

Response to the Brent decommissioning consultation – 9 April 2017

From WWF-UK, Greenpeace UK, Whale & Dolphin Conservation, Marine Conservation Society, Friends of the Earth Scotland, Scottish Wildlife Trust, KIMO, and RSPB Scotland

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Summary

Unfortunately it has not been possible to come to a view on the decommissioning proposal due to insufficient information provided by Shell. OSPAR 98/3 sets out very clear criteria and procedures for operators, requiring derogations to this decision, to follow in carrying out such assessments, which have not been adhered to. The material presented can not be clearly cross referenced to OSPAR 98/3 requirements and means we cannot assess whether or not there is a solid case with full legal, technical, environmental and economic justification, aligned specifically against the requirements of OSPAR 98/3, for each of the major components and pollutants for which Shell seeks derogation.

Related to this and generally there is a lack of quantitative analysis based on hard data, a significant reliance on subjective, qualitative judgments and opinions by experts, including Shell's own engineers. There is also a lack of quantification of the uncertainties in many of the estimates made, which was also highlighted by the Independent Review Group.

In view of this we recommend that Shell be requested to provide the following in order for interested parties to be able to adequately assess the proposals: a table setting out Shell's response in full to each specific requirement of 98/3 (Appendix 1), for ALL potential reuse, recycle and disposal options (not just those that were pre-shortlisted internally by Shell), which are based on independent assessments and clearly identify and quantify all inherent uncertainties as required by 98/3. This information should be circulated to all interested parties to allow any further consideration of the proposals.

Background

The Brent oil and gas field, owned by a Shell/Esso joint venture and operated by Shell, lies approximately 136 km north east of the Shetland Islands, in water depth of around 140 m, just within the UK Exclusive Economic Zone (EEZ). It is served by four large platforms – Alpha, Bravo, Charlie and Delta, 154 oil and gas wells, associated subsea infrastructure and a network of seabed pipelines.

Production of oil commenced 1976 and shifted to mainly gas with a major upgrade of facilities in the 1990s. After 40 years of operations, almost all the economically recoverable

oil and gas reserves have been produced. In line with UK legislation, the Brent Field will now be decommissioned. Decommissioning will take over 10 years.

In addition to the regulatory and assessment process for such decommissioning in UK waters, which is stipulated under the UK *Petroleum Act 1998* and related guidelines, the *Convention for the Protection of the Marine Environment of the North-East Atlantic* (OSPAR Convention) also applies, including *inter alia* a prohibition on the dumping, and the leaving wholly or partly in place, of disused offshore installations within the maritime area, under *OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations* (OSPAR 98/3 or simply 98/3).

However, under OSPAR 98/3, for certain defined sub-sea components, the operator may make a case for exemption – or derogation – from the general rule of complete removal from the sea. In such cases the operator must undertake a comparative assessment of all possible options considering environmental, safety, cost, technical and other criteria, including life-cycle analysis, and demonstrate that there are significant reasons why leaving in place is preferable to reuse, recycling or final disposal on land.

OSPAR 98/3 sets out very clear criteria and procedures for operators to follow in carrying out such assessments (***refer Appendix 1 of this report for key requirements of 98/3***). There is also a requirement for consultation with other OSPAR members. Other applicable OSPAR requirements include:

OSPAR Recommendation 2006/5 on a Management Regime for Offshore Cuttings Piles (OSPAR 2006/5).

For the purpose of this consultative reply WWF and the other respondents, listed above, will prioritise our commentary on the case for seeking derogation under OSPAR 98/3 to **leave the following components in place:**

- a) Brent Alpha steel footings (nearly 26,000 tonnes of steel rising 55.5 m above the seabed).
- b) Concrete Gravity Base Structures (GBS) for the Bravo, Charlie and Delta platforms (a total of nearly 1 million tonnes of concrete GBS cell contents (a total of approx. 40,000 m³ of hydrocarbon-contaminated sediment plus oily water).
- c) Drill cuttings on the seabed and on top of GBS cells (a total of nearly 60,000 m³ contaminated with hydrocarbons and also heavy metals).
- d) The majority of pipelines that are associated with the field (there are some questions regarding whether leaving in place those pipelines that are currently located above the surface of the seabed, including by entrenching or burying them, is legal under 98/3).

But will also in addition provide where appropriate linked commentary on the proposed following decommissioning activities:

- a) Plugging and making safe the 154 wells across the Brent Field.
- b) Removing to shore, and recycling the platforms' topsides.
- c) Recovering oil and gas debris from the seabed across the Brent Field.
- d) Removing the oil – known as 'attic oil' – trapped at the top of some of the subsea storage cells.
- e) Cutting the upper portion of the Brent Alpha steel jacket, and removing to shore for recycling.

General comments on the proposed decommissioning plan

The case for derogation

The material presented lacks systematic correlation with the OSPAR 98/3 requirements and makes it difficult to readily assess whether or not there is a solid case with full legal, technical, environmental and economic justification, aligned specifically against the requirements of OSPAR 98/3, for each of the major components and pollutants that it seeks derogation for to leave in place.

The overall finding of our review of the provided documentation is that there is a general lack of quantitative analysis based on hard data, and a significant reliance on subjective, qualitative judgements and opinions by experts, including Shell's own engineers. There is also a glaring lack of quantification of the uncertainties in many of the estimates made (see below). This is in stark contrast to similar documentation, including Environmental Impact Statements for large coastal and marine infrastructure projects in other jurisdictions such as Australia and Papua New Guinea. In many cases these are of a higher standard in terms of being based on quantitative analysis and hard data.

1. As the obligation should be on the operator to clearly demonstrate to regulators, the community and OSPAR members that they have systematically and categorically addressed and complied with each key requirement of 98/3, *it is recommended that Shell be requested to complete a table aligned against each specific requirement of 98/3, as per Appendix 1 of this reply, and circulate this for review.*
2. As required by 98/3 Annex 2, this analysis matrix should include:
 - a) clearly identifying and quantifying all inherent uncertainties,
 - b) drawing of reasoned conclusions,
 - c) underlying facts and data that support the conclusions and recommendations.

3. This should be done for ALL potential reuse, recycle and disposal options (not just those that were pre-short-listed internally by Shell) **(refer to section as below)**.
4. It is important to note the requirement under 98/3 Annex 2 for the operator to clearly identify and quantify all inherent uncertainties. In this regard it should be noted that the Independent Review Group (see section IRG below) concludes in its report that, *inter alia* (except in a few instances) the Decommissioning Plan (DP) and supporting documents DO NOT quantify the considerable uncertainties in many of the estimates made (as required by OSPAR 98/3), which gives the impression of greater confidence in uncertain outcomes than is warranted.
5. *This alone may call into question the ability of all parties to responsibly assess compliance of the proposed derogations with the requirements of 98/3.*

Screening of alternative uses

OSPAR 98/3 requires that before seeking a derogation from the general prohibition on leaving disused offshore facilities in the marine environment, the proponent must show significant reasons why leaving the material in place is preferable to reuse or recycling or final disposal on land.

Annex 2 of 98/3 provides very clear, systematic guidance on the issues, criteria and process that must be considered in making such an assessment. Annex 2 of 98/3 also requires that the impacts of the proposed disposal (leaving in place) must be compared to the impacts of other options, including reuse, recycling and disposal on land. Factors that must be considered when comparing and selecting options include *inter alia*:

- a) Technical, engineering and safety aspects.
- b) Impacts on the marine environment and on other environmental compartments.
- c) Interference with other legitimate human uses, amenity etc.
- d) Emissions to the atmosphere.
- e) Consumption of natural resources and energy.
- f) Economic (cost) factors.
- g) Application of internationally agreed principles for environmental life cycle assessment.
- h) Identifying and quantifying the inherent uncertainties associated with each option.
- i) Adopting conservative assumptions about potential impacts.
- j) Considering cumulative effects.

The DP Report states that in screening possible alternative uses for the Brent field facilities, including those components that they propose to leave in place, they applied the following criteria:

- a) OSPAR 98/3.
- b) Safety risks of the option must be As Low as Reasonably Practicable (ALARP).
- c) Waste Hierarchy (reduce – reuse - recycle).
- d) The option must be technically feasible using EXISTING vessels, equipment and methods
- e) Options were discarded if there were no “business drivers” within Shell or Esso.

There are a number of issues with the application of these criteria, as follows:

- a) OSPAR 98/3: While the decommissioning plan (DP) claims to have been complied with 98/3 in screening potential reuse, recycling and land-disposal options, before proposing derogation for certain components, it appears that these have not been complied with. In addition to the issues identified above, the DP does not appear to have applied ALL of the criteria under 98/3 Annex 2 to ALL potential reuse, recycling and land-disposal options. Many options were discarded early in the process after qualitative, internal evaluation by Shell itself, based on the subjective expert opinions of Shell’s own engineers, using mainly safety, technical and cost criteria only, rather than quantitative, comparative assessment against ALL other potential options, using ALL of the criteria under 98/3. Only options that were pre-selected internally by Shell have been subjected to full comparative assessment. This may have caused the option of seeking derogation to leave certain components in the marine environment to be artificially pushed forward in the assessment (see also below).
- b) Safety risks: As per point a) above, the assessed potential safety risks of potential reuse, recycling and land-disposal options are internally based on subjective expert judgement by Shell’s own engineers, and certain options were discarded early by Shell itself, and not subjected to full comparative assessment in accordance with 98/3. It is stated that for those options that were put through for comparative assessment (CA), the safety assessment was not absolute as per HSE regulatory criteria (Probability of Loss of Life - PLL), only relative assessment between options. It is also explicitly stated that the safety assessment did not factor in application of prevention and mitigation measures – such might change the CA outcomes significantly.

It is recommended that this issue be addressed by undertaking a comparative safety assessment of ALL options (not just those pre-selected by Shell’s own engineers), using

independent experts (not Shell engineers), quantitative comparative methods which provide absolute results, and factoring in the application of relevant best-practice prevention and mitigation measures for all potential reuse, recycling and disposal options.

- c. Technically feasible using EXISTING technology: The DP excluded all alternative reuse, recycling and land-disposal options if they were not technically feasible using EXISTING vessels, equipment and methods. If the same constraint were applied to oil and gas exploration and production operations, lack of engineering innovation, research and development (R&D) would mean little or no frontier exploration/exploitation. If Shell (and the broader industry) can demonstrate an extremely high level of innovation in exploring for and producing oil and gas from deep inside the earth, under the depths of the ocean, it should be required to apply a similar level of innovation in decommissioning.

It is recommended that the “existing technology” constraint that has been self imposed by Shell be reconsidered and that R&D be required for innovative solutions for more ecologically acceptable decommissioning options than leaving abandoned structures and pollutants in the marine environment.

- d) Business drivers: As above, the fact that potential alternative reuse, recycling and land-disposal options were discarded internally by Shell if there were no “business drivers” within Shell or Esso, is considered to be unacceptable. There is nothing in OSPAR 98/3 that identifies consideration of ‘business drivers’ in the selection of options, and it is not clear exactly what sub-criteria constitute this criterion. It is assumed that business drivers would include regulatory compliance (including with OSPAR), maintaining social licence, and corporate social responsibility – which may dictate that some options that Shell may have internally discarded, should be revisited, and the CA revisited.

It is recommended that the “business drivers” constraint that has been self imposed by Shell be reconsidered as a criteria for pre-screening potential alternative reuse, recycling and land-disposal options, and that the CA be redone to include all options that were pre-screened out of the process internally by Shell using this criteria.

Comparative Assessment (CA) process & methods

There are a number of limitations with the Comparative Assessment (CA) process applied by Shell. As outlined above many potential options for reuse, recycling and disposal on land were pre-empted internally by Shell by being ruled as being non-feasible / non-viable / unsafe, based on subjective opinion of Shell engineers only, before full CA was applied to the remaining options only. OSPAR 98/3 requires that CA should be applied to ALL potential options before pushing the option of derogation to leave abandoned facilities and pollutants in the marine environment.

It is explicitly stated that there was reliance on subjective, expert opinion for the assessment of safety, technical feasibility and environmental impacts, not quantitative assessment based on hard data. This is not consistent with the requirements of 98/3 Annex 2. Clause 12 of 98/3 Annex 2 states that, *inter alia*:

- a) *'The assessment shall be sufficient to enable the competent authority of the relevant Contracting Party to draw reasoned conclusions on whether or not to issue a permit under paragraph 3 of this Decision . . .'*
- b) *The conclusions shall be based on scientific principles and the summary shall enable the conclusions to be linked back to the supporting evidence and arguments.*
- c) *The documentation shall identify the origins of the data used, together with any relevant information on the quality assurance of that data.'*

Additionally, life cycle analysis, energy consumption and gas emissions were only assessed for pre-selected options, and not applied to the pre-selection of options.

The assessment of energy consumption and gas emissions should be broader – and include all resource consumption (not just energy) and all emissions of pollution and wastes – not just gas emissions (i.e. assess the **total** environmental footprint of each option – not just energy use and gas emissions). Applying this more complete and holistic comparative assessment to all potential options may result in different outcomes in terms of identification and selection of preferred options. OSPAR 98/3 clearly requires the application of internationally agreed principles for environmental life cycle assessment.

There are also questions about the weighting criteria, sub-criteria, ranking and scoring process applied, in particular to environmental comparisons, and whether or not these are appropriate (equal weightings were used and again rankings were based on subjective, expert judgements – not quantitative analysis using hard data).

The use of Multi-criteria Decision Analysis (MCDA) for the CA which can give the outward impression that the process is rigorous and defensible. However MCDA is only as rigorous as the criteria, weightings and rankings used and in the absence of hard data and quantitative assessment, it is still reliant on subjective, qualitative opinions.

The CA seems to have an obsession with standardising comparisons across all facilities and components – this is misleading, the objective under OSPAR 98/3 is to compare reuse, recycle and disposal options for each component independently, not compare across all components.

The assessment of effects on fisheries in the CA looked at “financial” issues only, not at other aspects including safety of fishing vessels and fishermen, access to fish stocks and sustainability (and health) of stocks. Including these factors might weight against the option of derogation to leave abandoned facilities and pollutants in the marine environment.

Review of Each Proposed Decommissioning Action

Wells

The proposal to plug and make safe all 154 wells. *We support this option, subject to further evaluation of the process to be used to verify and monitor ongoing integrity of the plugged wells into the future.*

Platform topsides

Proposal to remove to shore and recycle the topsides of all four platforms. *We support this option.*

It should be noted that a highly specialized, purpose-built vessel – the Single Lift Vessel (SLV) *Pioneering Spirit* - is now available to undertake the topside removal task, and this may open up possible options to remove and transport to shore the Alpha steel jacket and the GBSs for the other three platforms, or at least provides an example of innovation that could be applied to these.

Alpha steel jacket

It is proposed that only the partial removal to shore of the steel jacket down to 84.5 m below LAT, seeking derogation under 98/3 to leave the remainder (the footings) in the marine environment – comprising nearly 26,000 tonnes of steel rising 55.5 m above the seabed, and with a seabed footprint of nearly 6,000 m², and an additional 50 m radius exclusion zone to be maintained around the site (precluding access by trawl fisheries). The DP proposes to leave the footings to degrade, disintegrate and collapse onto the seabed over time, which would could cause disturbance and pollution from the hydrocarbon-contaminated drill cuttings at the site.

The CA report states that leaving the Alpha steel footings in place is the best option for safety, technical and cost reasons. Selection of this option based on these three criteria only is not compliant with 98/3 – which requires the full list of criteria listed in Annex 2 of 98/3 to be applied in the CA, including but not limited to environmental impacts and impacts on other users and uses of the area (e.g. fisheries).

It should be noted that decommissioning of the Ekofisk platforms in Norwegian waters in 2008 - 2014 included the successful removal and recycling onshore of the complete steel jackets from no less than nine (9) offshore platforms, see <https://hmc.heerema.com/projects/ekofisk/>.

It is recommended that an independent re-evaluation of options for the Alpha steel jacket be undertaken, including applying ALL 98/3 criteria to ALL options in a more complete CA, addressing the issues identified under the previous sections above, considering successful methods used in other nearby decommissioning projects (e.g. Ekofisk) and greater attention

to possible innovative solutions, including potential use of the SLV Pioneering Spirit to remove the entire jacket to shore for recycling or disposal.

Gravity Base Structures (GBS)

Derogation under 98/3 to leave the full GBSs from the Bravo, Charlie and Delta platforms in the marine environment, comprising a combined total of nearly 1 million tonnes of concrete, rising above the sea surface, and an additional 50 m radius exclusion zone to be maintained around each GBS (precluding access by trawl fisheries). Shell proposes to leave the GBSs to degrade, disintegrate and collapse onto the seabed over time, which would cause disturbance and pollution from the hydrocarbon-contaminated drill cuttings at the three sites, and also release the cell contents into the marine environment.

Leaving the structures to degrade is not compliant with *IMO Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone (IMO Resolution A.672(16))* – which in clause 3.6 state that any disused installation that projects above the sea surface should be adequately maintained to prevent structural failure (i.e. not left to degrade).

The IMO Guidelines also state, like OSPAR 98/3, that abandoned or disused offshore installations or structures are required to be removed, except where non-removal or partial removal is consistent with the guidelines and standards. *The UK is an IMO member State and it is therefore recommended that in addition to assessing compliance with the UK Petroleum Act and OSPAR 98/3, Shell's proposed DP should also be assessed for compliance with all of the requirements of the IMO Guidelines (A.672(16)).*

In undertaking the CA, Shell only compared two options - partial removal of each GBS to -55m and leaving fully in place. Other options including complete removal to shore were pre-empted from the CA by Shell's internal pre-screening process – which suffers from the limitations outlined under the sections as above.

The CA report states that leaving the three concrete GBSs in place is the best option for safety, technical and cost reasons. Selection of this option based on these three criteria only is not compliant with 98/3 – which requires the full list of criteria listed in Annex 2 of 98/3 to be applied in the CA, including but not limited to environmental impacts and impacts on other users and uses of the area (e.g. fisheries).

In attempting to justify their preference for leaving the GBSs in the marine environment, the DP references the Frigg field on the UK-Norwegian median line where GBS were left in place, the argument being that *'if it was allowed before, it should be allowed again.'* This argument is not acceptable in modern operations or balanced re considering Ecofisk.

It is recommended that an independent re-evaluation of options should be undertaken for the GBSs, including applying ALL 98/3 criteria to ALL options in a more complete CA, and

greater attention to possible innovative solutions, including potential use of the SLV Pioneering Spirit to remove the entire GBSs to shore for recycling or disposal.

GBS attic oil

Removal of all attic oil from GBS cells. *We support this option, subject to further evaluation of the process to be used to verify and monitor that the removal of attic oil is complete and successful, and without loss to the marine environment.*

GBS cell contents (hydrocarbon-contaminated sediments, oily water etc)

The DP seeks to leave the GBSs cell contents from the Bravo, Charlie and Delta platforms in place (within the cells, until the cell walls degrade over time and the contents are released into the marine environment), comprising a combined total of approximately 40,000 m³ of hydrocarbon-contaminated sediment plus oily water.

The CA report states that leaving the GBS cell contents in place is the best option for safety, technical and cost reasons. As per the other components above, selection of this option based on these three criteria only is not compliant with 98/3 – which requires the full list of criteria listed in Annex 2 of 98/3 to be applied in the CA, including but not limited to environmental impacts.

The DP assesses the potential long-term fate of the cell contents using modeling, however the IRG highlights many of the models used in the CA are not appropriate. Modeling is, of course, only as good as the quality of the data used in the model. *In view of this we request that all models used in the CA be independently reviewed by relevant experts, including the appropriateness of the model for the intended purpose, the rigour, quality, relevance and representativeness of supporting data used in the model, and how the model was calibrated and verified.*

It should also be noted that of a total of 74 cells, Shell only sampled three (a very low 4% sampling efficiency), and from a single platform – Delta, only. This very low sampling efficiency focussed on a single platform only can in no way be considered to provide data that is truly representative of all cells across all platforms, and Shell should be required to undertake a much more representative sampling programme to properly inform the assessment of options.

We also believe that the engineering difficulties highlighted regarding drilling into the concrete GBS cells to undertake sampling should not excuse work in this area, again the oil and gas sector's innovative engineering strength should be harnessed.

The potential for in-situ bioremediation of the cell sediments (e.g. stimulating bacterial degradation of sediment hydrocarbons by adding nutrients and/or bacteria) appears to have been superficially dismissed, because temperatures are too low to support bacterial activity and because bioremediation would only penetrate the upper layers of sediment. However,

it should be noted that while bio-degradation of oil does proceed more slowly at lower temperatures, it does still proceed, and the sediment penetration issue could be simply addressed by mechanically mixing the sediment when nutrients and/or bacteria are introduced. This option could be looked at more closely by relevant experts (it is noted that the IRG only has one member with some bioremediation expertise).

If removal of Attic Oil from the GBS cells is possible, why can't all of the other cell contents be removed?

Material in drilling legs & minicell annulus

As above

Drill cuttings

The DP seeks to leave drill cuttings on the seabed and on top of the GBS cells (a total of nearly 60,000 m³ contaminated with hydrocarbons and also heavy metals).

The CA states that leaving the drill cuttings in place is the best option for environmental, technical and safety grounds. As per the other components above, selection of this option based on three criteria only is not compliant with 98/3 – which requires the full list of criteria listed in Annex 2 of 98/3 to be applied in the CA, including but not limited to impacts on other users of the sea (e.g. fisheries).

The compliance of the drill cutting contents and leaching rates with OSPAR criteria (OSPAR 2006/5) was assessed by desk-top screening and modelling only, and only “suggests” compliance, it does not confirm or prove compliance. As stated above, the IRG says many of the models used in the CA are not appropriate. Modelling is, of course, only as good as the quality of the data used in the model. *As before, we request that all models used in the CA be independently reviewed by relevant experts, including the appropriateness of the model for the intended purpose, the rigour, quality, relevance and representativeness of supporting data used in the model, and how the model was calibrated and verified.*

The CA for the drill cuttings was only undertaken for ‘some’ piles (those ‘modelled’ to be above OSPAR criteria – i.e. Charlie cell top). In accordance with 98/3 the CA for drill cuttings should be undertaken for ALL drill cuttings, considering ALL possible management options, including removal to shore for treatment, and applying ALL assessment criteria.

Leaving the drill cuttings in-place presents the risk of disturbance and dispersal by benthic storms, with coincident release of pollution. Potential bioturbation may also rework contaminants and make them (more) bioavailable.

Subsea installations (PLEM, SSIV, Splitter Box & VASP)

The DP proposes to remove all subsea installations. *We support this option, subject to further evaluation of the process to be used to verify and monitor such removal.*

Seabed debris

The DP proposes to remove industry-associated seabed debris within a defined area. *We support this option, subject to further evaluation of the process to be used to verify and monitor such removal.*

E.11 Pipelines

Various options are proposed for various pipelines, from complete removal to covering with rock to entrenching and burying. Shell proposes to clean and pig all pipelines. *While we support this option generally we feel a thorough evaluation of the processes to be used to verify and monitor the cleaning and pigging of pipelines is required.*

Proposed monitoring

The DP states that a post-decommissioning environmental survey will be conducted immediately after completion of decommissioning and again “about” five years later. It is not clear why the rather loose term “about” is used – the timing should be clearly set as a condition of any permission granted – as per Annex 2 of 98/3.

No details are provided of the proposed experimental design of environmental monitoring (the IRG also highlights this deficiency), and Shell states several times that such details will be developed in consultation with the regulator. Annex 2 of 98/3 requires clear details of proposed monitoring to be included and these should be available for review by all relevant stakeholders, including other users of the area, environmental parties and parties to OSPAR, not just by the regulator.

Environmental Assessment Detailed review of the Environmental Statement (ES) Report by DNV-GL is generating an entire review report of its own, and given time constraints and the need to be focussed the following major points are highlighted:

- a) The environmental assessment was only applied to the options that were pre-selected internally by Shell, using their own safety, cost and technical feasibility judgements, which pre-screened many options out from further analysis. OSPAR 98/3 requires that environmental assessment should be applied to ALL options up front, as a key part in the screening and selection process.
- b) The environmental assessment was based more on subjective, expert judgements than quantitative analysis using hard data.
- c) The environmental assessment relied a lot on modelling, which is subject to the limitations outlined above and by the IRG.
- d) The criteria selected to examine environmental impacts are quite broad (e.g. Table 19 of DP Doc):

- i) Marine needs sub-criteria.
 - ii) Operational discharges not included.
 - iii) Energy use and gas emissions are not complete “footprint”.
- e) The criteria used for determining the likely scale and severity of impacts needs much closer scrutiny – as does grading the sensitivity and value of receiving environments. These appear to be quite qualitative and subjective.
 - f) The criteria for positive and negative impacts, and low, moderate and large impacts also need closer scrutiny, and also seem to be subjective / qualitative / relative only.
 - g) The scores for the environmental impacts of options used in the CA do not correspond to impacts outlined in the ES.

Stakeholder Engagement (SE) Report

The SE Report has a huge emphasis on process used, and only a reasonable treatment of actual concerns raised and how Shell has addressed or proposes to address these concerns. Specific points from the report which are concerning with respect to the process are :

1. Several times in the DP documents Shell explicitly states that certain components (e.g the Alpha footings & the GBSs) are so-called ‘candidates for derogation’ (based on their nature and size in relation to Annex 1 of 98/3). This explicit identification of so-called ‘candidates for derogation’ misses the intent of 98/3. The intent of 98/3 is that NO components should be considered to be ‘candidates’ to leave in the marine environment unless all other options have been exhausted, in compliance with the very clear criteria and assessment process under Annex 2 of 98/3.
2. The DP reports implies that at the start of the process Shell internally identified which components are ‘candidates for derogation’, and then purposely set out to prove that this is the best option for those components, primarily (but not explicitly) because of cost concerns.

Independent Review Group (IRG) Report

The following significant points are noted from the IRG Report :

- a) The IRG does not support or endorse every statement in the individual reports.
- b) The IRG notes that (except in a few instances) the DP and supporting docs DO NOT quantify the considerable uncertainties in many of the estimates made (as required by OSPAR 98/3). This gives impression of greater confidence in uncertain outcomes than is really warranted.

- c) The IRG role has been to address the sufficiency of the evidence base on which the options have been assessed by Shell.
- d) The IRG is not responsible for approving the final options selected by Shell in its proposed DP.
- e) The evidence available on the risks from leaving the GBS legs standing above sea level in the long term, until they naturally degrade to just below sea level and thereafter until total collapse on to the sea bed, is not reliable.

APPENDIX 1: Key Requirements of OSPAR 98/3

It is recommended that in order for Shell to clearly demonstrate to regulators, the community and OSPAR members that they have systematically and categorically addressed and complied with each key requirement of OSPAR 98/3, they be requested to complete this table for ALL potential reuse, recycle and disposal options (not just those that were pre-short-listed internally by Shell), and circulate this for review.

Key OSPAR 98/3 Criteria	Shell Response
<p>Definitions</p> <p>"<u>disused offshore installation</u>" " means an offshore installation, which is neither</p> <ul style="list-style-type: none"> a) serving the purpose of offshore activities for which it was originally placed within the maritime area, nor b) serving another legitimate purpose in the maritime area authorised or regulated by the competent authority of the relevant Contracting Party; <p>but does <u>not</u> include:</p> <ul style="list-style-type: none"> c) any part of an offshore installation which is located <u>below the surface of the sea-bed</u>, or d) any <u>concrete anchor-base</u> associated with a <u>floating installation</u> which does not, and is not likely to, result in interference with other legitimate 	<p>[Shell should be requested to complete this table for all below.</p> <p>As required by 98/3 Annex 2 should include:</p> <ul style="list-style-type: none"> • clearly identifying and quantifying all inherent uncertainties, • drawing of reasoned conclusions, • underlying facts and data that support the conclusions and recommendations].

Key OSPAR 98/3 Criteria	Shell Response
uses of the sea;	
Programmes & Measures	
2. The <u>dumping</u> , and the <u>leaving wholly or partly in place</u> , of <u>disused offshore installations</u> within the maritime area <u>is prohibited</u> .	
3. By way of <u>derogation</u> from paragraph 2, if the competent authority of the relevant Contracting Party is satisfied that an <u>assessment in accordance with Annex 2</u> shows that there are significant reasons why an alternative disposal mentioned below is preferable to reuse or recycling or final disposal on land, it may issue a permit for:	
a) all or part of the <u>footings</u> of a <u>steel installation</u> in a <u>category listed in Annex 1</u> , placed in the maritime area <u>before 9 February 1999</u> , to be left in place;	
b) a <u>concrete installation</u> in a <u>category listed in Annex 1</u> or constituting a <u>concrete anchor base</u> , to be dumped or left wholly or partly in place;	
c) <u>any other disused offshore installation</u> to be <u>dumped or left wholly or partly in place</u> , when <u>exceptional and unforeseen circumstances</u> resulting from <u>structural damage or deterioration</u> , or from <u>some other cause presenting equivalent difficulties</u> , can be demonstrated.	
5. Any permit for a disused offshore installation to be dumped or permanently left wholly or partly in place shall accord with the requirements of	

Key OSPAR 98/3 Criteria	Shell Response
<u>Annex 4.</u>	
<p>Annex 1: Categories of Disused Offshore Installation where Derogations may be considered (excluding their topsides):</p> <p>a) steel installations weighing more than ten thousand tonnes in air;</p> <p>b) gravity based concrete installations;</p> <p>c) floating concrete installations;</p> <p>d) any concrete anchor-base which results, or is likely to result, in interference with other legitimate uses of the sea.</p>	
<p>Annex 2: Framework for the Assessment of Proposals for the Disposal at Sea of Disused Offshore Installations:</p>	
<p>General Provisions</p>	
<p>2. The assessment shall consider:</p> <ul style="list-style-type: none"> • the potential impacts on the environment, • the potential impacts on other legitimate uses of the sea, • the practical availability of reuse, recycling and disposal options. 	
<p>Information required</p>	
<p>3. The assessment of a proposal for disposal at sea of a disused offshore installation shall be based on descriptions of:</p>	
<p>a) the characteristics of the installation, including the substances contained within it;</p>	

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if the proposed disposal method includes the removal of hazardous substances,	
the removal process to be employed, and the results to be achieved,	
the form in which the substances will be present,	
the extent to which they may escape from the installation during, or after, the disposal	
b) the proposed disposal site:	
<ul style="list-style-type: none"> • the physical and chemical nature of the sea bed and water column 	
<ul style="list-style-type: none"> • the biological composition of their associated ecosystems 	
c) the proposed method and timing of the disposal	
4. The descriptions of the installation, the proposed disposal site and the proposed disposal method should be sufficient to assess:	
<ul style="list-style-type: none"> • the impacts of the proposed disposal, and 	
<ul style="list-style-type: none"> • how they would compare to the impacts of other options. 	
Assessment of disposal	
6. The assessment shall cover not only the proposed disposal, but also the <u>practical availability</u> and <u>potential impacts</u> of other options. The options to be considered shall include:	

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a) <u>re-use</u> of all or part of the installation;	
b) <u>recycling</u> of all or part of the installation;	
c) final disposal <u>on land</u> of all or part of the installation;	
d) other options for disposal at sea.	
Matters to be taken into account in assessing disposal options	
a) <u>technical and engineering</u> aspects of the option, including <u>re-use and recycling</u> and	
<ul style="list-style-type: none"> the impacts associated with <u>cleaning, or removing chemicals</u> from, the installation while it is offshore; 	
b) the <u>timing</u> of the decommissioning;	
c) <u>safety considerations</u> associated with removal and disposal, taking into account methods for assessing health and safety at work;	
d) impacts on the <u>marine environment</u> , including :	
<ul style="list-style-type: none"> exposure of biota to <u>contaminants</u> associated with the installation, 	
<ul style="list-style-type: none"> other <u>biological impacts</u> arising from <u>physical effects</u>, 	
<ul style="list-style-type: none"> conflicts with the <u>conservation of species</u>, with the protection of their <u>habitats</u>, 	
<ul style="list-style-type: none"> conflicts with <u>mariculture</u>, and 	
<ul style="list-style-type: none"> interference with <u>other legitimate uses</u> of the sea; 	

Key OSPAR 98/3 Criteria	Shell Response
e) impacts on other environmental compartments, including :	
• emissions to the <u>atmosphere</u> ,	
• leaching to <u>groundwater</u> ,	
• discharges to <u>surface fresh water</u>	
• effects on the <u>soil</u> ;	
f) <u>consumption</u> of natural resources and energy associated with re-use or recycling;	
g) <u>other consequences</u> to the physical environment which may be expected to result from the options;	
h) impacts on <u>amenities</u> , the activities of communities and on <u>future uses</u> of the environment; and	
i) <u>economic</u> aspects.	
9. <u>Internationally agreed principles for environmental life cycle assessment.</u>	
10. • Inherent <u>uncertainties</u> associated with each option. • <u>Conservative assumptions</u> about potential impacts. • <u>Cumulative</u> effects.	
Overall assessment	
12. The assessment shall be <u>sufficient</u> to enable the competent authority of the relevant Contracting Party to <u>draw</u> reasoned conclusions on whether or not to issue a permit under paragraph 3 of	

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<p>this Decision and, if such a permit is thought justified, on <u>what conditions</u> to attach to it.</p>	
<ul style="list-style-type: none"> • <u>Conclusions</u> shall be recorded in a <u>summary of the assessment</u>, which shall also contain a <u>concise summary</u> of the <u>facts which underpin</u> the conclusions. 	
<ul style="list-style-type: none"> • <u>Description of any significant expected or potential impacts</u> from the disposal at sea of the installation on the marine environment or its uses. 	
<ul style="list-style-type: none"> • The conclusions shall be based on <u>scientific principles</u> and the summary shall enable the conclusions to be <u>linked back to the supporting evidence</u> and arguments. 	
<ul style="list-style-type: none"> • Documentation shall <u>identify the origins of the data used</u>, together with any relevant information on the <u>quality assurance</u> of that data. 	