export	Brent A	VASP	36	1.25
N0830	SSIV Control Umbilical	Brent A	WLGP SSIV	-	0.5
C0603	Gas Import	NLGP SSIV	Brent A	20	0.37
C0815	SSIV Control Umbilical	Brent A	NLGP SSIV	-	1.2
N0513 riser	Oil Production	Brent C SSIV	Brent C	14 Flexible	0.2
N0513	Oil Production	Penguin DC5	Brent Cs SSIV	16 / 22 PiP	52.1
N1141	Gas Lift	Brent C	Penguin DC4	4	~57
N1845	Control & Chemical Umbilical	Brent C	Brent C SSIV	5	0.37
N1828	Control & Chemical Umbilical	Brent C SSIV	Penguin UCS5	5	52.0
N0601	Gas Export	WLGP SSIV	Brent A	16	0.4
N1826	Power Cable (Now owned by Fairfield)	Brent C	Dunlin	5	21.9
N1844	Power Cable	Brent B	Brent A	5	2.9
N1141	Gas Lift	Brent C	Gas Lift SSIV	4 flexible	0.37
N1141	Gas Lift	Gas Lift SSIV	Penguins GL Pipeline	4 flexible	0.07
N2845	SSIV Umbilical Jumper	Penguins Production SSIV	Penguins Gas Lift SSIV	-	0.02

[1] Brent Pipeline & Subsea Decommissioning Feasibility Study, Xodus Subsea, A-20028-S00-REPT-01-R01,February 2007

Table 2.2: Brent System Pipelines and Umbilicals Not in Use

Line No.	Service	From	To	Size (inch)	Length (km)
N0303 *	Pipeline section abandoned during construction	Brent B	Brent C	24	0.3
N0401	Flare Gas (not in use)	Brent A	Brent Flare System	28	3.0
N0402	Flare Gas (not in use)	Brent B	Brent Flare System	36	2.6
N0402 *a	Pipeline sections abandoned during construction	Brent B	Brent Flare System	36	0.75
N0402 *b	Pipeline sections abandoned during construction	Brent B	Brent Flare System	36	0.12
N0952	Flare Gas (not in use)	Brent Flare System	Brent Flare System	8"	0.04
N0738	Oil Production (not in use)	Brent S	Brent A	10	5.0
N0739	Oil Production (not in use)	Brent S	Statfjord DC	10	1.8
N0913	Water Injection (not in use)	Brent A	Brent S	8	5.0
N9900	Oil Production (not in use)	Well 211/29-7	Brent B	4 Flexible	2.1
N9902	Oil Production (not in use)	Well 211/29-7	Brent B	4 Flexible	2.3
N9903 A	Oil Production (not in use)	N0405 midline tie-in	N0513 pipeline crossing	24	1.7
N9903 B	Oil Production (not in use)	N0513 pipeline crossing	N0303 midline tie-in	24	2.9
N0841	Umbilical (not in use)	Brent A	Brent S	4.5	5.3
N9901	Control & Chemical Umbilical (not in use)	Brent B	Well 211/29-7	-	2.1
C0801	SSIV Control Umbilical (not in use)	Brent A	NLGP SSIV	-	1.2

Note 1: Sections marked with an asterisk do not officially have a line number. The number assigned is based on the corresponding operational pipeline.
Note 2: Superscripts "a" and "b" on lines N0301 and N0402 refer to geographically separate sections of the same abandoned pipeline.

2.6 Brent South

The Brent South (BS) Field is approximately 5 kilometres south of the Brent Alpha (BA) platform. The Field comprised 2 production wells (BS-1 & BS-2), one water Injection well (BS-3) and one exploration and assessment well that was not developed. The Field was tied back to the Brent Alpha.

Brent South has been abandoned. The Brent South production and water injection pipelines and control umbilical were put into Interim Pipeline Regime (IPR) during the abandonment of the three Brent South wells. The lines were flushed with deoxygenated seawater (injection water) down the water injection line and back to BA via the production line. Biocide/inhibitor/oxygen scavenger sticks were placed in each end of the three pipelines before blind flanges were installed.

The umbilical had a flushing loop head installed at the Brent South end, joining pairs of cores to allow them to be flushed from and back to Brent A. Six of the cores were successfully flushed. There was a blockage on the chemical / spare loop which meant that these lines could not be flushed, although reports that they were left filled with hydraulic oils rather than chemicals should be confirmed. The HP / LP loop failed during flushing, but it is unclear how complete the flushing process was when this occurred.

It is likely that the level of cleanliness achieved during flushing of the pipelines for IPR will be sufficient for final decommissioning. For the umbilical, it is unlikely that the blocked core(s) could be unblocked in the future.

2.7 Provisional Materials Inventory[2]

Many different types of material have been used in the construction and operation of the Brent Field platforms in over 30 years of operation. Data has been synthesised from many sources to obtain the current provisional Materials Inventory presented in Appendix 1, and summarised in Table 2.3 below.

Table 2.3 Provisional Material Inventory

Material	Alpha	Bravo	Charlie	Delta	South	All pipelines	Total (tonnes)	%
Steel topsides	11,921	19,572	31,048	19,781	N/A	N/A	**82,322**	4.39
Steel support structure	19,234	33,300	57,700	35,700	N/A	N/A	**145,934**	7.79
Grout (concrete)	5,278	12,747	9,082	12,747	N/A	N/A	**39,854**	2.13
Risers steel	345	302	385	78	N/A	N/A	**1,110**	0.06
Wells steel	4,442	6,039	6,357	7,628	N/A	N/A	**24,466**	1.31
Other steel structures	5,122	7,003	7,428	8,404	N/A	47,617	**75,574**	4.03
Stainless steel	459	1,349	1,732	1,311	N/A	N/A	**4,851**	0.26
Copper & Copper-Nickel alloys	174	396	510	407	N/A	N/A	**1,487**	0.08
Alloy steel	216	285	329	276	N/A	N/A	**1,106**	0.06
Anodes	407	N/D	N/D	N/D	N/A	100	**507**	0.03
NORM	43	123	152	119	N/A	N/D	**437**	0.02
Asbestos	4	9	9	9	N/A	N/A	**31**	0.00
Ethylene/Propylene & PVC	104	65	88	72	N/A	N/A	**329**	0.02
Halon	0	1	0	0	N/A	N/A	**2**	0.00
Rubber & Neoprene	28	28	28	28	N/A	N/A	**112**	0.01
Insulation	31	99	83	105	N/A	N/A	**318**	0.02
Lead	11	6	13	11	N/A	N/A	**41**	0.00
Titanium	28	31	32	31	N/A	N/A	**122**	0.01
Concrete (GBS and Pipelines)	N/A	132,500	230,000	142,000	N/A	22,472	**526,972**	28.12
Coal tar coatings	305	N/D	N/D	N/D	N/A	N/A	**305**	0.02
Paint (topsides)	1,245	961	899	899	N/A	N/A	**4,004**	0.21
Ballast sand	N/A	118,800	N/A	118,800	N/A	N/A	**237,600**	12.68
Sludge/sediments in cells (min)	N/A	3,456	1,548	3,456	N/A	N/A	**8,460**	0.45
Interphase material	N/A	352	720	330	N/A	N/A	**1,402**	0.07
Permanently trapped oil	N/A	320	5,290	420	N/A	N/A	**6,030**	0.32
Oily water	N/A	181,264	311,330	177,244	N/A	N/A	**669,838**	35.74
External cuttings	6,506	5,227	12,239	2,373	2,016	N/A	**28,361**	1.51
Cuttings in legs	N/A	4,799	N/D	4,799	N/A	N/A	**9,598**	0.51
Cuttings in tricells	N/A	1,400	N/D	1,400	N/A	N/A	**2,800**	0.15
Seabed & Celltop debris	N/D	N/D	N/D	N/D	N/D	N/D	**0**	0.00
Total	**55,903**	**530,434**	**677,002**	**538,428**	**2,016**	**70,189**	**1,873,973**	**100.00**

N/A = Not applicable to this structure
N/D = No data available

2 Based on Brent Decommissioning Provisional Material Inventory, Sigma3 (North Sea) Limited, BDE-80-SH-0003 A1, 16 May 2007

3 ENVIRONMENTAL BASELINE SUMMARY

A significant amount of work has been conducted by Shell UK to date in assessing the environmental baseline of the Brent Field area. This section does not attempt to comprehensively summarise or critique such work, but only seeks to set the context for this scoping study.

3.1 Key Environmental Sensitivities Offshore

The following table has been reproduced[3] in a simplified format and shows the general baseline features within Brent Field.

Table 3.1 Key Environmental Sensitivities of the Brent Field

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Plankton Plankton communities are vulnerable to discharges of oil and chemicals. Plankton is widely distributed across the North Sea.											
4	4	4	4	4	4	4	4	4	4	4	4
Benthic fauna Benthic communities in the study area are similar to those found throughout surrounding area of northern North Sea and no rare species are known to occur in this area. Benthic fauna are an important food resource. Benthic fauna are vulnerable to disturbance of seabed sediments e.g. as a result of decommissioning of pipes or subsea structures, or vessels' anchors.											
3	3	3	3	3	3	3	3	3	3	3	3
Fish Brent Field coincides with spawning areas of cod, haddock, saithe and Norway pout, and nursery areas used by mackerel, haddock, Norway pout & blue whiting. The fish found in the area are present throughout the general area and other North Sea areas. Finfish & shellfish are vulnerable to pollution, e.g. oil & chemicals, and the impact of drill cuttings, especially during egg, larval & juvenile stages. Fish/shellfish live close to seabed sediments are vulnerable to sediment disruption.											
2	2	2	2	2	3	3	3	3	3	3	3
Seabirds Fulmar, kittiwakes, guillemots and puffin are common species in the area throughout the year. Seabirds are vulnerable to surface oil-related pollution of the sea surface. The overall seabird vulnerability to pollution in the vicinity of the Brent Field is low, but there are periods of *high sensitivity in July and November*.											
3	3	4	4	4	4	2	4	3	3	2	4
Marine mammals Harbour porpoises and white-sided dolphins have been recorded in the area of Brent; minke whales and killer whales have also been recorded in surrounding quadrants. *High numbers of porpoises* have been recorded in Quadrant 211 in February and in adjacent quadrants in July, with other species being recorded in low/moderate numbers throughout the year. Cetacean species present in the area are generally distributed throughout the North Sea. Marine mammals are potentially vulnerable to acoustic disturbance, injury from collisions with vessels, oil spills and chemicals, and effects on availability of prey.											
	1	3	4	4	3	1	1	3			1
Fisheries Brent Field has low commercial fishing value; the area is fished throughout the year and demersal and pelagic fish e.g. mackerel, haddock, herring and cod dominate the species landed. The relative fishing effort is low compared to other N. Sea areas.											
4	4	4	4	4	4	4	4	4	4	4	4
Shipping The Brent Field is in an area of moderate to low shipping activity (0.5-10 vessels/day) compared to other areas in the North Sea. The majority of vessels passing the site are tanker and cargo vessels. There are 2 charted wrecks in the vicinity of the Brent Field (9km NE of Brent Bravo and 9km S of Brent Alpha). No routine military activities are known.											
3	3	3	3	3	3	3	3	3	3	3	3
Marine conservation habitats There are no known Annex I Habitats near Brent Field. No protected areas were identified within survey area 15km x 4km.											
4	4	4	4	4	4	4	4	4	4	4	4
Marine conservation species Cetaceans are protected under Annex II of Habitats Directive. Harbour porpoises have been recorded in very high numbers in February and July. Bottlenose dolphins have not been recorded in the area. The occurrence of seals is unlikely.											
4	1	4	4	4	3	3	4	4	4	4	4

KEY	1	Very high	2	High	3	Mod	4	Low		No data

[3] Report on Environmental Sensitivities of Brent Field (including Penguins), Shell UK BDE-14-SH-0006/BDE-F-GEN-HE-7753-00004, June 2008

The highest environmental sensitivity is identified as being marine mammals (whales, porpoises) during certain periods of the year.

3.2 Drill Cuttings & Marine Sediment Baseline Survey [4] [5]

In 2007 a pre-decommissioning baseline survey was conducted. 17 grab samples of drill cuttings and marine sediment were collected in cruciform patterns at each of Brent A, B, C, D platforms and 16 grab samples were collected from Brent South. They were analysed for physical and chemical parameters as follows: particle size, THC, n-alkanes, PAH, APE, PCB, metals, organotin and radioactivity. Additionally, day grab samples were collected for macrofaunal analysis. Samples were also collected from reference stations in the wider Brent Field area.

Also, within the drill cuttings pile, the following were collected: 1 piston core and 3 box samples for each pile, and 1 ROV core sample on top of GBS cells at Brent B, C and D. They were analysed for particle size, shear strength, water content, oil leach rate, THC, PAH, APE, PCB, metals and radioactivity.

The results showed:

- There is evidence that a wide variety of drilling fluids were used over the lifetime of the platforms.
- Total Hydrocarbons (THC) concentrations exceed the Specified Environmental Impact (SEI) criteria (50 μg/g) within the cutting piles, and up to 800 metres from the platforms (the contaminated areas are larger than the cuttings pile footprint).
- There are potentially significant impacts upon fauna as a result of the presence of Polyaromatic Hydrocarbons (PAH): Effects Range Low (ERL) and Effects Range Medium (ERM) criteria are often exceeded.
- Concentrations of As, Cd, Cr, Cu, Pb, Ni, Zn, exceed OSPAR expected background concentrations, both within and outside the cutting piles. There are elevated metal concentrations around the platforms compared with EAC.
- Macrofauna from 9 stations and 2 reference stations: Impacts of contamination are evident, although conclusive statements cannot be made because macrofauna was not collected from every station.

In general the results show that the effects of the drill cuttings could be seen to a distance of 450-475m from Brent A and C, at 800m from Brent B, greater than 500m for Brent D and 150 metres from Brent South.

3.3 Physical Nature of Drill Cutting Piles

A survey was conducted in 2007 to examine the physical nature of the drill cutting piles at Brent Facilities. The survey found that there appeared to be less drill cuttings in the 2007 survey than in a previous 1997 survey. The footprints of the drill cutting piles were found to vary in size, depending on the platform, as illustrated in Table 3.2 below.

The maximum thickness of the drill cutting piles depended on the platform, varying between 3-11 metres on the seabed, and between 3-12 metres on top of the cells.

[4] Pre-Decommissioning Environmental Survey Report, Gardline Environmental, BDE-D-GEN-HX-0780-00001, 14 April 2009.
[5] Pre-decommissioning Environmental Survey Report, Gardline Environmental Report No.7079.2, 11 Jan 2010

Table 3.2: Brent cutting piles 2007 survey data summary

Asset	Seabed		Cell tops		Total area	Total volume
	Area (m^2)	Volume (m^3)	Area (m^2)	Volume (m^3)	(m^2)	(m^3)
Brent Alpha	8,880	6,506	0	0	**8,880**	**6,506**
Brent Bravo	3,414	4,635	673	592	**4,087**	**5,227**
Brent Charlie	3,143	5,266	2,148	6,973	**5,291**	**12,239**
Brent Delta	1,632	1,575	234	798	**1,866**	**2,373**
Brent South	1,620	2,016	0	0	**1,620**	**2,016**

Total area of all seabed piles	18,689
Total area of cell top piles	3,055
Total area of combined piles	**21,744**

Total volume of all seabed piles	19,998
Total volume of cell top piles	8,363
Total volume of combined piles	**28,361**

3.4 Initial Screening Assessment of Cuttings Piles [6] [7]

Stage 1 (initial screening) of the cuttings pile management regime was conducted for the Brent facilities. Two key OSPAR assessment parameters were examined:

- Oil loss from drill cuttings pile to water column over time (OSPAR threshold is 10 tonnes/year)
- Persistence: this is assessed on the basis of the seabed area where the oil concentration remains above 50 mg/kg (compared against a threshold of 500 km^2yrs).

If either of the thresholds is exceeded, Stage 2 examination should be initiated (this involves BAT/BEP assessment).

Existing information provides reasonable confidence that each of the Brent cutting piles falls below both the OSPAR thresholds. The Brent Decommissioning Project is carrying out modelling, to assess and confirm that the criteria are met, and to assess the long-term environmental impact of leaving the drill cuttings in place. This information will need to be clearly presented and demonstrated within the EIA.

3.5 Contents of GBS Cells [8]

No sample of cell sediment has yet been collected from a Brent GBS. To obtain an initial estimate of the types and amounts of contaminants contained within the GBS, a desktop study was conducted which examined data from:

- some limited sampling data of Brent GBS contents (1 sampling event in 2007 at Brent Delta that involved sampling the mobile phase of water and oily fluid) and sampling data from Brent D GBS produced oil and water; and
- data from other decommissioning projects (such as Ekofisk and Brent Spar).

[6] Initial Screening Assessment of UKCS Cutting Piles; Aquatera Ltd, Rev1.1, Feb 2007.
[7] ERT: Data review for an Industry-Wide Response to Cutting Pile Management, Sept 2008
[8] Brent GBS Decommissioning Contaminants Review, Royal Haskoning, Ref 9S2249/R/303642/Newc, 28 May 2008

As might be expected owing to the historical and varied use of the GBS cells (the cells may have contained a range of contaminants, as well as hydrocarbons), the cell contents are predicted to be contaminated. Shell estimates that the cell sediments are likely to comprise a mixture of sand, water and oil, in roughly equal proportions.

Table 3.3 below provides estimates for the volume of sediment contained within the cells of BB, BC, and BD. These are Shell's "working estimates" and are based on the assumption that the average depth of sediment in cells that were used for oil storage is 4m.

Table 3.3: Estimated values for volume of sediment in GBS cells

Platform	Volume (m^3)
Brent Bravo	17,280
Brent Charlie	6,034
Brent Delta	17,280
Total	**40,594**

3.6 Environmental Baseline for Onshore Locations

Currently the location(s) for onshore dismantling are not known and as such baseline data cannot be provided. Shell UK will only use onshore facilities that are licensed to receive decommissioning wastes, although the EIA will still need to demonstrate that impacts are acceptable.

Aspects that will be of relevance when selecting/evaluating possible onshore locations include:

- Design/layout of facilities;
- Distance to neighbours and third party activities;
- Distance to nature conservation areas;
- Adjacent infrastructure;
- Pollution/spill contingency measures;
- Containment areas/systems;
- Waste water treatment facilities;
- Logistics for managing and transporting waste;
- Noise;
- Environmental monitoring results.

For the purposes of this scoping document, DNV has considered generic issues of concern, and those issues identified in Section 6 as potentially significant will typically need to be addressed in the EIA.

4 DECOMMISSIONING OPTIONS

The scoping workshop examined various decommissioning options for the Brent Field facilities as detailed in Table 4.1 below.

Both planned and unplanned activities (such as accidental events/outcomes) were taken into consideration for the various options as well as major legacy issues. Main concerns and issues raised from stakeholders were also identified (based on information provided by Shell UK) and taken into consideration.

Subsea Infrastructure (such as manifolds, SSIVs) was not covered in detail in the scoping workshop because it was concluded that the potential for impact was relatively minor in comparison to the other categories.

It is noted that Shell do not intend to use explosives during planned underwater cutting in any of the options. Explosives will only be considered as a last resort in exceptional unforeseen circumstances. In such an event, consultation would be held with DECC and JNCC prior to operations. If explosives were to be used Shell would strictly adhere to the JNCC guidelines (www.jncc.gov.uk/default.aspx?page=4900) for minimising acoustic disturbance to marine mammals.

Table 4.1 Decommissioning Options Examined

CATEGORY		SCOPE	OPTIONS	LEGACY ISSUES
1	**Jacket**	1 x steel jacket (BA);	**1**. Derogation to remain in place after removal of topsides, with legs cut down to top of piles at about -84 m LAT. Method : Cut and lift in several pieces using an HLV, probably with cold-cutting methods such as diamond wire, abrasive water-jetting. **2.** Derogation to remain in place after removal of topsides with legs cut down to give 55m clearance for shipping. Method : Cut and lift in several pieces using an HLV, probably with cold-cutting methods such as diamond wire, abrasive water-jetting; **3.** Full removal in pieces by HLV with onshore dismantling and recycling; the legs and piles would be severed approximately 3m below the level of seabed.	Long -term effects of derogated structure if left *in situ*
2	**Drill Cuttings**	All external cuttings piles (BA,BB,BC,BD), including cuttings piles on top of the GBS cells	1. Leave *in situ* for natural degradation, as per OSPAR 2. Remove and reinject from one of the Brent platforms. 3**.** Remove and treat onshore	Long-term effects of *in situ* degradation.
3	**Cell Sediments**	Oily sediments present in the cells of all 3 GBS (BB,BC,BD).	1. Leave *in situ* for natural degradation **2.** Cell sediments removed and re-injected offshore. 3. Cap *in situ* in the cells. 4. Cell sediments removed and disposed of onshore	Eventual exposure of untreated oily sediments when cells/GBS break down if left *in situ*.
4	**Topsides**	All 4 topsides. (BA,BB,BC,BD)	1. Complete removal by modular dismantling using an HLV 2. Piece small dismantling offshore 3. Removal in one piece using a single lift vessel.	None
5	**GBS**	3 x GBS (BB, BC, BD) Excluding cell sediments and drill cuttings (these are considered separately, see above).	**1**. Derogation to remain *in situ* after removal of topsides. Legs intact and upright. **2.** Partial derogation, with legs removed to about 70m depth. Method: Cut and lift in several pieces using an HLV, probably with cold-cutting methods such as diamond wire, abrasive water-jetting. **3.** Full removal of GBS by refloating, then dismantling inshore and onshore. *Note: cell sediments in GBS will be present when refloated.*	Long-term effects of derogated structure left *in situ*, with and without legs up.
6	**Pipelines, Umbilicals**	All in-field pipelines and umbilicals. Assume all lines and umbilicals are flushed.	1. Leave *in situ*. (with some intervention depending on pipe) 2. Removal – cut & lift for pipelines and reverse lay for umbilicals & pipelines < 16 inches. 3.Burial: Trench and back-fill or fluidize seabed, pipeline settle and sink	Long term effects of leaving pipelines *in situ*, whether buried or exposed

5 DESCRIPTION OF SCOPING METHODOLOGY

5.1 Scoping Workshop

The internal DNV scoping workshop was conducted in Stavanger, Norway on the 18- 19th May, and was attended by a multidisciplinary experienced team of 5 DNV personnel. DNV Norway provided the technical expertise in offshore decommissioning and the workshop was chaired by DNV UK.

Prior to the workshop, environmental baseline documents, background information on the facilities, and studies/ surveys conducted on drill cuttings and GBS cell sediments were reviewed and summarised to provide the context for the workshop. DNV consider that the background information and data made available by Shell UK (both Shell documents and external studies) `was sufficient to undertake the Scoping Workshop effectively.

5.2 Scoping Methodology

The methodology for the Scoping Workshop was based on the *European Commission (EC) Guidance on EIA Scoping* June 2001, as it provides a structured and recognised approach to identifying significant impacts from the project.

http://ec.europa.eu/environment/eia/eia-guidelines/g-scoping-full-text.pdf

Using the EC guidance and checklists led to a structured discussion for each category (see Table 4.1 for categories), evaluating the decommissioning options. The key Scoping Checklist in the EC guidance is in two parts (see Appendix 2):

1. The first part of the Scoping Checklist provides a list of possible project characteristics which could give rise to environmental effects. The user is prompted to first consider whether the project is expected to involve any of the activities or features listed in the checklist and to answer with:
   - yes - if the activity is likely to occur;
   - no - if the activity is not expected to occur;
   - ? - if it is uncertain whether the activity will occur or not.

   If the answer to any question is “Yes”, the user then considers which characteristics of the surrounding environment could be affected by that activity and the results are entered in the checklist.

2. Secondly, consideration is given as to whether an impact is likely to be significant. DNV used the *EC Guidance Checklist of Criteria for Evaluating the Significance of Environmental Effects* as a workshop prompt, but experience and expertise in the area were the key drivers in evaluating the significance of environmental effects.

5.3 Workshop Findings

The discussions and DNV’s evaluation of the potential significant impacts related to each category are captured in detail in the checklists provided within Appendix 2. It is from these detailed checklists that a summary of the potentially significant impacts was created for each category and these are provided as a set of six tables in Section 6.

For increased quality assurance, DNV compared the findings determined in the scoping workshop against findings from similar Norwegian EIA studies of offshore decommissioning projects, and made minor additions to the tables in Section 6. Also, DNV ensured that the key concerns of Shell UK stakeholders were captured.

6 SUMMARY OF OUTPUT FROM SCOPING WORKSHOP

The output from the Scoping Workshop is a scoping checklist on each facility, as provided in Appendix 2. These scoping checklists were then summarised in the following six tables for each of the six categories. The tables cover all the decommissioning options for each category.

It is important to note that these items have been identified as having a potential for significant impact on the basis of being considered without mitigation.

Where no entry is made in the tables, this means either there will be no impact, or the impact is not considered significant.

Also, these potentially significant impacts have not been ranked; those key issues with the greatest potential for impact are highlighted in Section 7.

6.1 Category 1 – Steel Jacket

Steel Jacket Brent A	Option 1 Derogation - legs cut to 84 m below sea surface	Option 2 Derogation – legs cut to 55 m clearance for shipping	Option 3 Full removal in pieces with HLV, onshore dismantling / recycling
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Will Project involve: **Any Physical Changes in locality**	o Offshore flotel required for temporary accommodation. Associated impacts will need to be addressed (e.g. anchor pits). o Impact on sea bed of anchor pits for crane vessels.	o Offshore flotel required for temporary accommodation. Associated impacts will need to be addressed (e.g. anchor pits). o Impact on sea bed of anchor pits for crane vessels.	o Offshore flotel required for temporary accommodation. Associated impacts will need to be addressed (e.g. anchor pits). o Impact on sea bed of anchor pits for crane vessels. o Disturbance to sea bed to remove drill cuttings to access jacket footings. Associated impacts will need to be addressed (e.g. marine). o If a structure needs to be constructed inshore to receive jacket or jacket sections, associated impacts will need to be addressed (marine, noise, visual).
Resource Use	o Potentially increased onshore and offshore traffic during decommissioning, and production of steel grillage.	o Potentially increased onshore and offshore traffic during decommissioning and production of steel grillage.	o Potentially increased onshore and offshore traffic during decommissioning and production of steel grillage.
Use, transport, handling, production of Hazardous Substances			o Disturbance to sea bed to remove drill cuttings to access jacket footings. Associated impacts will need to be addressed (e.g. marine).
Production of Solid wastes	o Large quantities of steel (potential positive impact of recycling). o Disposal of sacrificial anodes.	o Large quantities of steel (potential positive impact of recycling). o Disposal of sacrificial anodes.	o Large quantities of steel (potential positive impact of recycling). o Disposal of sacrificial anodes.
Air Emissions	o Odour from marine growth on jacket. o NO_x, SO_2, CO_2 emissions to air from vessels, helicopters, HLV, production of grillage etc.	o Odour from marine growth on jacket. o NO_x, SO_2, CO_2 emissions to air from vessels, helicopters, HLV, production of grillage etc.	o Odour from marine growth on jacket. o NO_x, SO_2, CO_2 emissions to air from vessels, helicopters, HLV, production of grillage etc.
Noise/Light emissions	o Potentially increased onshore and offshore traffic during decommissioning (including underwater noise). o Noise and vibration from lifting and cutting steel onshore and noise from underwater cutting offshore.	o Potentially increased onshore and offshore traffic during decommissioning (including underwater noise). o Noise and vibration from lifting and cutting steel onshore and noise from underwater cutting offshore.	o Potentially increased onshore and offshore traffic during decommissioning (including underwater noise). o Noise and vibration from lifting and cutting steel onshore and noise from underwater cutting offshore. o If a structure needs to be constructed inshore to receive jacket or jacket sections, noise impacts will need to be addressed.
Water & Marine Environment	o Offshore flotel required for temporary accommodation. Associated impacts will need to be addressed (e.g. anchor pits). o Introduction of alien species (e.g. from ballast water) to enclosed waters such as lochs (low probability).	o Offshore flotel required for temporary accommodation. Associated impacts will need to be addressed (e.g. anchor pits). o Introduction of alien species (e.g. from ballast water) to enclosed waters such as lochs (low probability).	o Offshore flotel required for temporary accommodation. Associated impacts will need to be addressed (e.g. anchor pits). o Introduction of alien species (e.g. from ballast water) to enclosed waters such as lochs (low probability).

Steel Jacket Brent A	**Option 1** **Derogation - legs cut to 84 m below sea surface**	**Option 2** **Derogation – legs cut to 55 m clearance for shipping**	**Option 3** **Full removal in pieces with HLV, onshore dismantling / recycling**
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
	o Impact on sea bed of anchor pits for crane vessels. o Water containing chemicals/biocides may be present in jacket legs.	o Impact on sea bed of anchor pits for crane vessels. o Water containing chemicals/biocides may be present in jacket legs.	o Impact on sea bed of anchor pits for crane vessels. o Water containing chemicals/biocides may be present in jacket legs. o Disturbance to sea bed to remove drill cuttings to access jacket footings. Associated impacts will need to be addressed (e.g. marine). o If a structure needs to be constructed inshore to receive the jacket, marine impacts will need to be addressed.
Environmental Risk from Accidents	EIA assessment should examine major accidents such as: - Drop piece during decommissioning and fracture live hydrocarbon (HC) pipeline - Refuelling spillage - Ship collision	EIA assessment should examine major accidents such as: - Drop piece during decommissioning and fracture live hydrocarbon (HC) pipe - Refuelling spillage - Ship collision	EIA assessment should examine major accidents such as: - Drop piece during decommissioning and fracture live hydrocarbon (HC) pipe - Refuelling spillage - Ship collision
Social Impact	o Potential positive impact of employment.	o Potential positive impact of employment.	o Potential positive impact of employment.
Other	o The legacy issue of leaving the jacket and footings in-situ needs to be addressed in the EIA, particularly with respect to the impact on fishermen.	o The legacy issue of leaving the jacket and footings in-situ needs to be addressed in the EIA, particularly with respect to the impact on fishermen.	o If a receiving facility needs to be constructed inshore to receive jackets, visual impacts will need to be addressed.

6.2 Category 2 – Drill Cuttings

DRILL CUTTINGS – BRENT A, B, C, D	Option 1 Leave in-situ	Option 2 Remove & Re-inject	Option 3 Remove & Treat onshore
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Will Project involve::			
Any Physical Changes in locality		o Dredging/suction of drill cuttings: associated impacts (e.g. marine and noise) will need addressing.	o Dredging/suction of drill cuttings: associated impacts (e.g. marine, solid waste, noise) will need addressing.
Resource Use		o Potentially increased onshore and offshore traffic (vessels, helicopters, HLV etc) and process activities.	o Potentially increased onshore and offshore traffic (vessels, helicopters, HLV etc) and process activities.
Use, transport, handling, production of Hazardous Substances		o Handling of contaminated drill cuttings	o Handling of contaminated drill cuttings
Production of Solid wastes			o Large quantities of solid wastes generated when drill cuttings are removed. Note that drill cuttings will likely contain debris (e.g. scaffold)
Air Emissions		o Energy and emissions to air from vessels, etc.	o NO_x, SO_2, CO_2, dust emissions to air from vessels, helicopters, HLV processes, onshore thermal processing etc. o Onshore odour of drill cuttings due to H_2S and oil.
Noise		o Dredging/suction of drill cuttings can produce underwater noise and disturbance o Noise from potentially increased offshore traffic (vessels, helicopters, etc).	o Dredging/suction of drill cuttings can produce noise and disturbance o Noise from potentially increased onshore and offshore traffic (vessels, helicopters, HLV etc) and process activities (e.g. low thermal desorption).
Water & Marine Environment	o Legacy of leaving drill cuttings on sea bed.	o Dredging/suction of drill cuttings will result in leaching into water column. o Large quantities of liquid wastes will be generated when drill cuttings are removed.	o Dredging/suction of drill cuttings will result in leaching into water column. o Large quantities of liquid wastes will be generated when drill cuttings are removed. o Introduction of alien species (e.g. from ballast water) to enclosed waters such as lochs.
Env. Risk from Accidents		o Leakage of drill cuttings from re-injected wells o Spillages to sea from platform	o Spillages to sea during the transportation o Spillages onshore
Social Impact	o Impact upon fishermen due to continued presence of drill cuttings.	o Positive impact of temporary employment.	o Positive impact of temporary employment.
Other Factors	o Cumulative impacts of Brent A, B, C, D. o Legacy of leaving drill cuttings on sea bed.	o Cumulative impacts of Brent A,B,C,D.	o Cumulative impacts of Brent A,B,C,D.

6.3 Category 3: Cell Contents

GBS CELL SEDIMENT BRENT B, C & D	Option 1 Leave in-situ	Option 2 Remove and re-inject	Option 3 Cap in-situ in cells	Option 4 Remove and transport to shore
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Will Project involve: **Any Physical Changes in locality**	o Removal of drill cuttings on top of cells to permit access for sampling of contents. Associated impacts will need to be addressed (e.g. marine impacts). o Significant construction and modifications may be necessary to access GBS.	o Removal of drill cuttings on top of cells to permit access. Associated impacts will need to be addressed (e.g. marine impacts). o Significant construction and modifications may be necessary to access GBS.	o Removal of drill cuttings on top of cells to permit access. Associated impacts will need to be addressed (e.g. marine impacts). o Significant construction and modifications may be necessary to access GBS.	o Removal of drill cuttings on top of cells to permit access. Associated impacts will need to be addressed (e.g. marine impacts). o Significant construction and modifications may be necessary to access GBS.
Resource Use		o Potentially increased traffic onshore, offshore and air traffic.	o Potentially increased traffic onshore, offshore and air traffic.	o Potentially increased traffic onshore, offshore and air traffic, plus use of low thermal desorption unit onshore.
Use, transport, handling, production of Hazardous Substances		o Chemicals may be used to help fluidise the sediment during removal. o Removed cell sediment sludge may require handling/filtering before re-injection.	o Use of various capping materials (e.g. bentonite)	o Potentially chemicals may be used to help fluidise the sediment. o Removed sediment sludge will require handling/filtering and then transport to shore.
Production of Solid wastes				o The operation will generate significant cell sediment sludge that would need to be shipped to shore for disposal.
Air Emissions		o NO_x, SO_2, CO_2 emissions to air from vessels, helicopters etc.	o NO_x, SO_2, CO_2 emissions to air from vessels, helicopters etc.	o NO_x, SO_2, CO_2 emissions to air from vessels, helicopters etc. o Potential odour onshore from cell sediment.
Noise/Light emissions		o Increased sea traffic offshore, with associated underwater noise.	o Increased sea traffic offshore, with associated underwater noise.	o Increased traffic impacts (onshore and offshore), including potential offshore underwater noise.
Water & Marine Environment	o Legacy issues relating to leaving the sediment in-situ; associated impacts will need to be addressed including marine impacts after disintegration of GBS.	o Offshore flotel required for temporary accommodation; associated impacts will need to be addressed (e.g. anchor pits). o Removal of drill cuttings on top of cells to permit access; associated marine impacts will need to be addressed. o Removed sediment sludge will require filtering before re-injection, creating	o Legacy issues relating to leaving the sediment in the GBS; marine impacts after disintegration of GBS will need to be addressed. o Offshore flotel required for temporary accommodation; associated impacts will need to be addressed (e.g. anchor pits). o Removal of drill cuttings on top of cells to permit access; associated marine impacts will need to be addressed.	o Offshore flotel required for temporary accommodation; associated impacts will need to be addressed (e.g. anchor pits). o Removal of drill cuttings on top of cells to permit access; associated marine impacts will need to be addressed. o Removed sediment sludge will require filtering before transport to shore,

GBS CELL SEDIMENT BRENT B, C & D	Option 1 Leave in-situ	Option 2 Remove and re-inject	Option 3 Cap in-situ in cells	Option 4 Remove and transport to shore
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
		wastewater (that may also contain chemicals added to facilitate removal). o Contaminated Wastewater from within cells.		creating wastewater. (that may also contain chemicals added to facilitate removal). o Contaminated Wastewater from within cells. o Introduction of alien species (from ballast water) to enclosed waters such as lochs (low probability).
Environmental Risk from Accidents		o Potential leakage from injection well.		o Spillages during transportation
Social Impact		o Potential positive impact of employment offshore.	o Potential positive impact of employment. offshore	o Potential positive impact of employment. onshore
Other Factors	o Legacy issues relating to leaving the sediment in-situ; associated impacts will need to be addressed including eventual exposure when structure collapses, fisheries impact, ethical and reputation aspects.	o Legacy issues relating to leaving the sediment after re-injection; associated impacts will need to be addressed including leakages, fisheries impact, ethical and reputation aspects.	o Legacy issues relating to leaving the sediment in-situ; associated impacts will need to be addressed including eventual exposure when structure collapses ethical and reputation aspects.	

6.4 Category 4- Topsides

TOPSIDES - Brent A, B, C & D	Option 1 Complete Removal (modular dismantling using HLV)	Option 2 Complete Removal (Piece–small dismantling offshore)	Option 3 Complete Removal in one piece using single lift vessel
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Will Project involve:			
Any Physical Changes in locality	o If onshore receiving facility requires expansion owing to volume of topsides, then associated impacts will need to be addressed (e.g. landtake) o Potential temporary accommodation (flotel) for decommissioning workers - associated impacts will need to be addressed (e.g. anchor pits)	o If onshore receiving facility requires expansion owing to volume of topsides, then associated impacts will need to be addressed (e.g. landtake) o Potential temporary accommodation (flotel) for decommissioning workers - associated impacts will need to be addressed (e.g. anchor pits)	o If onshore receiving facility requires expansion owing to volume of topsides, then associated impacts will need to be addressed (e.g. landtake) o Potential temporary accommodation (flotel) for decommissioning workers - associated impacts will need to be addressed (e.g. anchor pits) o If single lift method requires construction of inshore receiving structure for topsides, associated impacts will need to be addressed.
Resource Use	o Energy consumption from miscellaneous sources, particularly HLV, and also from production of grillage. o Potentially increased traffic, onshore and offshore, (ship, truck, helicopter) during decommissioning.	o Energy consumption from miscellaneous sources, particularly HLV, and also from production of grillage. o Potentially increased traffic, onshore and offshore, (ship, truck, helicopter) during decommissioning.	o Energy consumption from miscellaneous sources, particularly SLV. o Potentially increased traffic, onshore and offshore, (ship, truck, helicopter) during decommissioning.
Use, transport, handling, production of Hazardous Substances	o Quantities of hazardous wastes are present in topsides. o Risk due to spillage of hazardous / toxic materials needs to be managed.	o Quantities of hazardous wastes are present in topsides. o Risk due to spillage of hazardous / toxic materials needs to be managed.	o Quantities of hazardous wastes are present in topsides. o Risk due to spillage of hazardous / toxic materials needs to be managed.
Production of Solid wastes	o Large quantities of waste steel, hazardous wastes and general wastes from topsides.	o Large quantities of waste steel, hazardous wastes and general wastes from topsides.	o Large quantities of waste steel, hazardous wastes and general wastes from topsides.
Air Emissions	o Emissions of NOx, SOx, dust, CO2 to air from vessels, helicopter, HLV and from production of grillage. Dust emissions from deconstruction of topsides onshore.	o Emissions of NOx, SOx, dust, CO2 to air from vessels, helicopter and from production of grillage. Dust emissions from deconstruction of topsides onshore.	o Emissions of NOx, SOx, dust, CO2 to air from vessels, helicopter, SLV etc. Dust emissions from deconstruction of topsides onshore.
Noise/Light emissions	o If onshore receiving facility requires expansion owing to large volume of topsides, noise impacts will need to be addressed. o Noise from onshore deconstruction activities (lifting, cutting etc). o Potentially increased traffic, onshore and offshore, (ship, truck, helicopter etc) during decommissioning - associated noise impacts will need to be examined.	o If onshore receiving facility requires expansion owing to large volume of topsides, noise impacts will need to be addressed. o Noise from onshore deconstruction activities (lifting, cutting etc). o Potentially increased traffic, onshore and offshore, (ship, truck, helicopter etc) during decommissioning - associated noise impacts will need to be examined.	o If onshore receiving facility requires expansion owing to large volume of topsides, noise impacts will need to be addressed. o Noise from onshore deconstruction activities (lifting, cutting etc). o Potentially increased traffic, onshore and offshore, (ship, truck, helicopter etc) during decommissioning - associated noise impacts will need to be examined. o If single lift method requires construction of inshore receiving structure for topsides, associated noise impacts will need to be addressed.
Water & Marine Environment	o Quantities of wastewater from flushing topside pipes. o Owing to potential temporary accommodation (flotel if required) for decommissioning workers. Associated impacts will need to be addressed (e.g. anchor pits) o Introduction of alien species from (e.g. ships and barges, ballast	o Quantities of wastewater from flushing topside pipes. o Owing to potential temporary accommodation (flotel if required) for decommissioning workers. Associated impacts will need to be addressed (e.g. anchor pits) o Introduction of alien species from (e.g. ships and barges, ballast	o Quantities of wastewater from flushing topside pipes. o Owing to potential temporary accommodation (flotel if required) for decommissioning workers. Associated impacts will need to be addressed (e.g. anchor pits) o Introduction of alien species from (e.g. ships and barges, ballast

TOPSIDES - Brent A, B, C & D	Option 1 Complete Removal (modular dismantling using HLV)	Option 2 Complete Removal (Piece–small dismantling offshore)	Option 3 Complete Removal in one piece using single lift vessel
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
	water) – low probability. o Material management: Onshore yard requires solid impermeable surface on deconstruction area, with drainage containment system.	water) – low probability. o Material management: Onshore yard requires solid impermeable surface on deconstruction area, with drainage containment system.	water) – low probability. o Material management: Onshore yard requires solid impermeable surface on deconstruction area, with drainage containment system. o If single lift method requires construction of inshore receiving structure for topsides, the associated marine impacts of the new structure will need to be addressed.
Environmental Risk from Accidents	EIA assessment should consider major potential accidents, e.g. • Small module of topside drops and breaks hydrocarbon pipeline • Drop module during transport and breaks hydrocarbon pipe • Ship Vessel collision and spill • Spillage during refuelling of HLV	EIA assessment should consider major potential accidents, e.g. • Small module topside drops and breaks hydrocarbon pipe • Drop module during transport and breaks hydrocarbon pipe • Ship Vessel collision and spill • Spillage during refuelling of HLV	EIA assessment should consider major potential accidents, e.g. • Single lift topples and breaks hydrocarbon pipe • Risks during transfer to shore • Ship Vessel collision and spill • Spillage during refuelling of SLV. • Spillages onshore while dismantling.
Social Impact	o If onshore receiving facility requires expansion owing to the large volume of topsides, then related social impacts will need to be addressed. o Potential positive impact of employment.	o If onshore receiving facility requires expansion owing to the large volume of topsides, then related social impacts will need to be addressed. o Potential positive impact of employment.	o If onshore receiving facility requires expansion owing to the large volume of topsides, then related social impacts will need to be addressed. o Potential positive impact of employment. o If single lift method requires construction of inshore receiving structure for topsides, associated visual impact will need to be addressed.

6.5 Category 5: GBS

GBS FOR BRENT B, C & D	Option 1 Derogation to leave in place after removal of topsides. Legs intact and upright.	Option 2 Partial derogation with legs removed to 70 m depth.	Option 3 Full removal by refloating, then dismantling inshore.
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Will Project involve: **Any Physical Changes in locality**		o Temporary accommodation may be required - associated impacts to be addressed (e.g. anchor pits).	o Temporary accommodation may be required - associated impacts to be addressed (e.g. anchor pits). o A GBS receiving structure may need to be constructed nearshore, and associated impacts will need to be addressed. o If onshore receiving facility requires expansion owing to huge volume of GBS. o Potential impact upon sea floor owing to high pressure water jets to clear drill cuttings and aid refloat by underbase injection.
Resource Use		o Energy consumption from increased onshore and offshore traffic (ship, truck, helicopter, HLV) activities during decommissioning.	o Energy consumption from increased onshore and offshore traffic (ship, truck, helicopter) activities during decommissioning.
Use, transport, handling, production of Hazardous Substances			o Displacement of drill cuttings by water-jetting prior to removal of GBS. o 'Star cell' drill cuttings
Production of Solid wastes		o GBS solid waste (and some marine growth) from the legs.	o Large quantities of GBS solid waste (and some marine growth). o Quantities of cell sediment waste (and sand ballast).
Air Emissions		o Emissions of NO_x, SO_2, CO_2 to air from increased activities; vessels, helicopters, HLV etc. o Dust emissions from deconstruction of GBS legs onshore. o Odour from marine growth on removed GBS concrete legs.	o Emissions of NO_x, SO_2, CO_2 to air from increased activities; vessels, helicopters etc. o Dust emissions from deconstruction of GBS onshore. o Odour from marine growth on removed GBS concrete.
Noise/Light emissions		o Noise from lifting and crushing of concrete legs inshore and onshore o Potentially increased onshore and offshore traffic (ship, truck, helicopter) activities during decommissioning with associated noise impacts (including underwater).	o A new GBS receiving structure may need to be constructed inshore; associated noise/visual impacts will need to be addressed. o If onshore receiving facility requires expansion owing to huge volume of GBS, the associated noise impacts will need to be addressed. o Noise from lifting and crushing of concrete inshore and onshore o Potentially increased onshore and offshore traffic (ship, truck, helicopter) activities during decommissioning with associated noise impacts (including underwater).

GBS FOR BRENT B, C & D	Option 1 Derogation to leave in place after removal of topsides. Legs intact and upright.	Option 2 Partial derogation with legs removed to 70 m depth.	Option 3 Full removal by refloating, then dismantling inshore.
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Water & Marine Environment	Legacy issues will need to be addressed with respect to future collapse of GBS in hundreds of years, and exposure of cell contents to marine environment.	o Legacy issues will need to be addressed with respect to future collapse of GBS in hundreds of years, and exposure of cell contents to marine environment. o Introduction of alien species (e.g. from ballast water) to enclosed waters such as lochs (low probability). o Temporary accommodation may be required offshore - associated impacts to be addressed (e.g. anchor pits). o Potential impacts on fish and marine mammals from offshore concrete legs deconstruction activities.	o A GBS receiving structure may need to be constructed inshore; associated marine impacts will need to be addressed. o Potential impact upon marine environment owing to high pressure water jets to clear drill cuttings (both on GBS surface and at seabed/GBS interface). o Introduction of alien species (e.g. from ballast water) to enclosed waters such as lochs (low probability). o Temporary accommodation may be required offshore - associated impacts to be addressed (e.g. anchor pits).
Environmental Risk from Accidents		o EIA assessment should examine major potential accidents such as spillage during refuelling of vessels, and dropping of sections.	o EIA assessment should examine major potential accidents such as: o Spillage during refuelling of vessels. o Break-up, collapse and sinking during refloating offshore or at nearshore dismantling site.
Social Impact	o Potential impact upon fishermen and shipping of leaving GBS in place.	o Potential impact upon fishermen and shipping of leaving GBS in place.	o If onshore receiving facility requires expansion owing to huge volume of GBS, or a new GBS receiving structure needs to be constructed inshore, the associated social impacts will need to be addressed. o Potential positive impact of employment.
Other Factors	o Legacy issues will need to be addressed with respect to collapse of GBS in the distant future.	o Legacy issues will need to be addressed with respect to collapse of GBS in the distant future.	o If a GBS receiving structure needs to be constructed inshore, the visual impact will need to be addressed.

6.6 Category 6: Pipelines and Umbilicals

PIPELINES and UMBILICALS	Option 1 Leave in-situ (with some remedial activity)	Option 2 Removal – cut & lift or reverse lay	Option 3 Burial: Trench & Drag or Fluidise & Sink
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
Will Project involve:			
Any Physical Changes in locality	o Offshore flotel required for temporary accommodation (associated issues include anchor pits). o Disturbance to seabed during remedial burial & rock-dump	o Offshore flotel required for temporary accommodation (associated issues include anchor pits). o If onshore facility requires expansion to store the large quantities of pipelines.	o Offshore flotel required for temporary accommodation (associated issues include anchor pits). o Disturbance to seabed during dredging, rock-dump and fluidise.
Resource Use	o Use of materials for rock dumping where necessary	o Increased sea & air traffic during decommissioning. o Potentially increased traffic onshore to transport solid steel wastes for recycling.	o Increased sea & air traffic during decommissioning.
Use, transport, handling, production of Hazardous Substances	o Chemicals used in flushing pipelines. o Contaminated waste (Hg, LSA, Scale) in pipes and the flush wastewater.	o Chemicals used in flushing pipelines. o Contaminated waste (Hg, LSA, Scale) in pipes and the flush wastewater. o Potential asbestos 'wrap' between concrete and steel on some old pipelines prior to ~1980 (may also be integral with the concrete). Also, coal tar enamel on some old pipelines - hot cutting onshore can emit hazardous substances.	o Chemicals used in flushing pipelines. o Contaminated waste (Hg, LSA, Scale) in pipes and the flush wastewater.
Production of Solid wastes		o Large quantities of solid waste (concrete, rubber, steel) from waste pipes. Note the positive impact of recycling steel pipes. o Sacrificial anode waste (recycling metals). o Contaminated wastes (Hg, LSA, Scale) in pipes cleaned onshore.	
Air Emissions		o SO_2, NO_x, CO_2, dust emissions to air from increased vessels, helicopters, HLV etc. o Dust onshore from cutting pipes. o Odour onshore from marine growth on pipelines	o SO_2, NO_x, CO_2, dust emissions to air from increased vessels, helicopters, HLV etc.
Noise/Light emissions		o Noise due to increased sea & air traffic during decommissioning (including underwater noise). o If onshore facility requires expansion to store large quantities of pipelines, then there will be potential noise impacts during pipeline movements. o Noise from cutting pipelines onshore.	o Noise due to increased sea & air traffic during decommissioning (including underwater noise).

PIPELINES and UMBILICALS	Option 1 Leave in-situ (with some remedial activity)	Option 2 Removal – cut & lift or reverse lay	Option 3 Burial: Trench & Drag or Fluidise & Sink
	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled	Activities with potential for impact if not controlled
		o Noise from increased onshore traffic transporting the solid wastes.	
Water & Marine Environment	o Legacy issue of leaving pipe in-situ. o Large quantities of contaminated liquid waste from flushing pipes (including chemicals used to flush). o Impact of rock dumping if necessary.	o Large quantities of contaminated liquid waste from flushing pipes (including chemicals used to flush). o Anchor pits of large shipping vessels. o Dredging may be required to cut the pipes	o Legacy issue of leaving pipe in-situ. o Large quantities of contaminated liquid waste from flushing pipes (including chemicals used to flush). o Anchor pits of large shipping vessels. o Dredging during trenching; fluidisation of seabed.
Environmental Risk from Accidents		o EIA assessment should examine major accidents such as dropping a pipe section during lifting and it hitting a live pipeline, and to spills from pipelines and vessels.	
Social Impact	o Legacy issue of leaving pipe in-situ (e.g. impact upon fishermen).	o Potential positive impact of employment	o Legacy issue of leaving pipe in-situ. o Potential positive impact of employment
Other Factors	o Contaminated waste (Hg, LSA, Scale) in pipes and the flush wastewater. o Legacy of contaminated waste remaining in pipes, if any.		o Contaminated waste (Hg, LSA, Scale) in pipes and the flush wastewater. o Legacy of contaminated waste remaining in pipes, if any.

7 POTENTIALLY SIGNIFICANT IMPACTS

The previous section summarises the detailed output from the Scoping Workshop.

Those issues with the greatest potential for impact are highlighted in the summary table overleaf.

This table illustrates that:

- There are some aspects which are common to all categories, such as the energy consumption and air emissions resulting from the increased activities and traffic both on and offshore as a result of decommissioning activities.
- There are fundamental differences in impacts between leaving facilities *in-situ* (with resulting legacy concerns offshore) and removing them (typically resulting in more short-term impacts, and potentially significant impacts onshore). This is as expected. Legacy issues are discussed in more detail in Section 8.
- Currently the locations of onshore dismantling, treatment and disposal facilities are not known, but they will be licensed. Owing to the large quantities of waste that could be generated during decommissioning, it is possible that expanded storage facilities may be necessary, and the associated impacts of such an expansion (if required) would need to be examined in detail in the impact assessment.
- Some of the items that may come onshore are extremely large (e.g. GBS, Jacket, single lift Topsides) and it may be necessary to construct a structure inshore to temporarily hold them while they are dismantled. The potential impact of such a receiving structure would need to be assessed in detail.

The potential for cumulative impacts from decommissioning Brent A, B, C and D and Brent South facilities will need to be considered in the EIA.

	Table 7.1: Key Potential Environmental Issues			
CATEGORY	**Option 1**	**Option 2**	**Option 3**	**Option 4**
Jacket	***Derogation –84m below sea level***	***Derogation – 55m below sea level***	***Full removal & onshore dismantle***	-
	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment)	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment)	Increased traffic on & offshore (energy & air emissions) Impacts from onshore deconstruction. Disturbance of drill cuttings to enable full removal (marine) Impacts if construct Jacket-receiving-structure inshore (marine, noise).	-
Drill Cuttings	***Leave in situ***	***Remove & Re-inject***	***Remove & Treat onshore***	-
	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment)	Dredging of drill cuttings (marine impact, underwater noise) Increased traffic offshore (energy & air emissions) Leakage of re-injected drill cuttings from wells in the long term	Dredging of drill cuttings (marine impact, solid waste, underwater noise) Increased traffic on & offshore (energy & air emissions) Large quantities of waste to transport and handle onshore.	
Cell Sediment	***Leave in situ***	***Remove & Re-inject***	***Cap in situ in Cells***	***Remove & transport to shore***
	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment) Long term pollution risk after cell disintegration.	Increased traffic offshore (energy & air emissions) Leakage of re-injected sediments from wells in the long term	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment) Long term pollution risk after cell disintegration. Increased traffic offshore (noise, energy & air emissions)	Contaminated wastewater from filtered cell sediment (including chemicals used to help fluidise sediment) Increased traffic on & offshore (noise, energy & air emissions) Large quantities of waste

	Table 7.1: Key Potential Environmental Issues			
CATEGORY	**Option 1**	**Option 2**	**Option 3**	**Option 4**
Topsides	***Complete removal - modular dismantling with HLV***	***Complete removal - Piece small***	***Complete Removal - single lift***	-
	Possible expansion of onshore facilities to receive topsides (noise, social impacts). Hazardous wastes on topsides Accidental Spillages Wastewater from flushing topside pipes Increased traffic on & offshore (energy & air emissions) Noise from onshore deconstruction. Material management: Onshore yard requires solid impermeable surface on deconstruction area, with drainage containment system.	Hazardous wastes on topsides Accidental spillages Wastewater from flushing topside pipes Increased traffic on & offshore (energy & air emissions) Noise from onshore deconstruction Material management: Onshore yard requires solid impermeable surface on deconstruction area, with drainage containment system.	Possible expansion of onshore facilities to receive topsides (noise, social impacts). Hazardous wastes on topsides Accidental spillages Wastewater from flushing topside pipes Increased traffic on & offshore (energy & air emissions) Noise from onshore deconstruction. Material management: Onshore yard requires solid impermeable surface on deconstruction area, with drainage containment system. Impacts if need to construct Topside-receiving-structure inshore (marine, noise).	

	Table 7.1: Key Potential Environmental Issues			
CATEGORY	**Option 1**	**Option 2**	**Option 3**	**Option 4**
	Leave GBS & legs in situ	***Leave GBS in situ, legs removed to 70m depth***	***Full GBS removal & onshore dismantling***	-
GBS	Legacy issues of leaving GBS *in situ* (impacts on fishermen & marine environment), with long term deterioration and eventual disintegration	Legacy issues of leaving GBS *in situ* (impacts on fishermen & marine environment), with long term deterioration and eventual disintegration Increased traffic on & offshore (noise, energy & air emissions) Risk for impacts on fish and marine mammals from offshore concrete deconstruction activities. Onshore noise and dust from deconstruction yard for GBS legs.	Increased traffic on & offshore (noise, energy & air emissions) Large quantities of GBS waste, and cell sediment waste Possible expansion of onshore facilities to store GBS waste (noise, social impacts), and possible construction of GBS-receiving-structure inshore (marine, noise). Disturbance of drill cuttings (on sea floor & on top of GBS) during full GBS removal (marine) Noise and dust from processing/crushing concrete onshore Local community issues (traffic, social impacts) Potential accident during refloat of GBS offshore, or from inshore dismantling.	

	Table 7.1: Key Potential Environmental Issues			
CATEGORY	**Option 1**	**Option 2**	**Option 3**	**Option 4**
	Leave pipes in situ	***Remove – cut & lift or reverse lay***	***Trench & Backfill/Fluidise and Sink***	-
Pipelines	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment) Management of contaminated liquid effluent (including Hg, scale, LSA) from flushing pipes	Management of contaminated liquid effluent (including Hg, scale, LSA) from flushing pipes Increased traffic on & offshore (energy & air emissions) Potentially hazardous pipe constituents (e.g. asbestos, coal tar) emitted during hot cutting	Legacy issues of leaving *in situ* (impacts on fishermen & marine environment) Disturbance of seabed during dredging and fluidisation of seabed and rock dumping. Management of contaminated liquid effluent (including Hg, scale, LSA) from flushing pipes Increased traffic on & offshore (energy & air emissions)	

8 EIA APPROACH & FURTHER STUDIES

8.1 EIA Methodology

The table 8.1 below provides an overview of the key stages typically of an EIA process. This Scoping Report covers the second stage "Scoping" detailed in the table.

Table 8.1 EIA Stages

Stage	Description
Screening	Screening involves the determination of whether or not an individual proposal requires further assessment in an EIA. Proposal screening often uses screening criteria contained within National EIA legislation and/or loan organisation practices.
Scoping	Scoping of the EIA study allows the study to establish the key issues and impacts to be addressed and the framework or boundary of the study.
Analysis of Alternative Options	The proposal should have considered alternative options, and included environment in the decision making process.
Project Description	Description of the project including size, location, timetable, nature etc.
Environmental Baseline Review	Collection of environmental baseline data from literature and field measurement; may include discussions with local authorities, and other stakeholders.
Legislative Review	A review of local, regional, national and international environmental legislation that could affect the proposed development.
Impact Prediction & Significance	Prediction of the significant environmental impacts associated with the project; environmental risk assessment and/or modelling may be used to assess impacts. Comparison of impacts against criteria.
Impact Mitigation	Development of controls that can be used to mitigate significant or uncertain impacts. Mitigation measures may require redesign of unacceptable aspects associated with the project.
Environmental Management Plan	Development of impact mitigation measures into an environmental management plan.
Environmental Monitoring Programme	Development of an environmental monitoring programme to verify that impact predictions are consistent with practice.
Reporting	Reporting of the EIA process, via development of an Environmental Impact Statement (EIS) which clearly and impartially documents the impacts of the project, the proposed mitigation measures and the significance of the effects. The EIS must be suitable for describing the project to the general public, stakeholders and decision makers.
Review	Review of EIS by regulator to determine if the report is a satisfactory assessment of the project, and contains the information required for decision making.
Project Implementation & Operation	Regular environmental monitoring reviews should take place. Significant deviations from expectation may require retrofitting or modification of the development as well as further consultation with the Authorities and Interested and Affected parties.

8.2 Approach to Assessing Some Key Environmental Issues

Many of the issues in the decommissioning EIA study will be the type of issues faced in a 'typical' EIA, and the approach to conducting the assessment should be no different to the standard approach to assessment, and the tools used (e.g. models) should be those accepted by the regulatory authorities. For example, noise modelling from ship traffic near the coastline is a well understood and practised activity.

However, there are a number of issues relating to the decommissioning of the Brent Field that are not 'standard' assessment items; these include legacy issues: how do we assess the impact of leaving *in situ:*

- GBS
- Jacket
- Drill cuttings
- Pipelines

The following sub-sections (8.2.1 – 8.2.3) discuss these components in more detail.

It should be noted that Shell UK has already conducted a number of assessment studies (e.g. for Drill Cuttings, GBS and Pipelines), and these reports will be used to inform the EIA.

8.2.1 GBS and Jackets

OSPAR Decision 98/3 allows a potential "derogation" from the general presumption of total removal, for all or part of the GBS or the 'footings' of steel jackets (>10,000 tonnes) placed in the maritime area before 9th February 1999. The Operator must present an assessment which demonstrates that there are significant reasons why an alternative to reuse, recycling or on-shore disposal is preferable. If the regulator is satisfied that the case is made, it will carry out consultation with the other OSPAR contracting parties. Where a structure remains *in situ*, there are requirements upon the Operator as follows:

- Adequate maintenance of the structure
- Safety of navigation
- Meeting liabilities for any claims

In summary, the legislation permits GBSs and Jacket footings to remain *in situ*, provided the EIA satisfactorily demonstrates that it is the best option (for example, via a comparative assessment of alternatives, which would need to include assessment of the potentially significant risk of accidents of moving the large structures). In the comparative assessment of alternatives, the environmental issues relating to leaving the GBS and Jacket *in situ* need to be taken into account. Such an assessment should take into consideration:

- The social impacts relating to hazards and obstacles to fishing, both in the short term and in the long term after collapse of the structures.
- Other environmental issues relating to the degradation and collapse of structures, such as impacts relating to the release of GBS contents (if left *in situ*).
- The need for long term monitoring of the *in situ* structures
- The operator's long term liabilities
- Development of appropriate legacy management strategy

8.2.2 Drill Cuttings

In relation to Drill Cuttings, the legacy issue is simpler. OSPAR recommendation 2006/05 sets out a Cuttings Pile Management Regime and is based on two stages. Stage 1 provides for initial screening of all cuttings piles and this has been completed by Shell. Where both the rate of oil loss and persistence are 'below' the thresholds and no other discharges have contaminated the cuttings pile, no further action is necessary and the cuttings pile may be left *in situ* to degrade naturally.

Existing information provides reasonable confidence that the Brent cutting piles fall below the OSPAR thresholds. The Brent Field project is carrying out modelling to assess and confirm that the criteria are met and assess the long- term environmental impact of leaving the drill cuttings in place.

8.2.3 Pipelines

Pipelines are not covered by OSPAR decision 98/3 but a Comparative Assessment of options is required under the Petroleum Act. The EIA should include a comparative assessment of pipe management options before making a decision, and ensure it includes consideration of potential impacts upon fishermen (as a key impact is often fishing gear interactions). Shell UK has already conducted a study at a high level with the main environmental assessment focusing on energy/CO_2. The EIA will need to expand upon this study and consider additional issues (as identified in Section 6 of this report) such as:

- physical impacts on seabed habitats and fauna (dredging, rock dumping, trenching)
- impacts from planned or unplanned discharges to sea
- impacts related to possible onshore pipe disposal activities
- specific compositions/materials of the various pipelines may need to be considered with regard to onshore cutting
- material segregation and disposal/recycling
- for the leave *in situ* options, the long term issues need to be further addressed (real risks and liability issues).

The comparative assessment should differentiate between the different types of pipelines, taking into account diameter, whether they are exposed/buried/rock dumped and type of material.

8.3 Further Studies Required

Further studies that will be required to help support and inform the EIA include:

- Shell UK will need to demonstrate that they have examined all practical possibilities for collecting samples of the GBS cell contents (oil, water phase and sediment). This is because it is preferable to know as much as possible about the cell contents to inform the EIA, particularly if the polluted cell sediments are to be left *in situ* in the cells. If the outcome of the evaluation is that sampling is not possible owing to e.g. restricted access, safety reasons, then the available Brent reports and experience from similar decommissioning cases could be used to give a best estimate.
- DNV consider that the drill cuttings have been adequately sampled for the purpose of the EIA. Depending on recommended management solution, additional future sampling may however be appropriate.
- Existing information provides reasonable confidence that the Brent cutting piles fall below the OSPAR thresholds. The Brent Decommissioning Project is conducting modelling to assess and confirm that the criteria are met and to assess the long- term environmental impact of leaving the drill cuttings in place.
- Currently the location(s) for onshore dismantling are not known and as such baseline data are not available. Shell UK will only use onshore facilities that are licensed to receive such decommissioning wastes, although the EIA will still need to demonstrate that impacts for the specific location are acceptable. Aspects that will be of relevance when selecting/evaluating possible onshore locations include: design/layout of facilities; distance to neighbours and

relevant third party activities; distance to nature conservation areas; infrastructure; pollution/spill contingency; containment areas/systems; waste water treatment facilities; waste logistics; noise; environmental monitoring results.

- The EIA will need to include a comparative assessment of pipeline management options before making a decision, and ensure it includes consideration of potential impacts upon fishermen. Shell UK has already conducted a study at a high level with the environmental assessment focussing upon energy/CO_2. The EIA will need to expand upon this study and consider additional issues as identified in this report such as:
  - physical impacts on seabed habitats and fauna (dredging, rock dumping, trenching)
  - impacts from planned or unplanned discharges to sea
  - impacts related to possible onshore scrapping activities and waste disposal
  - specific compositions/materials of the various pipelines may need to be considered with regard to onshore cutting
  - material segregation and disposal/recycling
  - for the leave *in situ* options, the long term legacy issues need to be further addressed (real risks and liability issues).
  - Clarity on the condition of the pipelines at Brent South that have been abandoned, particularly with respect to whether all pipelines have been flushed. Reports indicate that it is likely that the level of cleanliness achieved during flushing of the pipelines will be sufficient for final decommissioning, and this should be confirmed.

8.4 Supporting Studies Being Undertaken

The Brent Decommissioning Project has initiated the following studies to provide more information on some of the potential positive and negative environmental and socio-economic effects of the decommissioning programme.

- Assessment of the safety risk to fishermen from the derogated footings of the Brent Alpha steel jacket
- Assessment of safety risk to mariners from derogated Brent installations
- Assessment of safety risk to fishermen from decommissioned pipelines in the Brent Field
- Brent Alpha cuttings pile long-term fate modelling
- Brent Bravo cuttings pile long-term fate modelling
- Brent Charlie cuttings pile long-term fate modelling
- Brent Delta cuttings pile long-term fate modelling
- Brent South cuttings pile long-term fate modelling
- Short- and long-term modelling of human disturbances on Brent Delta cuttings pile
- Assessment of socio-economic effects on commercial fisheries
- Assessment of potential economic and employment implications of decommissioning options

PROVISIONAL MATERIAL INVENTORY

APPENDIX 1

This more detailed inventory was originally prepared in 2007. The summary shown in Table 2.3 is based on this study but has been revised to include latest estimates for the weight of BC topsides and the weights of steel and concrete in the whole of the Brent Field pipeline system.

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Provisionai materials Inventory		Alpha	Bravo	Charlie	Delta	Pipelines	Report ref	Notes
ABS	tonne	2	2	2	2		Sect. 10.2.2	Plastic pipes etc.
Ac-228*	MBq	870	2,466	3,036	2,381		Sect. 9.3.3	Low activity scale
Acetylene gas bottles*	bottle	32	32	32	32		Sect. 11.6	Gas bottles
Alloy Steel	tonne	216	285	329	276		Sect. 8 (all)	Pipe work, pumps etc.
Aluminium (anodes + other)	tonne	419	15	15	15	47	Sect. 10.1.6	Anodes, engines etc.
Aluminium Bronze	tonne	1	1	1	1		Sect. 10.1.12	Pumps etc.
Americium-241	MBq	5	16	20	21		Sect. 9.2.4	Smoke detectors
Anodes (total)	tonne	407				951	Sect. 9.14	See Al and Zn
Anti-foam	m^3				0.1		Sect. 11.7	Chemicals tanks
Anti-scale	m^3	1	1.5	2.5	4		Sect. 11.7	Chemicals tanks
Argon compressed gas*	bottle	2	2	2	2		Sect. 11.6	Compressed gas
Asbestos - blue		n/q	n/q	n/q	n/q		Sect. 9.4.2	Not quantified
Asbestos - white / brown		n/q	n/q	n/q	n/q		Sect. 9.4.2	Not quantified
Asbestos (total)*	tonne	4	9	9	9		Sect. 9.4.2	Insulation, gaskets
Barytes*	tonne	2	4	5	5		Sect. 11.9.1	Residual bulk
Batteries	tonne	28.2	16.3	35.5	30.7		Sect. 9.7	Various battery sets
Biocide	m^3	1	1	1	1		Sect. 11.7 & 11.3	Chemicals tanks & coolers circuits
Brass	tonne	1	1	1	1		Sect. 10.1.10	Pumps, piping etc.
Bronze	tonne	1	1	1	1		Sect. 10.1.11	Pumps, piping etc.
Buna	tonne	1	1	1	1		Sect. 10.2.6	O rings seals etc.
Butyl Rubber	tonne	2	2	2	2		Sect. 10.2.3	O rings seals etc.
Cadmium		n/q	n/q	n/q	n/q		Sect. 9.7.3	Screw/fittings coating
Cadmium Oxide/hydroxide	tonne	0.26	0.48	0.54	0.78		Sect. 9.7.2	Ni/Cd batteries
Carbon Steel: topsides	tonne	11,921	19,572	25,448	19,781		Sect. 7.3	Plant, topsides only
Carbon steel; casings, etc.	tonne	5,122	7,003	7,428	8,404		Sect. 8.1-3	Casings, utility legs, Xmas trees
Carbon Steel GBS/Jacket	tonne	19,234	33,300	57,700	35,700		Sect. 7.1	Rebar in concrete, steel skirts, Alpha jacket
Carbon Steel pipe lines	tonne					288,922	Sect. 6.1	Sub-sea pipe-lines
Cement (powder)	tonne	2	3	3	3		Sect.11.9.1	Residual bulk material
Ceramics (all types)	tonne	5	5	5	5		Sect. 10.3.8	White-ware etc.
CFCs, HCFCs, HFC							See Halons	HVAC systems etc.
Chartex/Passive Fire Protection	tonne	27	103	122	80		Sect. 9.5	Penetrations etc.
Chemical residues							Sect. 11	See indiv. entries
Chromel-Alumel	tonne	0.01	0.01	0.01	0.01		Sect. 10.1.2	Thermocouples etc.
Chromium		n/q	n/q	n/q	n/q		Sect. 10.1.3	Alloy steel only
Coatings (coal tar enamel)	tonne	305				3,677	Sect. 9.11 & 6.1	Jacket and subsea pipelines
Concrete	tonne	5,278	132,500	230,000	142,000	235,174	Sect .7.1	GBS and piles
Cooling medium	m^3	7	7	7	7		Sect. 11.2	Cooling systems
Copper	tonne	107	222	281	242		Sect. 8.4 & 9	Pipes, cables, electrical
Copper nickel alloys*	tonne	67	174	229	165		Sect. 8.4-5	Pipes, valves, pumps
Cork	tonne	2	2	2	2		Sect. 10.3.1	Lifbouys etc.
Corrosion Inhibitor	m^3	3	5	3	5		Sect. 11.7	Fluid circuits
Cotton	tonne	2	5	5	6		Sect. 10.3.2	Bedding etc.
Cuttings residues*	tonne	12	12	12	12		Sect. 11.10	Cuttings
Demulsifier	m^3	1	3	0.5	3		Sect. 11.7	Chemicals tanks
Desiccant (tonnes)	tonne	7	7	7	7		Sect. 10.3.3	Air driers

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Provisional materials Inventory		Alpha	Bravo	Charlie	Delta	Pipelines	Report ref	Notes
Diesel*	m^3	10	18	30	25		Sect. 11.1	Bulk and day tanks
Drains*	tonne	15	7	11	8		Sect. 11.11	Hazardous/non hazardous
EPDM*	tonne	23	5	23	11		Sect. 9.10.3	Cables
Ethylene/ Propylene	tonne	72	46	120	85		Sect. 9.10.3	Cables
Explosives*		n/q	n/q	n/q	n/q		Sect. 11.5	Not quantified
Fire foam	m^3	20	20	20	20		Sect. 11.7	Fire fight systems
Fluorescent tubes*	nos.	1,396	2,984	3,116	3,446		Sect. 9.6.1	Lighting
Formica	tonne	2	2	2	2		Sect. 10.3.4	Living areas
Gas		n/q	n/q	n/q	n/q		Sect. 11.8	Assume vented
Glass	tonne	5	5	5	5		Sect. 10.3.6	Living areas etc..
GRP	tonne	7	21	16	20		Sect. 10.2.7	Replaced floor grids
Graphite/charcoal*	tonne	0.1	0.1	0.1	0.1		Sect. 10.3.10	Water filters
Gun Metal	tonne	1	1	1	1		Sect. 10.1.8	Pumps, valves etc.
H2S Scavenger	m^3		1.5	2.3	2		Sect. 11.7	Chemicals tanks
Halon (see CFCs)		230	585	330	400		Sect. 9.8	HVAC chillers
Heli fuel*	m^3	2.2	2.2	2.2	2.2		Sect. 11.13	Aviation fuel
Hydraulic fluids (water based)	m^3	3	2	3	3		Sect. 11.3	Shutdown system
Inconel/Nimonics	tonne	6	13	13	13		Sect. 8.5.8	RB211s & Avons
Insulation *	tonne	31	99	83	105		Sect. 9.4	Structures, pipes
Iridium		none	none	none	none		Sect. 9.2.1	NDT sources
Iron (cast iron)	tonne	3	3	3	3		Sect. 10.1.1	Weights
Lead*	tonne	11	6	13	11		Sect. 9.7.1	Batteries
LSA Scale (topsides only)	tonne	43	123	151	119		Sect. 9.3	Pipes and vessels
Lube oil *	m^3	20	39	36	38		Sect. 11.4	Compressors, gas generators
Marble	tonne	0.1	0.1	0.1	0.1		Sect. 10.3.9	Unknown
Melamine	tonne	1	1	1	1		Sect. 10.3.5	Laminates
Mercury (lamps only)	gram	15	32	33	37		Sect. 9.6	Lamps (excludes pipes)
Methanol	m^3	2	0.5	3.5	0.5		Sect. 11.7	Chemical residues.
Midel transformer oil	m^3	4.5	8	9	6		Sect. 9.9.5	PCB replacement
Monel	tonne	0.1	0.1	0.1	0.1		Sect. 10.1.9	Pumps, valves
NDT Sources	GBq	none	23	26.67	none		Sect. 9.2.1	Testing
Neoprene	tonne	5	5	5	5		Sect. 10.2.4	Various
Nickel		n/q	n/q	n/q	N/q		Sect. 10.1.4	Alloy steel only
Ni-resist	tonne	10	10	10	10		Sect. 10.1.5	Pumps valves
Nylon	tonne	10	10	10	10		Sect. 10.2.1	Electrical, ropes etc.
Oil based mud	tonne	5	5	5	5		Sect. 11.9.2	Residues
Other heavy metals								Individual headings
Other material								Individual headings
Oxygen compressed gas*	bottle	2	2	2	2		Sect. 11.6	Bottled gas
Oxygen Scavenger	m^3	2	3	4	2.5		Sect. 11.7	Chemical residues
Paint (topsides)	tonne	930	961	899	899		Sect. 9.11	Paint on struct. steel
Pb-210 *	MBq	256	725	893	700		Sect. 9.3.3	In Low activity scale
PCBs (residual in transf. oils)	ppm	<5	<5	<5	<5		Sect. 9.9.3	Residues in Transformer oil
Phosphor Bronze	tonne	1	1	1	1		Sect. 10.1.7	Pumps, valves etc..
Plastics (floor coverings)	tonne	4	3	10	5		Sect. 9.15	Floor coverings etc.
Platinum	gram	20	20	20	20		Sect. 10.1.13	Laboratory ware

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Provisional materials Inventory		Alpha	Bravo	Charlie	Delta	Pipelines	Report ref	Notes
Polonium (Po-210)*	MBq	1,283	3,637	4,479	3,512		Sect. 9.3.3	Low activity scale
Pre coat*	m^3	0.4	0.4	0.4	0.4		Sect. 11.7	Water inject. filters
Propane compressed gas*	bottle	2	2	2	2		Sect.11.6	Gas bottles
PTFE*	tonne	0.1	0.1	0.1	0.1		Sect. 10.2.8	Seals etc.
PVC	tonne	32	19	65	61		Sect. 9.10.3	Cable covering
Radium-226	MBq	1,133	3,213	3,956	3,102		Sect. 9.3.3	Low activity scale
Residual H/Cs	tonne	7	125	794	87	n/q	Sect. 11.8	Residues in pipes etc.
Rubber	tonne	20	20	20	20		Sect. 10.2.5	Mats and floor coating
Sewage bilges	tonne	1	1	1	1		Sect. 11.11	Sewage system
Smoke detectors	no.	125	400	490	520		Sect. 9.1	Smoke detectors
Stainless Steel	tonne	459	1,349	1,732	1,311		Sect. 8	Pipes and vessels
Stellite*		n/q	n/q	n/q	n/q		Sect. 8.4.2	Valve facings
TEG	m^3	3	3	3	3		Sect. 11.7	Chemicals residues
Tin*	tonne	1	1	1	1		Sect. 10.1.14	Solder etc (not incl. anti-foul paint)
Titanium	tonne	28	31	32	31		Sect. 8.4 & 5	Pipes and machines
Total activity in LSA*	MBq	12,575	35,652	43,902	34,427		Sect. 9.3	Low activity scale
Tritium Lights	no.	none	none	none	none		Sect. 9.2.5	Tritium lights
Wood	tonne	20	20	20	20		Sect. 10.3.7	Accomod. areas, lay-down etc.
Zinc (anodes + paint + others)	tonne	537	532	519	499	904	Sect. 9.13 & 9.14	Anodes, paint, galvansing

SCOPING WORKSHOP CHECKLISTS

APPENDIX 2

Category 1: Jacket - BA

Option 1: Derogation to remain in place after removal of topsides, with legs (upper jacket) cut down to top of piles at about -84m LAT. Jacket taken onshore for recycling/disposal.

Option 2: Derogation with legs cut down to give 55m clearance for shipping.

Option 3: Full removal in pieces by HLV with onshore dismantling and recycling.

THE SCOPING CHECKLIST: QUESTIONS ON PROJECT CHARACTERISTICS

1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.1	Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	N		N. Unlikely to require any expansion onshore because there is only one jacket to be removed.
1.2	Clearance of existing land, vegetation and buildings?	N		Same as above. It is assumed that Shell UK will use an existing onshore facility.
1.3	Creation of new land uses?	N		As above 1.1/1.2
1.4	Pre-construction investigations eg boreholes, soil testing?	N		
1.5	Construction works?	Y	Sea fastenings and grillage will be required to be manufactured to fasten the jacket on barges.	Y– need to include sea fastenings & grillage manufacture in Energy and Gaseous Emissions (E&E) assessment for all options.
1.6	Demolition works?	Y	Decommissioning/demolition activities are captured throughout this checklist. Option 3: Complete removal, need to assess disturbance to local habitat & disturbance at seabed	Y (but generally captured throughout checklist). Y (Option 3 only) Impact of removing jacket footings, as piles will be cut 3m below seabed .
1.7	Temporary sites used for construction works or housing of construction workers?	Y	Offshore requires temporary accommodation eg floatel.	Y (e.g. anchor pits of floatel)

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	N		
1.9	Underground works including mining or tunnelling?	N		
1.10	Reclamation works?	N		
1.11	Dredging?	Y	Option 3: Drill cuttings at the footing of the steel jacket which would have to be removed.	Y (Option 3) Impact on seabed from disturbance of drill cuttings
1.12	Coastal structures e.g. seawalls, piers?	Y	If inshore structure is required to receive the partial or complete jacket	Y If inshore structure is required to receive the partial or complete jacket
1.13	Offshore structures?	N		
1.14	Production and manufacturing processes?	Y	Options 1, 2 & 3 Produce steel grillage that is required to transport on barges e.g. lifting gears	Y - need to include sea fastenings/grillage manufacture in Energy and Gaseous Emissions (E&E) assessment.
1.15	Facilities for storage of goods or materials?	Y	Options 1, 2 & 3 - Particularly onshore storage (existing facility) for receiving steel jackets - Offshore store on barges	- N (for all options) as using existing facility. - Y if need to expand storage (Options 1, 2 & 3)
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Y	Options 1, 2 & 3: Large quantities of solid waste (steel) will be recycled	Y
1.17	Facilities for long term housing of operational workers?	N		
1.18	New road, rail or sea traffic during construction or operation?	Y	Sea traffic and road (solid waste on trucks)	- Y for sea & waste traffic - N for onshore personnel commuting
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	N		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	N	Options 1, 2 & 3: Offshore – applicable only to transit time from site to shore, as platforms have exclusion zone that vessels work within.	

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.21	New or diverted transmission lines or pipelines?	N		
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	N		
1.23	Stream crossings?	N		
1.24	Abstraction or transfers of water from ground or surface waters?	N		
1.25	Changes in waterbodies or the land surface affecting drainage or run-off?	N		
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Y	Helicopter transport and various supply vessels.	Y - Transport of jacket, materials and steel waste. To be captured as part of Energy and Gaseous Emissions (E&E) calculations, and socio – economic studies. Note that CO_2 emissions from transport are likely to be small compared to emissions from HLV during operations.
1.27	Long term dismantling or decommissioning or restoration works?	Y	Options 1 & 2: Legacy of leaving jacket, footings and drill cuttings *in situ*. Generally the location would be marked on maps when leaving structures in situ, but there will remain a hazard to trawling/shipping. Note that cutting down to -55m will accommodate shipping, but the potential impact on fishing trawling needs to be examined. Ospar permits leaving jacket footing *in situ.* Ospar footings are defined as the height of the pile stick-up (in this case, approx 60m above seabed).	Y (Option 1 & 2)
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	Y	Captured throughout this checklist.	

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.29	Influx of people to an area in either temporarily or permanently?	Y	Covered in 1,7	
1.30	Introduction of alien species?	?	Options 1, 2 & 3: From crane ship (semi-sub) and barges, pumping out ballast water etc.	? Unlikely (owing to IMO regime) but possible (for all options). Potential loss of native species in worst consequence inshore (e.g. lochs). Given all safeguards on vessels in UKCS (such as IMO ballast water regime), this has a low potential impact
1.31	Loss of native species or genetic diversity?	?	May have marine growth time on jacket, although marine growth on jacket is not native species (native species must exist > 100 years). DECC consider that species growing on man-made structures are of no significant conservation value.	N
1.32	Any other actions?	Y	1. Options 1, 2 & 3 : Anchor pits – HLV Crane vessels 2. Option 3: Dredging operation for pile removal – big impact as there is impact on drill cutting disturbance 3. Option 3: Dredge the drill cuttings, excavate the area and cut the foundation piles. Need to consider removal of conductor/ risers 4. Option 3: Explosives are a last resort back-up option if non-explosive cutting fails. 5. Options 1, 2 & 3: Large volumes of water may be present in the legs of the jacket (with biocide /chemicals/ bentonite/grout)	Y Y Y ? ?

2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
2.1	Land especially undeveloped or agricultural land?	N	Unlikely to require expansion as there is only one jacket	N
2.2	Water?	Y	Options 1, 2 & 3: Remove marine growth by using seawater	N
2.3	Minerals?	Y	Use steel but will recover greater amounts	Y (for Energy and Gaseous Emissions (E&E) assessment as per IOP.
2.4	Aggregates?	N		
2.5	Forests and timber?	N		
2.6	Energy including electricity and fuels?	Y	Vessels, cutting tools, recycling plants etc.	Y Transport material, tugs to tow barge, DSV, support vessels
2.7	Any other resources?	N		

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	N		
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (eg insect or water borne diseases)?	N		
3.3	Will the project affect the welfare of people e.g. by changing living Conditions?	N		

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
3.4	Are there especially vulnerable groups of people who could be affected by the project eg hospital patients, the elderly?	Y	Local society issue	Y, potentially onshore. Although current licensed onshore facilities are intended to be used, need to demonstrate in EIA that impacts are acceptable.
3.5	Any other causes?	N		

4. Will the Project produce solid wastes during construction or operation or decommissioning?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.1	Spoil, overburden or mine wastes?	N		N
4.2	Municipal waste (household and or commercial wastes)?	N		
4.3	Hazardous or toxic wastes (including radioactive wastes)?	Y	Option 3: Removal of drill cuttings - Leaching of THC etc (covered in category 2:drill cutting) Options 1, 2 & 3: - Anodes –aluminium & zinc base? - Structural water – toxic?	?
4.4	Other industrial process wastes?	N		
4.5	Surplus product?	N	Covered above.	
4.6	Sewage sludge or other sludges from effluent treatment?	Y	Options 1, 2 & 3: - Vessels (IMO covered), - Sewage discharges are regulated offshore (require masceration). Sewage arisings onshore would be connected to existing sewers	N
4.7	Construction or demolition wastes?	Y	Options 1, 2 & 3: Steel waste	Y
4.8	Redundant machinery or equipment?	N		
4.9	Contaminated soils or other material?	N		
4.10	Agricultural wastes?	N		

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.11	Any other solid wastes?	Y	Option 1, 2 & 3: Marine growth - significant amount on structure. Option 3: Drill cuttings. Sampling of heavy metals: if below threshold, use in landfill or bio-remediation (organic waste)	Y

5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Y	Vessels/ helicopters/cutting tools	Y Look at CO_2, SOX, NOX and PM emissions.
5.2	Emissions from production processes?	Y	Production of temporary steel (grillage/fastenings) for demolition work. Air emissions from waste steel recycling process (smelter)	Y - To capture in IOP E&E emissions
5.3	Emissions from materials handling including storage or transport?	Y	Vessels/barges	Y - to capture in E&E emissions
5.4	Emissions from construction activities including plant and equipment?	Y	Covered above.	
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Y	Odour onshore from marine growth Jacket	Y
5.6	Emissions from incineration of waste?	N		
5.7	Emissions from burning of waste in open air (*eg* slash material, construction debris)?	N		
5.8	Emissions from any other sources?	N		

6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.1	From operation of equipment eg. engines, ventilation plant, crushers?	Y	Onshore noise plus offshore underwater noise. Options 1, 2 & 3: noise from cutting offshore and onshore	Y - Options 2 & 3: Noise onshore. Y – offshore underwater, depending on the cutting technology e.g. water jet, diamond wire and explosive. Vibration to be taken into consideration.
6.2	From industrial or similar processes?	N		
6.3	From construction or demolition?	Y	Covered above	
6.4	From blasting or piling?	N	There will be no blasting operations	
6.5	From construction or operational traffic?	Y	Options 1, 2 & 3: Vessel for materials transport can create noise.	Y
6.6	From lighting or cooling systems?	Y	Options 1, 2 & 3: Onshore impact	N – will use existing facility
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	N		
6.8	From any other sources?	Y	Options 1, 2 & 3 : Noise from: - Lifting from vessels to shore. -Cutting into pieces inshore & onshore	Y

7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	Y	Structural water (potentially containing contaminants/biocides) from jackets will be drained/pumped out/ discharged (limits/consent) offshore.	Y – need to examine the impact of discharge offshore, both planned and unplanned (spillage of structural water)
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Y	Sewage facilities onboard	N
7.3	By deposition of pollutants emitted to air, onto the land or into water?	N		
7.4	From any other sources?	N	Paint on steel is normally within specification for cutting purpose/smelter process	N
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	N	No planned discharges	

8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
8.1	From explosions, spillages, fires etc. from storage, handling, use or production of hazardous or toxic substances?	Y	For example: 1. Dropping /tilt over during lifting by both methods. Disturbance to pipes/ drill cuttings 2. Sinking during towing 3. Vessels transporting waste collide 4. Refuelling spill during operations for tow barge/support vessels /floatel spillage	Y - EIA should consider the environmental risk from key accidents

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
8.2	From events beyond the limits of normal environmental protection eg failure of pollution control systems?	N	Covered above	
8.3	From any other causes?	N	Covered above	
8.4	Could the project be affected by natural disasters causing environmental damage (*eg* floods, earthquakes, landslip, *etc*)?	Y	Potential but low probability	N

9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
9.1	Changes in population size, age, structure, social groups *etc*?	N		
9.2	By resettlement of people or demolition of homes or communities or community facilities eg schools, hospitals, social facilities?	N		
9.3	Through in-migration of new residents or creation of new communities?	N		
9.4	By placing increased demands on local facilities or services eg housing, education, health?	N		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Y	Offshore and offshore	Y - Impact on remote areas; impact could be positive.
9.6	Any other causes?	N		

10. Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?

Category 1: Jacket - BA				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.1	Will the project lead to pressure for consequential development which could have significant impact on the environment eg more housing, new roads, new supporting industries or utilities, etc?	N		N
10.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment eg: supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	N		N
10.3	Will the project lead to after-use of the site which could have an impact on the environment?	Y	Options 1 & 2: Will potentially restrict other activities (e.g. trawling). Shell has reviewed reuse options for leaving jacket structure in place.	Y Need to address impact on fisheries
10.4	Will the project set a precedent for later developments?	?	Ekofisk, Frigg and NW Hutton have already set precedents for decommissioning.	?
10.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	N		

Category 2: Drill Cuttings BA, BB, BC, BD & BS

Option 1: Leave *in situ* for natural degradation, as per OSPAR.

Option 2: Remove and re-inject from one of the Brent platforms

Option 3: Remove and treat onshore

Note 1: Note, where jacket is removed (Jacket Option 2) & GBS is refloated (GBS Option2), drill cuttings may be removed.
Note 2: For Option 1, there are no significant impacts to be considered except legacy issues.

THE SCOPING CHECKLIST: QUESTIONS ON PROJECT CHARACTERISTICS

1. **Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?**

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.1	Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	N	Option 3: Water is treated offshore e.g. on a barge.	N
1.2	Clearance of existing land, vegetation and buildings?	N		
1.3	Creation of new land uses?	N		
1.4	Pre-construction investigations eg boreholes, soil testing?	Y	Sampling methods of drill cuttings to be described in EIA.	N
1.5	Construction works?	Y	Option 2: Minor modification of equipment required for reinjection into well.	N
1.6	Demolition works?	N		
1.7	Temporary sites used for construction works or housing of construction workers?	Y	Options 2 & 3: DSV vessel will be used, hence no temporary accommodation will be required	N
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	N		
1.9	Underground works including mining or tunnelling?	N		
1.10	Reclamation works?	N		
1.11	Dredging?	Y	Options 2 & 3: Relocation on seabed & suction dredging	Y (Options 2 & 3)
1.12	Coastal structures *eg* seawalls, piers?	N		

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.13	Offshore structures?	N		
1.14	Production and manufacturing processes?	N		
1.15	Facilities for storage of goods or materials?	Y	Option 3: Transport to onshore. Offshore storage on barges.	N - using existing Facility.
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Y	Option 2: - Reinjection requires drill cuttings to be in a slurry/ milling; large quantities. - Well facilities required Option 3: Large quantities of water in slurry to be treated offshore & drill cuttings to be treated onshore	Y Large quantities of solid & water waste
1.17	Facilities for long term housing of operational workers?	N		
1.18	New road, rail or sea traffic during construction or operation?	Y	Sea traffic to an existing onshore facility to treat drill cuttings. Existing specific facilities for e.g. oily waste facilities	Y (Options 2 & 3) for sea and waste traffic. N. For onshore personnel commuting
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	N		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	N	Option 3: Offshore – applicable only to transit time from platform to shore, as platforms have exclusion zone	
1.21	New or diverted transmission lines or pipelines?	N		
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	N		
1.23	Stream crossings?	N		
1.24	Abstraction or transfers of water from ground or surface waters?	N		
1.25	Changes in waterbodies or the land surface affecting drainage or run-off?	N		

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Y	Helicopter transport, supply vessels etc.	Y Transport of material – drill cuttings & slurry will increase number of trips This will need to be captured as part of E&E calculation, and socio – economic studies. CO_2 emissions from transport are likely to be small compared to emissions from HLV.
1.27	Long term dismantling or decommissioning or restoration works?	Y	The entire checklist addresses this. Note: For Option 1 and the legacy of leaving drill cutting *in situ*. The EIA will need to examine the OSPAR requirements (2 criteria to be complied) and include modelling of longevity.	Y to be addressed in EIA
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	Y	The entire checklist addresses this.	
1.29	Influx of people to an area in either temporarily or permanently?	Y	Covered above	
1.30	Introduction of alien species?	Y	Option 3: Ballast water from barges/vessel	? Unlikely (owing to IMO ballast water controls) but possible (Options 2 & 3). Potential loss of native species inshore (e.g. lochs) as a worst consequence. Given all safeguards on vessels in UKCS (such as IMO ballast water regime), this has a low potential impact.
1.31	Loss of native species or genetic diversity?	N	No native species. May have existing habitat over time	
1.32	Any other actions?	N		

2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
2.1	Land especially undeveloped or agricultural land?	N		
2.2	Water?	N		
2.3	Minerals?	N		
2.4	Aggregates?	N		
2.5	Forests and timber?	N		
2.6	Energy including electricity and fuels?	Y	Energy from DSV, vessels, reinjection pump, compressor	Y Energy consumed in transporting materials, MSV (multi support vessel), support vessels etc. Should be captured as part of E&E assessment.
2.7	Any other resources?	N		

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	Y	Option 3: Transporting the contaminated drill cuttings onshore Option 2: Handling of drill cuttings.	Y
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (eg insect or water borne diseases)?	N		
3.3	Will the project affect the welfare of people eg by changing living conditions?	N		
3.4	Are there especially vulnerable groups of people who could be affected by the project eg hospital patients, the elderly?	?	Using existing facilities	? onshore. Although current licensed onshore facilities are intended to be used, need to demonstrate in EIA that impacts are acceptable.
3.5	Any other causes?	N		

4. Will the Project produce solid wastes during construction or operation or decommissioning?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.1	Spoil, overburden or mine wastes?	N		
4.2	Municipal waste (household and or commercial wastes)?	N		
4.3	Hazardous or toxic wastes (including radioactive wastes)?	Y	Options 2 & 3: Handling of contaminated drill cuttings. Option 2 has a more significant impact as slurry needs to be treated to extract water	Y
4.4	Other industrial process wastes?	N		
4.5	Surplus product?	N	Covered above	
4.6	Sewage sludge or other sludges from effluent treatment?	Y	Sewage discharges are regulated offshore (require masceration) and sewage arising onshore would be connected to existing sewers	N
4.7	Construction or demolition wastes?	N		
4.8	Redundant machinery or equipment?	N		
4.9	Contaminated soils or other material?	Y	Option 1 : Contamination of seabed legacy issue	Y
4.10	Agricultural wastes?	N		
4.11	Any other solid wastes?	Y	Options 1,2 & 3: Debris e.g. scaffold etc Operational and removal of debris clearance needs to be considered	Y

5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Y	Option 3: Emissions from vessels/ helicopters/ pumps for re-injection/barges Option 3: Emissions from low temperature thermal treatment onshore of solid drill cuttings waste (to be captured in E&E assessment)	Y. Look at CO2, SOX, NOX and PM emissions. Vessels waiting inshore for Option 2 to be considered
5.2	Emissions from production processes?	Y	Low thermal desorption unit (captured in 5.1)	Y

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.3	Emissions from materials handling including storage or transport?	Y	Captured in 5.1.	
5.4	Emissions from construction activities including plant and equipment?	N		
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Y	Option 3: Potential odour from drill cuttings onshore due to H_2S and oil content	Y
5.6	Emissions from incineration of waste?	N	No incineration.	
5.7	Emissions from burning of waste in open air (*e.g.* slash material, construction debris)?	N		
5.8	Emissions from any other sources?	N		

6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.1	From operation of equipment e.g. engines, ventilation plant, crushers?	Y	Options 2 & 3: Noise from vessels required for ROV surveys of drill cuttings.	N
6.2	From industrial or similar processes?	N		
6.3	From construction or demolition?	N		
6.4	From blasting or piling?	N		
6.5	From construction or operational traffic?	Y	Option 3: Noise onshore from vessels for transport of drill cuttings	Y
6.6	From lighting or cooling systems?	Y	Option 3: Onshore impact if industrial and recreational nearby, but will use existing facility	N (using existing facility)
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	N		
6.8	From any other sources?	Y	Option 3: Lifting drill cuttings from vessels to shore	Y

7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	Y	Option 2: Reinjection potential of spillage, and leakage from injection wells (more shallow than normal wells), to contaminate seabed Options 2 & 3: Leaching into the water column during dredging/disturbance	Y
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Y	Facilities onboard	N
7.3	By deposition of pollutants emitted to air, onto the land or into water?	N		
7.4	From any other sources?	N		
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	Y	Option 1: Legacy issue of leaving contaminated drill cuttings *in situ*	Y

8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
8.1	From explosions, spillages, fires etc. from storage, handling, use or production of hazardous or toxic substances?	N		
8.2	From events beyond the limits of normal environmental protection eg failure of pollution control systems?	N	Covered above	
8.3	From any other causes?	N	Covered above	
8.4	Could the project be affected by natural disasters causing environmental damage (*eg* floods, earthquakes, landslip, *etc*)?	Y	Low probability	N

9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
9.1	Changes in population size, age, structure, social groups *etc*?	N		
9.2	By resettlement of people or demolition of homes or communities or community facilities eg schools, hospitals, social facilities?	N		
9.3	Through in-migration of new residents or creation of new communities?	N		
9.4	By placing increased demands on local facilities or services eg housing, education, health?	N		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Y		Y Impact on remote areas. Impact could be positive.
9.6	Any other causes?	N		

10. Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.1	Will the project lead to pressure for consequential development which could have significant impact on the environment eg more housing, new roads, new supporting industries or utilities, etc?	N		

Category 2: Drill Cuttings BA, BB, BC, BD & BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment eg: supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	N		
10.3	Will the project lead to after-use of the site which could have an impact on the environment?	Y	Legacy issue for Option 1. Potential impacts on fishermen due to leaving the existing drill cutting *in situ*	Y
10.4	Will the project set a precedent for later developments?	?	Brent may set precedents on option used on managing drill cuttings for future decommissioning projects.	?
10.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	Y	Cumulative effects of Brent A, B, C & D; the interaction of the various platforms to be considered.	Y

Category 3: Cell Sediments BB, BC, BD

Option 1: Cell sediments *in situ* (GBS in situ)

Option 2: Cell sediments removed & re-injected offshore (GBS in situ)

Option 3 Cap *in situ* in the cells (GBS in situ)

Option 4 Cell sediments removed & disposed onshore (GBS in situ)

Note 1: If GBS is refloated (GBS Option 3), cell contents will be removed at same time
Note 2: For Option 1, there are no significant impacts to be considered except legacy issues.

THE SCOPING CHECKLIST: QUESTIONS ON PROJECT CHARACTERISTICS

1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
1.1	Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	N	Waste will go to an existing disposal facility (oily based sludge) to be treated	
1.2	Clearance of existing land, vegetation and buildings?	N		
1.3	Creation of new land uses?	N		
1.4	Pre-construction investigations eg boreholes, soil testing?	Y	Sampling of cell contents, volume, and characterization. To be described in EIA	N
1.5	Construction works?	Y	Minor modification on topsides for sampling equipment. And potential for significant modifications: - for capping cells (Option 3), - accessibility (Option 1, 2 & 4) - reinjection offshore (Option 2	Y
1.6	Demolition works?	N		
1.7	Temporary sites used for construction works or housing of construction workers?	Y	Options 2, 3 & 4 will require accommodation facilities, but normally there are floatels during normal operations.	N
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	N		
1.9	Underground works including mining or tunnelling?	N		
1.10	Reclamation works?	N		

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
1.11	Dredging?	Y	Options 1, 2, 3 & 4. Potential impact due to disturbance of drill cuttings on top of GBS (e.g. by water–jetting) to access cells.	Y
1.12	Coastal structures *eg* seawalls, piers?	N		
1.13	Offshore structures?	N		
1.14	Production and manufacturing processes?	N		
1.15	Facilities for storage of goods or materials?	N	Using existing facility	N
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Y	Option 4: Removal and transport to shore of cell sediments. Large quantities of water will need to be removed from the sludge prior to transporting sediments onshore to existing facilities. Option 2: Filter wastewater offshore and reinject.	Y. Large quantities of solid waste & wastewater
1.17	Facilities for long term housing of operational workers?	N		
1.18	New road, rail or sea traffic during construction or operation?	Y	Potential road and sea traffic to existing facility (e.g. oily waste facility) to treat cell sediments.	Y for sea and waste traffic (Option 2 & 4) N for onshore personnel commuting
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	N		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	N	Option 4: Offshore – applicable only to transit from platform to shore, as platforms have exclusion zone	
1.21	New or diverted transmission lines or pipelines?	N		
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	N		
1.23	Stream crossings?	N		

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
1.24	Abstraction or transfers of water from ground or surface waters?	N		
1.25	Changes in waterbodies or the land surface affecting drainage or run-off?	N		
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Y	Helicopter transport, supply vessels etc.	Y Transport of cell sediments will increase the number of trips. To be captured as part of Energy and Gaseous Emissions (E&E) calculations. CO_2 emissions from transport are likely to be small compared to emissions from HLV during operations.
1.27	Long term dismantling or decommissioning or restoration works?	Y	Captured throughout this checklist Options 1 & 3: Legacy of leaving cell sediments in situ. Study to be conducted on degradation. Eko-tank study - '200-500' years, GBS will degrade naturally; concrete will cover the sediments/ballast sand	Y. Associated impacts will need to be addressed in EIA including eventual exposure when structure collapses and ethical and reputational aspects.
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	Y	Captured elsewhere in this table	
1.29	Influx of people to an area in either temporarily or permanently?	Y	Covered above	
1.30	Introduction of alien species?	Y	Option 4: Ballast water from barges/vessel	? (Options 2, 3 & 4) Unlikely but possible potential loss of native species inshore (e.g. lochs). Given the safeguards on vessels in UKCS (such as IMO ballast water regime), this has a low potential impact.
1.31	Loss of native species or genetic diversity?	N		
1.32	Any other actions?	N		

2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
2.1	Land especially undeveloped or agricultural land?	N		
2.2	Water?	N		
2.3	Minerals?	N		N
2.4	Aggregates?	N		
2.5	Forests and timber?	N		
2.6	Energy including electricity and fuels?	Y	Options 2, 3 & 4: Energy use by vessels, pumps, compressors etc	Y Impact from transport, MSV (multi support vessel), support vessels etc.
2.7	Any other resources?	N		

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	Y	Option 4: Transport the cell sediments to shore Option 2 & 4: Use of chemicals to fluidize the sediments?	Y
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (eg insect or water borne diseases)?	N		
3.3	Will the project affect the welfare of people eg by changing living Conditions?	N		
3.4	Are there especially vulnerable groups of people who could be affected by the project eg hospital patients, the elderly?	?		Y potentially onshore. Although current licensed onshore facilities are intended to be used, need to demonstrate in EIA that impacts are acceptable.
3.5	Any other causes?	N		

4. Will the Project produce solid wastes during construction or operation or decommissioning?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.1	Spoil, overburden or mine wastes?	Y	Options 2 & 4 : Removed cell sediments	Y
4.2	Municipal waste (household and or commercial wastes)?	N		
4.3	Hazardous or toxic wastes (including radioactive wastes)?	Y	Options 2 & 4: Cell sediments to be filtered offshore. Option 4: Onshore remediation of solid wastes	Y
4.4	Other industrial process wastes?	N		
4.5	Surplus product?	N	Covered above	
4.6	Sewage sludge or other sludges from effluent treatment?	N		
4.7	Construction or demolition wastes?	N		
4.8	Redundant machinery or equipment?	N		
4.9	Contaminated soils or other material?	N		
4.10	Agricultural wastes?	N		
4.11	Any other solid wastes?	N		

5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Y	Options 2, 3 & 4: Emissions from vessels/ barges/ helicopters/ pumps etc. Potentially will use low temperature thermal desorption for sediment waste and landfill output.	Y. Look at CO2, SOX, NOX and PM emissions.
5.2	Emissions from production processes?	N		
5.3	Emissions from materials handling including storage or transport?	Y	Options 2 & 4: Vessels/barges for transport	Y

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.4	Emissions from construction activities including plant and equipment?	N		
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Y	Option 4: Potential odour from cell sediments onshore	Y
5.6	Emissions from incineration of waste?	N	There will be no incineration	
5.7	Emissions from burning of waste in open air (*e.g.* slash material, construction debris)?	N		
5.8	Emissions from any other sources?	Y?	Option 4: Consider the potential release of hydrocarbon from low thermal desorption unit onshore	Y?

6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.1	From operation of equipment e.g. engines, ventilation plant, crushers?	Y	Options 2 & 4 for vessels	N
6.2	From industrial or similar processes?	Y	Option 4: Onshore thermal desorption plant	Y?
6.3	From construction or demolition?	N		
6.4	From blasting or piling?	N		
6.5	From construction or operational traffic?	Y	Options 2,3 & 4: Vessels for transport of material. Potential for noise	Y
6.6	From lighting or cooling systems?	Y	Option 4: Onshore impact (if the industrial and residential activity are nearby)	N. Will use existing licensed facility.
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	N		
6.8	From any other sources?	N		

7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	Y	Option 2 : Potential to contaminate seabed from leakage from injection wells (injection wells are more shallow than normal wells) Option 4: Potential to contaminate from spillage	Y
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Y	Sewage facilities onboard	N
7.3	By deposition of pollutants emitted to air, onto the land or into water?	N		
7.4	From any other sources?	N		
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	Y	Legacy issue: Options 1, 2 & 3 leaving cell sediments in situ	Y

8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
8.1	From explosions, spillages, fires etc. from storage, handling, use or production of hazardous or toxic substances?	N		
8.2	From events beyond the limits of normal environmental protection eg failure of pollution control systems?	N	Covered above	
8.3	From any other causes?	N	Covered above	
8.4	Could the project be affected by natural disasters causing environmental damage (*eg* floods, earthquakes, landslip, *etc*)?	Y	Low probability	N

9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
9.1	Changes in population size, age, structure, social groups *etc*?	N		
9.2	By resettlement of people or demolition of homes or communities or community facilities eg schools, hospitals, social facilities?	N		
9.3	Through in-migration of new residents or creation of new communities?	N		
9.4	By placing increased demands on local facilities or services eg housing, education, health?	N		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Y	Offshore and onshore socio-economic impact to be addressed	Y Impact on remote areas. Impact could be positive.
9.6	Any other causes?	N		

10. Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.1	Will the project lead to pressure for consequential development which could have significant impact on the environment eg more housing, new roads, new supporting industries or utilities, etc?	N		N

Category 3: Cell Sediments BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment eg: supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	N		N
10.3	Will the project lead to after-use of the site which could have an impact on the environment?	N		N
10.4	Will the project set a precedent for later developments?	?	Projects like Ekofisk have already set a precedent with respect to cell sediment.	N
10.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	N		

Category 4: Topsides BA, BB, BC, BD

Option 1: Complete removal by modular dismantling using an HLV

Option 2: Piece –small dismantling offshore

Option 3: Removal in one piece using a single lift vessel

THE SCOPING CHECKLIST: QUESTIONS ON PROJECT CHARACTERISTICS

1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.1	Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	Y	Onshore facility may require expansion (e.g. VATS expansion was required for Ekofisk, but this was not identified in the Ekofisk EIA)	? Significant if there is potential expansion of the onshore facility
1.2	Clearance of existing land, vegetation and buildings?	N	Same as for 1.1	
1.3	Creation of new land uses?	N	Onshore	As above 1.1
1.4	Pre-construction investigations e.g. boreholes, soil testing?	N		
1.5	Construction works?	Y	Construction of temporary floors & scaffold required.	N
1.6	Demolition works?	Y	Decommissioning/demolition activities are captured throughout this checklist.	
1.7	Temporary sites used for construction works or housing of construction workers?	Y	Offshore requires temporary accommodation e.g. floatel. Onshore facility if not adequate may require additional construction space.	Y
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	N		
1.9	Underground works including mining or tunnelling?	N		
1.10	Reclamation works?	N		
1.11	Dredging?	N		
1.12	Coastal structures *eg* seawalls, piers?	Y	Option 3: If single lift method requires construction of inshore structure to be built to receive the entire topsides.	Y (Option 3) If construction of inshore facility is required (potential impact on marine environment, fisherman etc)
1.13	Offshore structures?	N		

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.14	Production and manufacturing processes?	Y	Steel production of grillage and sea fastenings that will be required.	Y - need to include sea fastenings/grillage manufacture in Energy and Gaseous Emissions (E&E) assessment.
1.15	Facilities for storage of goods or materials?	Y	Onshore storage at existing facility, offshore storage on barges.	N as using existing facility Y if have to expand existing facilities. (Refer to 1.1/1/2)
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Y	Large quantities of solid & flushing liquids from topsides pipelines.	Y Large quantities of contaminated water and solid wastes.
1.17	Facilities for long term housing of operational workers?	N		
1.18	New road, rail or sea traffic during construction or operation?	Y	Sea traffic and road (waste on trucks)	Y for sea and waste traffic N for onshore personnel commuting
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	N		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	N	Platforms currently have exclusion zones that vessels comply with.	
1.21	New or diverted transmission lines or pipelines?	N		
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	N		
1.23	Stream crossings?	N		
1.24	Abstraction or transfers of water from ground or surface waters?	N		
1.25	Changes in waterbodies or the land surface affecting drainage or run-off?	N		

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Y	Helicopter transport, supply vessels etc.	Y (all options) Note: Transport of material of piece small will increase number of trips. Need to capture as part of E&E calculations, and socio–economic impacts. Note that CO_2 emissions from transport are likely to be small compared to emissions from HLV during operations.
1.27	Long term dismantling or decommissioning or restoration works?	Y	Decommissioning/dismantling activities are captured throughout this checklist.	
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	Y	Decommissioning/dismantling activities are captured throughout this checklist.	
1.29	Influx of people to an area either temporarily or permanently?	Y	Covered in 1.7	
1.30	Introduction of alien species?	Y	From crane ship (semi-sub) and barges, pumping out ballast water	? (All options). Potential loss of native species in inshore locations e.g. lochs. Given the safeguards on vessels in UKCS (such as IMO regime), this has low potential impact.
1.31	Loss of native species or genetic diversity?	N		
1.32	Any other actions?	N		

2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
2.1	Land especially undeveloped or agricultural land?	Y	Covered already in 1.1	
2.2	Water?	Y	Utilise seawater	N
2.3	Minerals?	Y	Use steel but will recycle greater amounts	N

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
2.4	Aggregates?	N		
2.5	Forests and timber?	N		
2.6	Energy including electricity and fuels?	Y	Vessels, cutting tools, forklifts	Y SSCV/ HLV vessels. Transport material, tugs to tow barge, DSV
2.7	Any other resources?	Y	Chemicals for flushing	Y

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	Y	Substances as per material inventory and chemical use / cutting tools / paints	Y
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (eg insect or water borne diseases)?	N		
3.3	Will the project affect the welfare of people e.g. by changing living conditions?	?	Onshore	Although current licensed onshore facilities are intended to be used, need to demonstrate in EIA that there will be no impact.
3.4	Are there especially vulnerable groups of people who could be affected by the project e.g. hospital patients, the elderly?	?	Local society issue	Y (onshore). Although current licensed onshore facilities are intended to be used, need to demonstrate in the EIA that there will be no significant impact.
3.5	Any other causes?	N		

4. Will the Project produce solid wastes during construction or operation or decommissioning?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.1	Spoil, overburden or mine wastes?	N		
4.2	Municipal waste (household and or commercial wastes)?	N		
4.3	Hazardous or toxic wastes (including radioactive wastes)?	Y	LSA(NORM) & inventory waste	Y
4.4	Other industrial process wastes?	Y	Solids and liquid waste	Y
4.5	Surplus product?	N	Covered above	
4.6	Sewage sludge or other sludges from effluent treatment?	Y	- Vessels (IMO covers) - Sewage discharges are regulated offshore, and sewage arising onshore would be connected to existing sewers.	N
4.7	Construction or demolition wastes?	Y	Steel & material inventory waste	Y
4.8	Redundant machinery or equipment?	Y	Vessels/equipment to be land filled & recycled	Y
4.9	Contaminated soils or other material?	N		
4.10	Agricultural wastes?	N		
4.11	Any other solid wastes?	Y	Debris e.g. scaffold etc Operational and removal of debris clearance needs to be considered	Y

5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Y	Vessels/ helicopters/cutting tools	Y - CO_2, SOX & NOX and PM emissions.
5.2	Emissions from production processes?	Y	Production of temporary steel for demolition works. Recycling process (smelter emissions).	Y - To capture in E&E assessment.
5.3	Emissions from materials handling including storage or transport?	Y	Vessels/barges	Y

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.4	Emissions from construction activities including plant and equipment?	Y	Covered above	
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Y	- Deconstruction work on topsides - Dust issue onshore	Y
5.6	Emissions from incineration of waste?	N		
5.7	Emissions from burning of waste in open air (*eg* slash material, construction debris)?	N		
5.8	Emissions from any other sources?	N		

6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.1	From operation of equipment e.g. engines, ventilation plant, crushers?	Y	Onshore receptors. Offshore operation, it is a controlled process	Y for onshore N for offshore.
6.2	From industrial or similar processes?	N		
6.3	From construction or demolition?	Y	Covered above	
6.4	From blasting or piling?	N	No blasting	
6.5	From construction or operational traffic?	Y	From vessels for transport of materials	Y
6.6	From lighting or cooling systems?	Y	Potential onshore impact if industrial & receptors are adjacent. If build a new structure inshore to receive single lift topsides	N – will use existing facility. Y
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	N		

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.8	From any other sources?	Y	Noise from (e.g.): - lifting from vessels to shore. - Cutting into pieces and dumping into skips	Y

7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	Y	- There are risk in activities handling hazardous substances both onshore and offshore. - Onshore facility has bunds	Y
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Y	Wastewater from flushing topside pipes.	Y
7.3	By deposition of pollutants emitted to air, onto the land or into water?	N		
7.4	From any other sources?	N		
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	N	No planned discharges	

8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous or toxic substances?	Y	During decommissioning, the following scenarios are examples of what may need to be considered: 1. Spillage during flushing 2. Drop small piece on pipes not hydrocarbon free, potential explosion 3. Lose a module during transport, hit a pipeline 4. Collision of vessels transporting waste 5. Single lift, topples, hit pipeline & other subsea equipment (low probability / high consequence) 6. Refuelling during operations for HLV, spillage 7 Failure of booms containment inshore	Y - EIA should consider the environmental risk from key accidents
8.2	From events beyond the limits of normal environmental protection e.g. failure of pollution control systems?	Y	Covered above	
8.3	From any other causes?	N		
8.4	Could the project be affected by natural disasters causing environmental damage (*eg* floods, earthquakes, landslip, *etc*)?	Y	Potential but low probability	N

9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
9.1	Changes in population size, age, structure, social groups *etc*?	N		
9.2	By resettlement of people or demolition of homes or communities or community facilities eg schools, hospitals, social facilities?	N		

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
9.3	Through in-migration of new residents or creation of new communities?	N		
9.4	By placing increased demands on local facilities or services eg housing, education, health?	N		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Y		Y Impact on remote areas. Impact could be positive.
9.6	Any other causes?	N		

10. Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.1	Will the project lead to pressure for consequential development which could have significant impact on the environment eg more housing, new roads, new supporting industries or utilities, etc?	N		
10.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment eg: supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	N		

Category 4: Topsides BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.3	Will the project lead to after-use of the site which could have an impact on the environment?	N		
10.4	Will the project set a precedent for later developments?	?	If single lift method is used	Y
10.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	N		

Category 5: GBS BB, BC, BD

Option 1: Leave *in situ*: Derogation to remain in place after removal of topsides. Legs intact and upright

Option 2:. Partial removal: Derogation, with legs removed to about 70m depth.

Option 3: . Full removal of GBS by refloating, then dismantling inshore and onshore.

Note: For Option 1, there are no significant impacts to be considered except legacy issue.

THE SCOPING CHECKLIST: QUESTIONS ON PROJECT CHARACTERISTICS

1. **Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?**

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.1	Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	Y	Onshore facility may require expansion (eg VATS expansion was required for Ekofisk)	Y (Options 2 & 3) - potentially significant if there is a expansion of the onshore facility
1.2	Clearance of existing land, vegetation and buildings?	N	Onshore	Same as 1.1 but significance is minor. Assumption is using existing facilities
1.3	Creation of new land uses?	N	Onshore	As above 1.1
1.4	Pre-construction investigations eg boreholes, soil testing?	N		
1.5	Construction works?	Y	Option 2: Removed legs on barge, require sea-fastening/grillage (these need to be manufactured).	Y (capture as part of Energy & Gaseous Emissions E&E assessment)
1.6	Demolition works?	Y	Decommissioning/demolition activities are captured throughout this checklist.	Y(Options 2 & 3)
1.7	Temporary sites used for construction works or housing of construction workers?	Y	Offshore requires temporary accommodation eg floatel.	Y (Offshore – impact of anchor pits)
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	N		
1.9	Underground works including mining or tunnelling?	N		
1.10	Reclamation works?	N		

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.11	Dredging?	Y	May need to clear Drill Cuttings when refloating the GBS (Option 3) at the base, and on top of the cells	Y (Option 3)
1.12	Coastal structures *eg* seawalls, piers?	Y	Possible construction of inshore structure to receive the refloated GBS (Option 3) if there is no existing facility.	Y?
1.13	Offshore structures?	N		
1.14	Production and manufacturing processes?	Y	Option 2: Produce steel sea fastenings/grillage required to fasten materials on transport barges.	Y - capture as part of E&E assessment (see 1.5).
1.15	Facilities for storage of goods or materials?	Y	Captured in 1.1 and 1.12.	
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Y	- Options 2 & 3: Large quantities of solid (cement) - Option 3: cell contents	Y. Large quantities of solid waste & cell contents waste
1.17	Facilities for long term housing of operational workers?	N		
1.18	New road, rail or sea traffic during construction or operation?	Y	Sea traffic and road traffic if waste on trucks	Y for sea and waste traffic N for onshore personnel commuting
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	N		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	N	Option 2 & 3: Platforms currently have exclusion zone that vessels comply with.	
1.21	New or diverted transmission lines or pipelines?	N		
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	N		
1.23	Stream crossings?	N		

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1.24	Abstraction or transfers of water from ground or surface waters?	N		
1.25	Changes in waterbodies or the land surface affecting drainage or run-off?	N		
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Y	Helicopter transport, supply vessels etc	Y Note: Transport as 'piece small' will increase number of trips. Note that CO_2 emissions from transport are likely to be small compared to emissions from HLV for option 1 during operations.
1.27	Long term dismantling or decommissioning or restoration works?	Y	Legacy of leaving the GBS *in situ,* with collapse in distant future, and associated future Impact and liability implications.	Y (Option 1)
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	Y	Captured throughout this checklist.	
1.29	Influx of people to an area in either temporarily or permanently?	Y	Covered in 1.7	
1.30	Introduction of alien species?	Y	From crane ship (semi-sub) and barges, pumping out ballast water etc.	? Unlikely (owing to IMO regime) but possible (options 2 & 3). Potential loss of native species in worst consequence inshore (e.g. lochs). Given all safeguards on vessels in UKCS (such as IMO ballast water regime), this has a low potential impact
1.31	Loss of native species or genetic diversity?	N		
1.32	Any other actions?	Y	Options 2 & 3: Anchor pits – Crane vessels Option 3: High pressure water jet may be used to remove base/grout from the seabed. No explosives will be used.	Y

2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
2.1	Land especially undeveloped or agricultural land?	Y	Onshore if expansion is required. Covered above	
2.2	Water?	Y	Option 2 & 3: Dust suppression when crushing concrete onshore	N
2.3	Minerals?	Y	Use steel but will recover larger amounts	N
2.4	Aggregates?	N		
2.5	Forests and timber?	N		
2.6	Energy including electricity and fuels?	Y	Vessels, cutting tools etc.	Y Transport material, tugs to tow barge, DSV, support vessels.
2.7	Any other resources?	N		

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	N		
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (eg insect or water borne diseases)?	N		
3.3	Will the project affect the welfare of people eg by changing living conditions?	Y	Potentially onshore	Y
3.4	Are there especially vulnerable groups of people who could be affected by the project eg hospital patients, the elderly?	Y	Local societal issue	Y (onshore Options 2 & 3). Although licensed onshore facilities will be used, need to demonstrate in the EIA that impacts are acceptable.
3.5	Any other causes?	N		

4. Will the Project produce solid wastes during construction or operation or decommissioning?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.1	Spoil, overburden or mine wastes?	Y	Options 2 & 3: Crushed concrete waste	Y
4.2	Municipal waste (household and or commercial wastes)?	N		
4.3	Hazardous or toxic wastes (including radioactive wastes)?	Y	Option 3: - Cell contents contained in GBS - 'star cell' (spaces between cells) contain drill cuttings - drill cuttings on top of cells.	Y
4.4	Other industrial process wastes?	N		
4.5	Surplus product?	N	Covered above	
4.6	Sewage sludge or other sludges from effluent treatment?	Y	- Vessels (IMO covered), - Sewage discharges regulated offshore, and sewage arising onshore would be connected to existing sewers.	N
4.7	Construction or demolition wastes?	Y	Option 2: Crushed concrete (legs) Option 3: Crushed concrete (legs & GBS) Option 3: Drill cuttings	Y
4.8	Redundant machinery or equipment?	N		
4.9	Contaminated soils or other material?	Y	Covered above	
4.10	Agricultural wastes?	N		
4.11	Any other solid wastes?	Y	Options 2 & 3: -Marine growth on cut legs and refloated GBS	Y

5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Y	Vessels/ helicopters/cutting tools etc.	Y CO_2, SOX & NOX and PM emissions
5.2	Emissions from production processes?	Y	Production of temporary steel (grillage/fastenings) for demolition work. Air emissions from waste steel recycling process (smelter)	Y - To capture in IOP E&E emissions

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.3	Emissions from materials handling including storage or transport?	Y	Vessels/barges (captured above)	
5.4	Emissions from construction activities including plant and equipment?	Y	Covered above	
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Y	Deconstruction work onshore/inshore (Dust) Odour from marine growth/crushed concrete/ cell contents	Y
5.6	Emissions from incineration of waste?	N		
5.7	Emissions from burning of waste in open air (*eg* slash material, construction debris)?	N		
5.8	Emissions from any other sources?	N		

6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.1	From operation of equipment e.g. engines, ventilation plant, crushers?	Y	Options 2 & 3: Onshore noise from crushers etc	Y Option 2 & 3: Noise onshore. Depending on cutting technology (eg water jet, diamond wire, explosives, could be underwater noise offshore to be taken into consideration.
6.2	From industrial or similar processes?	N		
6.3	From construction or demolition?	Y	Covered above	
6.4	From blasting or piling?	N	No blasting No piling	
6.5	From construction or operational traffic?	Y	Options 2 & 3: Vessel for transport of material. Potential for noise	Y (Options 2 & 3)
6.6	From lighting or cooling systems?	Y	Options 2 & 3: Potential onshore impact if industrial & residential areas are close to each other.	Y (Options 2 & 3) if existing facility is expanded or a new inshore structure is constructed for GBS.

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	N		
6.8	From any other sources?	Y	Options 2 & 3: Noise from : - Lifting from vessels to shore - Crushing into pieces inshore & onshore	Y

7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	Y	Option 3: handling of cell contents, including cell liquids.	Y
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Y	Facilities onboard	N
7.3	By deposition of pollutants emitted to air, onto the land or into water?	N		
7.4	From any other sources?	Y	Options 2 & 3: GBS concrete (contaminated with wax, asphalts etc) crushed onshore	Y
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	N		

8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous or toxic substances?	Y	For example, scenarios may include: 1. Sinking during refloat 2. Sinking during inshore dismantling 3. Lose a large concrete piece during transport, hit a pipeline 4. Vessels transporting waste collide 5. Refuelling during operations for tow barge/support vessels /floatel - spillage 6. Failure of booms inshore while pumping out cell contents	Y - EIA should consider the environmental risk from key accidents
8.2	From events beyond the limits of normal environmental protection eg failure of pollution control systems?	N	Covered above	
8.3	From any other causes?	N		
8.4	Could the project be affected by natural disasters causing environmental damage (*eg* floods, earthquakes, landslip, *etc*)?	Y	Potential but low probability	N

9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
9.1	Changes in population size, age, structure, social groups *etc*?	N		
9.2	By resettlement of people or demolition of homes or communities or community facilities eg schools, hospitals, social facilities?	N		
9.3	Through in-migration of new residents or creation of new communities?	N		

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
9.4	By placing increased demands on local facilities or services eg housing, education, health?	N		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Y		Y Impact on remote areas. Impact could be positive
9.6	Any other causes?	N		

10. Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.1	Will the project lead to pressure for consequential development which could have significant impact on the environment eg more housing, new roads, new supporting industries or utilities, etc?	N		
10.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment eg: supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	N		
10.3	Will the project lead to after-use of the site which could have an impact on the environment?	Y	Legacy issue for Options 1 & 2 – impact on fishermen	Y

Category 5: GBS BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
10.4	Will the project set a precedent for later developments?	Y	Brent has 3 GBS and if they are left *in situ* or refloated, it may set a precedent (although Ekofisk has already set a precedent).	N
10.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	Y	Potential impact on pipelines eg FLAGS Cumulative impact of Brent B,C,D.	Y

Category 6: Pipelines and Umbilicals (BA. BB, BC, BD, BS)

Option 1: Leave *in situ* (minor/major intervention depending on condition of the pipe)

Option 2: Removal – cut & lift for pipelines; reverse lay for umbilicals & pipelines<16 inches

Option 3: Burial: Trench & backfill, or fluidize seabed, pipeline settle & sink

Note 1: It is assumed that pipelines are cleaned/flushed into an injection well as proposed in Xodus report.
Note 2: For Option 1, there are no significant issues to be considered except legacy issues.

THE SCOPING CHECKLIST: QUESTIONS ON PROJECT CHARACTERISTICS

1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?

Category 6: Pipelines and Umbilicals BA, BB, BC, BD, BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
1.1	Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	Y	Option 2: If onshore facility requires expansion to store pipelines.	Y?
1.2	Clearance of existing land, vegetation and buildings?	N	Same as above (minor). Assumption is using existing facility	
1.3	Creation of new land uses?	N		As above 1.1/1.2
1.4	Pre-construction investigations eg boreholes, soil testing?	Y?	Option 3 : Investigation of the seabed condition prior to trenching the pipelines	N Sufficient information is likely to exist on seabed condition
1.5	Construction works?	Y	Pipe carrier vessels may require sea fastenings/grillage to be manufactured.	Y - need to include sea fastenings & grillage manufacture in Energy and Gaseous Emissions (E&E) assessment for all options.
1.6	Demolition works?	Y	Option 2: Potential issues are Asbestos cap and coal tar enamel on pipes. Hot cutting onshore can emit hazardous emissions.	Y
1.7	Temporary sites used for construction works or housing of construction workers?	Y	Offshore requires temporary accommodation eg floatel. Onshore facility if not adequate requires additional construction space Removed Pipelines require 2/3 of the vessel lay barge for storage and adequate facilities onshore for storage	Y (Options 2 & 3)

Category 6: Pipelines and Umbilicals BA, BB, BC, BD, BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	N		
1.9	Underground works including mining or tunnelling?	N		
1.10	Reclamation works?	N		
1.11	Dredging?	Y	Option 2 & 3: Dredging may be required to cut the pipes and trench the area	Y (Options 2 & 3)
1.12	Coastal structures *eg* seawalls, piers?	N		
1.13	Offshore structures?	N		
1.14	Production and manufacturing processes?	N		
1.15	Facilities for storage of goods or materials?	Y	See 1.1	Y if have to expand (Option 2)
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Y	Option 2: Large quantities of concrete, plastic and rubber (umbilicals), steel (reuse/smelter) Quantities of oil contaminated flushwater to be treated offshore or to a suitable receiving facility offshore.	Y Large quantities of solid waste (pipelines) and liquid waste from flushing and cleaning the pipelines
1.17	Facilities for long term housing of operational workers?	N		
1.18	New road, rail or sea traffic during construction or operation?	Y	Sea traffic and road (waste on trucks)	- Y for sea (Options 2 & 3) and waste traffic (Option 2) - N for onshore personnel commuting.
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	N		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	Y	Options 2 & 3: Increase in vessel traffic to transport pipelines, equipment for trenching the pipelines and minor or major modifications on exposed pipe if left in –situ.	Y This needs to be examined in EIA

Category 6: Pipelines and Umbilicals BA, BB, BC, BD, BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
1.21	New or diverted transmission lines or pipelines?	Y	FLAGS + other relevant pipes that need to be reconfigured prior to COP and decommissioning of each platform sequence	Y
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	N		
1.23	Stream crossings?	N		
1.24	Abstraction or transfers of water from ground or surface waters?	N		
1.25	Changes in waterbodies or the land surface affecting drainage or run-off?	N		
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Y	Supply vessels	Y To be captured as part of Energy and Gaseous Emissions (E&E) calculations, and socio – economic studies. Note that CO_2 emissions from transport are likely to be small compared to emissions from HLV during operations.
1.27	Long term dismantling or decommissioning or restoration works?	Y	Options 1 & 3: - Legacy of leaving pipelines *in situ* as in time it will be degrade to waste on the seabed. - Impact on fisherman. - Pollution risks from flushing and cleaning	Y
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	Y	Captured throughout this checklist.	
1.29	Influx of people to an area in either temporarily or permanently?	Y	Covered above	

Category 6: Pipelines and Umbilicals BA, BB, BC, BD, BS				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
1.30	Introduction of alien species?	Y	Options 2 & 3: From lay barge and vessels, ballast water etc.	? Unlikely (owing to IMO control) but possible (for options 2 & 3). Potential loss of native species in worst consequence inshore (e.g. lochs). Given all safeguards on vessels in UKCS (such as IMO ballast water regime), this has a low potential impact.
1.31	Loss of native species or genetic diversity?	N		
1.32	Any other actions?	Y	Option 2 & 3: Anchor pits – Lay vessels anchor. Option 3: Trenching by waterjet may impact the seabed.	Y

2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant?**
2.1	Land especially undeveloped or agricultural land?	Y	Onshore if expansion is required. Covered above	Y if expansion is required
2.2	Water?	N		
2.3	Minerals?	N		
2.4	Aggregates?	Y	Option 1 Rock dumping if deemed appropriate for major intervention.	Y
2.5	Forests and timber?	N		
2.6	Energy including electricity and fuels?	Y	Vessels	Y Transport materials, laybarges, support vessels etc.
2.7	Any other resources?	N		

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	Y	Options 1, 2 & 3: Chemicals used for cleaning and flushing pipelines	Y
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (eg insect or water borne diseases)?	N		
3.3	Will the project affect the welfare of people eg by changing living conditions?	Y	Options 2 & 3: Offshore facility accommodation required	Y
3.4	Are there especially vulnerable groups of people who could be affected by the project eg hospital patients, the elderly?	Y	Local society issue	Y? onshore. Although licensed onshore facilities are intended to be used, need to demonstrate in EIA that impacts are acceptable.
3.5	Any other causes?			

4. Will the Project produce solid wastes during construction or operation or decommissioning?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
4.1	Spoil, overburden or mine wastes?	N		
4.2	Municipal waste (household and or commercial wastes)?	N		
4.3	Hazardous or toxic wastes (including radioactive wastes)?	Y	Option 2: Contaminated waste in pipes eg mercury, LSA, scale Options 1, 2 & 3: Contaminated flushed liquid for disposal	Y
4.4	Other industrial process wastes?	N		

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	**Is the effect likely to be significant? Why?**
4.5	Surplus product?	N	Covered above	
4.6	Sewage sludge or other sludges from effluent treatment?	Y	- Vessels (IMO covered), - Sewage discharges regulated offshore, and sewage arising onshore would be connected to existing sewers.	N
4.7	Construction or demolition wastes?	Y	Option 2: Cut pipes from offshore, and Cement, plastics etc	Y
4.8	Redundant machinery or equipment?	N		
4.9	Contaminated soils or other material?	N		
4.10	Agricultural wastes?	N		
4.11	Any other solid wastes?	Y	Marine growth on pipes?	N

5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Y	Vessels/ cutting tools etc	Y Consider CO_2, SOX & NOX and PM emissions from vessels waiting inshore
5.2	Emissions from production processes?	N		
5.3	Emissions from materials handling including storage or transport?	Y	Vessels/barges	Y
5.4	Emissions from construction activities including plant and equipment?	N		

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Y	Option 2: o Some old pipelines, prior to 1980, may contain asbestos materials (this will need to be clarified) in a wrap between the concrete and the steel / coal tar enamel, but may also be integrated with the concrete. o Deconstruction work onshore for cutting pipes (Dust) o Odour from marine growth on removed pipelines?	Y
5.6	Emissions from incineration of waste?	N		
5.7	Emissions from burning of waste in open air (*eg* slash material, construction debris)?	N		
5.8	Emissions from any other sources?	N		

6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
6.1	From operation of equipment eg engines, ventilation plant, crushers?	Y	Option 2: Noise at receptors onshore from: -Cutting of pipes onshore. -Vessels inshore etc.	Y
6.2	From industrial or similar processes?	N		
6.3	From construction or demolition?	Y	Covered above	
6.4	From blasting or piling?	N		
6.5	From construction or operational traffic?	Y	Option 2: Noise potential from transport vessels	Y
6.6	From lighting or cooling systems?	Y	Onshore – use existing facility	N

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	N		
6.8	From any other sources?	N		

7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	Y	Options 1, 2 & 3: 1. Accidental release of flushed effluents (oil based) by spillage and impact 2. Waste anodes on pipelines will need to be managed.	Y
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Y	Facilities onboard	N
7.3	By deposition of pollutants emitted to air, onto the land or into water?	N		
7.4	From any other sources?	Y	Option2: Onshore cut pipes are cleaned and flushed by water, and the residual scale & mercury creates contaminated water. This may pose an issue	Y
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	N	No planned discharges	

8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous or toxic substances?	Y	Option 2, for example: 1. Dropped pipe during lifting operations 2. Collision of vessels (pipe carriers) transporting waste	Y - EIA should consider the environmental risk from key accidents
8.2	From events beyond the limits of normal environmental protection eg failure of pollution control systems?	N	Covered above	
8.3	From any other causes?	N	Covered above	
8.4	Could the project be affected by natural disasters causing environmental damage (*eg* floods, earthquakes, landslip, *etc*)?	Y	Low probability	N

9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
9.1	Changes in population size, age, structure, social groups *etc*?	N		
9.2	By resettlement of people or demolition of homes or communities or community facilities eg schools, hospitals, social facilities?	N		
9.3	Through in-migration of new residents or creation of new communities?	N		
9.4	By placing increased demands on local facilities or services eg housing, education, health?	N		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Y		Y Impact on remote areas. Impact could be positive
9.6	Any other causes?	N		

10. Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?

Category 6: Pipelines BA, BB, BC, BD				
No.	Questions to be considered in Scoping	Yes/No/ ?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant?
10.1	Will the project lead to pressure for consequential development which could have significant impact on the environment eg more housing, new roads, new supporting industries or utilities, etc?	N		
10.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment eg: supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	N		
10.3	Will the project lead to after-use of the site which could have an impact on the environment?	Y	Options 1 & 3: Legacy issue for leaving pipelines in situ, with long term impact on fisheries and trawling (umbilical) and future creation of debris on seabed long term by degradation.	Y
10.4	Will the project set a precedent for later developments?	N		N
10.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	Y	Cumulative effects of Brent A, B,C & D.	Y

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